



ATTACHMENT A  
CITY OF SEATTLE

2008 NPDES PHASE I MUNICIPAL STORMWATER PERMIT  
STORMWATER MANAGEMENT PROGRAM

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Prepared by  
Seattle Public Utilities  
and  
Brown and Caldwell

March 27, 2008



CITY OF SEATTLE  
2008 NPDES STORM WATER MANAGEMENT PROGRAM

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On the Cover: Broadview Green Grid. This Natural Drainage Systems project spans 16 blocks of a residential neighborhood in northwest Seattle. Topography, infrastructure, and landscape were designed to meet Seattle Public Utilities' goals for Natural Drainage Systems, including stormwater management, improvements in ecology, safety, and aesthetics.



CITY OF SEATTLE  
2008 NPDES STORM WATER MANAGEMENT PROGRAM

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## I. SIGNATURE



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## **CITY OF SEATTLE NPDES STORMWATER MANAGEMENT PROGRAM**

**Submitted to the Washington Department of Ecology in compliance with the  
2007 National Pollutant Discharge Elimination System and State Discharge  
General Permit for discharges from Large and Medium Municipal Separate  
Storm Sewer Systems**

**WAR04-4503**

**City of Seattle  
Seattle Public Utilities  
Seattle, Washington**

**Date: March 31, 2008**

I certify under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for willful violations.

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Nancy Ahern  
Deputy Director- Utility System Management  
Seattle Public Utilities



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## II. INTRODUCTION



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## II.1 Introduction

This document comprises the first-year compilation of the Stormwater Management Program (SWMP) for the City of Seattle (City) under the 2007 National Pollution Discharge Elimination System (NPDES) Phase I Municipal Stormwater Permit (Permit) (Ecology 2007a). This SWMP applies to the municipal separate storm sewers owned or operated by the City within the geographical boundaries established by the Permit. Existing City programs relevant to the SWMP are outlined with minimum performance requirements, principal responsibilities, information links and summaries of current status and upcoming work. This first-year compilation of the SWMP is Attachment A to the Annual Report Form, which addresses the activities that the Permit requires to be completed in the first year of the Permit (February 16, 2007 - December 31, 2007). This SWMP will be reviewed and updated annually according to the Permit requirement.

Permit Condition S5 outlines the ten components of the SWMP that have required programs and activities, which include reporting and minimum performance measures. Section III of this document is organized to follow these Permit requirements in a parallel structure. Many of these components involve existing programs conducted by the City's various departments and organizational structure. This SWMP compiles this information in a single document that will not only meet Permit requirements but will also aid the City's implementation of its NPDES stormwater management program. The acronyms and terms used in this document are defined in Section V.

There are six City departments primarily responsible for implementing the SWMP components and associated activities and projects. Seattle Public Utilities (SPU) has the designated lead role for managing stormwater, conducting water quality programs, and managing drainage-related capital projects. Other departments with major Permit-related responsibilities include the Department of Planning and Development (DPD), Seattle Parks and Recreation (Parks), Seattle Department of Fleets and Facilities (FFD), Seattle City Light (SCL), and Seattle Department of Transportation (SDOT). These departments and SPU have been implementing many of the Permit-required programs for many years, and in some cases well before the first NPDES municipal separate storm sewer system (MS4) permit was issued in 1995.

### II.1.1 Background

The NPDES program is a key element of the Federal Clean Water Act<sup>1</sup> aimed at controlling and reducing waterborne pollutants discharged from point sources such as wastewater and stormwater. The Washington State Department of Ecology (Ecology) has jurisdiction for implementing the federal NPDES program in the State of Washington. In implementing this program, Ecology issues NPDES permits to cover individual facilities or groups of multiple entities with common activities under a general NPDES permit. These permits must meet federal minimum requirements. For regulated municipal stormwater discharges, the NPDES program requires permits for large, medium and small MS4s as defined in federal regulations. The Phase I regulations of the MS4 program went into effect in 1990 and apply to municipalities with populations of more than 100,000 (medium and large MS4s).

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<sup>1</sup> Note: The "Clean Water Act" as a term refers to the body of law that includes: Federal Water Pollution Control Act (1972), Clean Water Act (1977), and the Water Quality Act (1987).



The first Phase I MS4 permit was issued by Ecology in July 1995 to the Cities of Seattle and Tacoma and counties of Clark, King, Pierce and Snohomish. The MS4s owned or operated by the Washington State Department of Transportation (WSDOT) located in these cities and counties were also regulated under the 1995 permits. To meet the requirements of the 1995 Permit, the City prepared and managed stormwater under a SWMP that was approved by Ecology in 1997. The City provided updates on stormwater management activities to Ecology in annual reports that were submitted from 1996 to 2005. This SWMP replaces the City's 1997 SWMP.

On January 17, 2007, Ecology re-issued the Phase I MS4 permit. The Permit became effective on February 16, 2007 and covers a five-year period ending February 15, 2012 (the Phase II MS4 permit was issued concurrently and applies to approximately 90 other small cities and counties in Western Washington and approximately 30 cities and counties in Eastern Washington). The 2007 Phase I MS4 permit has 20 pages of text outlining the requirements for developing the SWMP and its ten components and associated programs, along with minimum performance measures and reporting requirements. The WSDOT will be issued a separate and individual MS4 permit, which is currently under development.

Phase I MS4 permittees and third parties have appealed the Permit to the State of Washington Pollution Control Hearings Board (PCHB). The PCHB is scheduled to hear this appeal in late spring 2008. The outcome of this hearing and/or associated negotiations may affect the SWMP. Consequently, the SWMP may need revision before the next scheduled update to address the outcome. However, this SWMP is intended to comply with all Permit requirements as of March 31, 2008.

For the City, there are no applicable Total Maximum Daily Loads (TMDL) listed in Appendix 2 of the Permit. According to S7.B of Permit, "for applicable TMDLs not listed in Appendix 2, compliance with the Permit shall constitute compliance with those TMDLs" (Ecology 2007a).

### II.1.2 City of Seattle Drainage

Drainage infrastructure in the City's system was developed with the primary purpose of conveying stormwater runoff in order to protect people and property. The City's drainage infrastructure now includes three different types: the separate storm sewer system, the partially separated system, and the combined sewer system (Figure II.1.1) each serving approximately one third of the geographical area of Seattle.

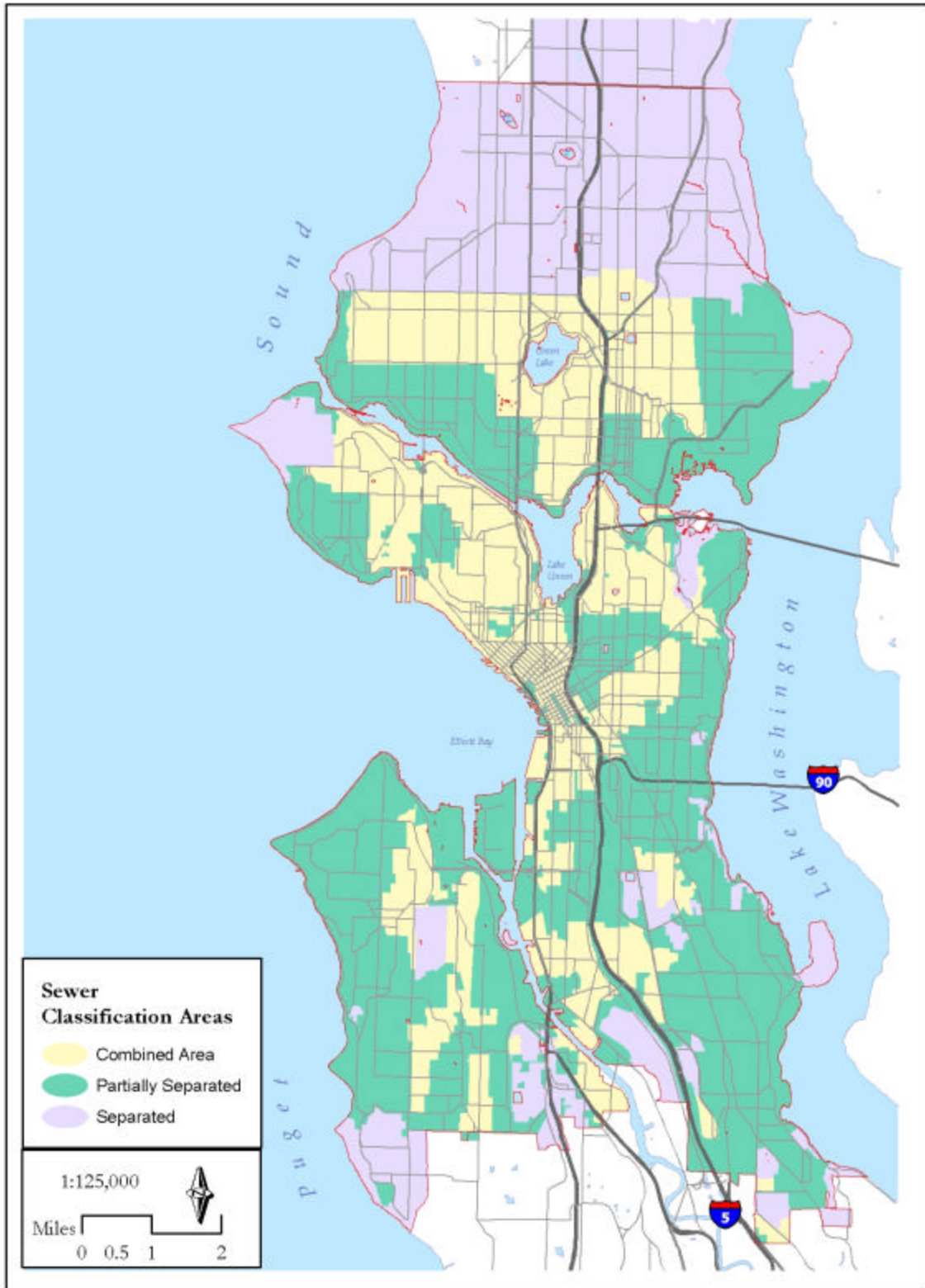
In the separate system, storm drainage is directed to a separate storm drain system, while wastewater goes to a sanitary sewer and on to the wastewater treatment plant before discharge. While parts of the City's separated drainage system are formal and piped, some parts of the separate stormwater runoff are managed primarily through an informal system of ditches and culverts, most of which drain to creeks or larger receiving waters. The area north of NE 85<sup>th</sup> Street, which the City annexed in 1954, is an example of an area still served primarily by ditch and culvert drainage systems.

In partially separated sewer areas of the City, all drainage once flowed in the combined system. During the 1960's, storm drain separation projects were built that diverted street runoff in pipes to the separate storm drainage system and receiving waters. Rooftop and other private property drainage continue to be directed to wastewater treatment plants.

The combined sewer system is a formal piped system that continues to carry both sanitary wastewater and stormwater runoff from some parts of the City to one of the area's wastewater treatment plants. Combined sewers are outside the NPDES municipal stormwater permit structure.



Figure II.1-1. Map of City Drainage Systems



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## III. NPDES STORMWATER MANAGEMENT PROGRAM



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## III.1 Legal Authority-S5.C.1

### III.1.1 Requirements

The Permit (Section S5.C.1) requires the SWMP to demonstrate certain legal authorities for controlling stormwater discharges to the City's MS4. Section S5.C.1 of the Permit outlines these areas, but does not require specific products, submittals, reports or a schedule for completing required activities because this requirement has been in effect since the 1995 NPDES permit. Many of these legal authorities are expressed in the requirements of the other SWMP components, some of which have Permit-required products and completion schedules, including the authorities needed for controlling stormwater related to:

- Industrial activity
- Illicit discharges, spills and dumping
- Inter jurisdictional agreements
- Development and redevelopment
- Construction inspections

### III.1.2 Program description

Legal Authority enabling the City to control discharges to and from the MS4 is primarily established by Seattle Municipal Code (SMC), Stormwater, Grading and Drainage Control (SMC 22.800 – 22.808) (Stormwater Code) which was last updated in 2000. The Directors of SPU and DPD share responsibility for issuance of notice of violation, stop work orders, and corrective actions for violation of the Stormwater Code. The Stormwater Code is designed to control, through regulation and ordinance, the contribution of pollutants to the MS4. It prohibits illicit discharges, spills and illegal dumping, and authorizes inspections, surveillance and monitoring to determine compliance and meet the ongoing Permit requirements.

The Side Sewer Ordinance (SMC 21.16) prohibits discharge of certain materials; requires maintenance of detention facilities; provides a right of entry for inspection; requires repair of inoperative or inadequate sewers, drains, or natural watercourses; and regulates the construction, alteration, repair, and connection of side sewers and service drains.

### III.1.3 Responsible City Departments

The City Attorney's office assists SPU and DPD with implementation of legal authority for SMC and Directors' Rules, further discussed in III.1.4, related to the management of stormwater.

### III.1.4 Completed Activities

In February 2008, the City submitted draft revisions of the Stormwater Code and associated Director's Rules to Ecology for review and determination of equivalency to Ecology's Stormwater Management Manual for Western Washington (Ecology 2005). The purpose of this revised Stormwater Code and its associated Directors' Rules are to protect life, property, public health, and the environment from the adverse impacts of



urban stormwater runoff. These adverse impacts can include flooding, pollution, landslides, and erosion. The revisions have been drafted to the Stormwater Code and its Directors' Rules in order to account for advances in urban stormwater runoff management practices since the Stormwater Code was last comprehensively updated in 2000 and to reflect the requirements of the 2007 Permit. Table III.1-1 lists the components of the Stormwater Code and Directors' Rules Drafts that were submitted to Ecology in February 2008, and may require further revision.

Table III.1-1. Components of the Stormwater Code and Directors' Rules Drafts Submitted to Ecology in February 2008

Seattle Municipal Code	Effective Date	Revision Date*	Directors' Rules		Title	Effective Date	Revision Date*	Revision Title
			DPD	SPU				
22.800	7/5/2000	2/15/2008	17-2000	01-00	Volume 1, Source Control Technical Requirements Manual	07/05/00	02/15/08	Volume 1, Source Control Technical Requirements Manual
			16-2000	DPD Rule Only	Volume 2, Construction Stormwater Control Technical Requirements Manual	07/05/00		Volume 2, Construction Stormwater Control Technical Requirements Manual
			26-2000	03-00	Volume 3, Flow Control Technical Requirements Manual	01/01/01		Volume 3, Stormwater Flow Control and Water Quality Treatment Technical Requirements Manual
			27-2000	04-00	Volume 4, Stormwater Treatment Technical Requirements Manual	01/01/01		

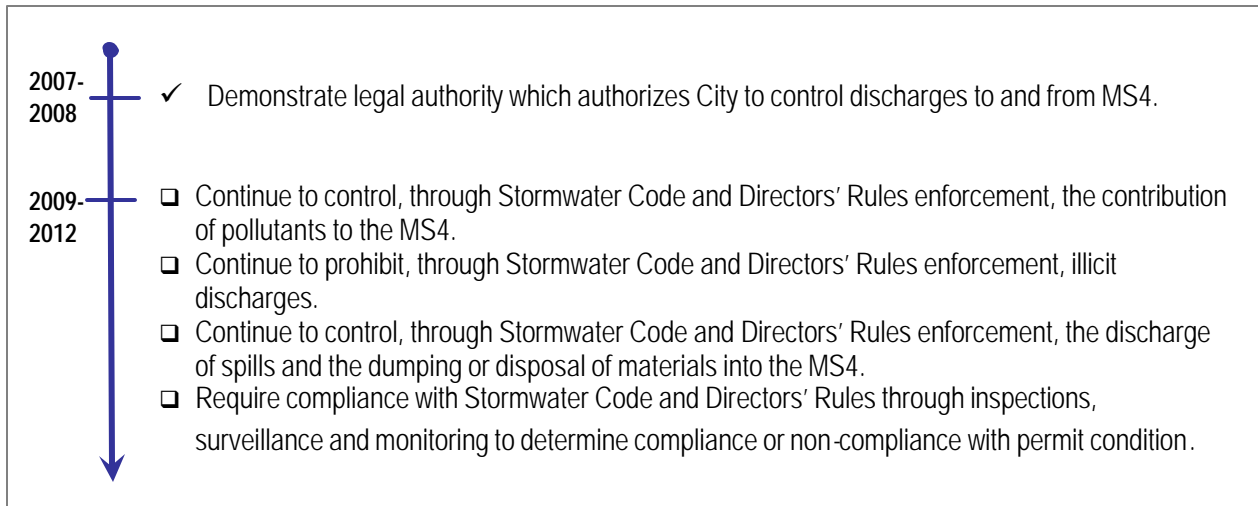
\* Stormwater Code and Directors' Rules Drafts were submitted to Ecology for review on 2/15/2008 and may require additional revision.

### III.1.5 Current and Planned Activities

SPU anticipates Ecology review and approval of the revised draft Stormwater Code and Directors' Rules in April or May of 2008. SPU will review and address potential comments and prepare the draft revised Stormwater Code for public review and adoption by City Council and Directors' Rules for adoption by SPU and DPD (Directors' Rules) in fourth quarter 2008.



Figure III.1-1. Timeline Showing Progress and Next Steps



Legend:      ✓ Implemented      ☐ Planned

*For More Information*

- ❖ City of Seattle Attorney web site: <http://www.seattle.gov/law/>
- ❖ City Clerk web site for SMC and other information: <http://www.seattle.gov/leg/clerk/clerk.htm>
- ❖ For general questions about this SWMP or more information about this section, email [swmp@seattle.gov](mailto:swmp@seattle.gov) or visit [www.seattle.gov/util](http://www.seattle.gov/util) **keywords:** Stormwater Management Plan.



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## III.2 Mapping-S5.C.2

### III.2.1 Requirements

The Permit (Section S5.C.2) requires the City to:

- Map all known municipal separate storm sewer outfalls, receiving waters, and structural stormwater treatment and flow control Best Management Practices (BMPs) owned, operated or maintained by the City.
- Initiate a program to map connection points between municipal separate storm sewers owned or operated by the City and other municipalities or other public entities.
- Map the following attributes for all storm sewer outfalls with a 24-inch nominal diameter or larger or equivalent cross-section for non-pipe systems: land use, tributary conveyance type, material, size, and associated drainage area.
- Initiate a program to develop and maintain a map of all connections to the municipal separate storm sewer authorized by the City.
- Map existing, known connections over 8 inches to the municipal separate storm sewers tributary to all storm sewer outfalls with a 24-inch nominal diameter or larger or equivalent cross-section for non-pipe systems.
- Map geographic areas served by the City's MS4 that do not discharge stormwater to surface water
- Make available to Ecology, Co-Permittees and Secondary Permittees maps depicting the Permit-required information.

### III.2.2 Ongoing Mapping Program

The City's mapping program provides the ongoing means to document and maintain the City-owned or operated municipal separate storm drainage system including connections, outfalls, drainage infrastructure, drainage areas, land uses, receiving waters, treatment and flow control BMPs and other elements. The City's drainage systems are described in Section II.1.2.

The history of Seattle's Geographic Information System (GIS) spans 18 years. Evolving from a small installation in the former Seattle Engineering Department, GIS capabilities are now firmly integrated in the daily business functions of at least six City departments.

The City's GIS was originally built primarily to improve the way the City manages and operates its utility infrastructure. The City's GIS system has matured and can now support complex business functions in most of the City's departments. For example, GIS data and capabilities are used today at the City to inform decision makers and planners, help deliver services to the public, dispatch Police and Fire personnel, and manage City real property. The City's GIS system and data are and will continue to be an important tool for stormwater management.



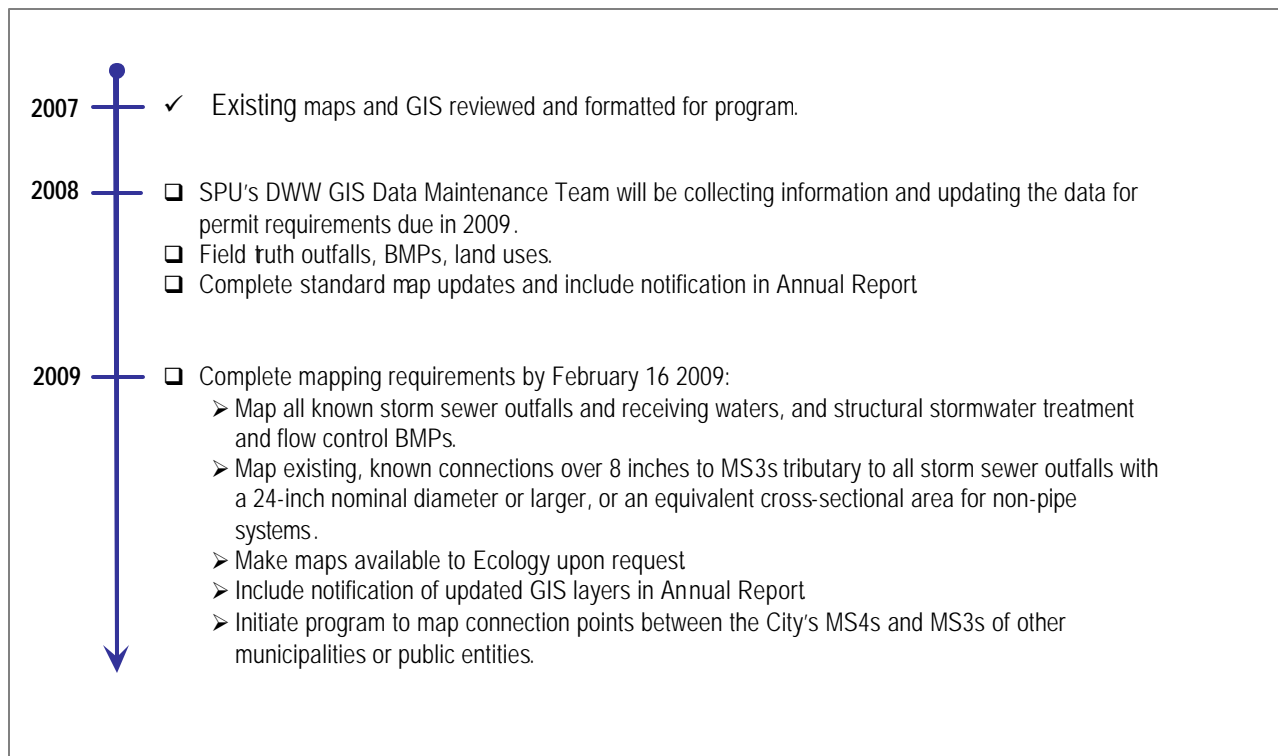
### III.2.3 Responsible City Departments

GIS support for stormwater management is provided by SPU's GIS Section of the Information Technology Division (GIS Section). The GIS Section will continue to develop and maintain a map of all connections to the MS4 and is responsible for updating the drainage-related GIS layers with information obtained from City-led capital improvement projects and side sewer as-built drawings. Side sewer drawings are obtained from documentation supporting development permit applications submitted to DPD. An example of these documents are side sewer site plans which record private infrastructure changes planned under side sewer permits issued by DPD. All work that is conducted under permits issued by DPD is mapped by the permittee by hand or other methods and is reviewed and approved by the DPD inspector. These side sewer site plans are scanned by DPD, and then sent to the GIS Section. The side sewer infrastructure plans are then digitized by the SPU GIS Section and placed into the working GIS directory for use by GIS users within the City.

### III.2.4 Current and Planned Mapping Activities

Figure III.2-1 describes the progress made in 2007, and the planned next steps in 2008 for meeting Permit requirements in 2009.

Figure III.2-1. Timeline Showing Progress and Next Steps



Legend:      ✓ Implemented      ☐ Planned

Current  
Activities

Planning  
Ahead



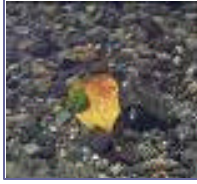


*For More Information*

- ❖ The Public may request map information in person at the Map Counter in the Public Resource Center, Seattle Municipal Tower 20<sup>th</sup> floor, or by phone at 206.684.0965 or via email at [gismap@seattle.gov](mailto:gismap@seattle.gov).
- ❖ The public can view standard GIS maps and find out more information at the web site: [http://www2.seattle.gov/GIS\\_Map/default.asp](http://www2.seattle.gov/GIS_Map/default.asp).
- ❖ For general questions about this SWMP or more information about this section, email [swmp@seattle.gov](mailto:swmp@seattle.gov) or visit [www.seattle.gov/util](http://www.seattle.gov/util) **keywords:** Stormwater Management Plan.



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## III.3 Coordination-S5.C.3

### III.3.1 Requirements

The Permit (Section S5.C.3) requires internal coordination of stormwater activities among City departments and external coordination between the City and outside agencies. Minimum performance measures include:

- Developing and implementing a written internal coordination agreement or Executive Directive.
- Establishing coordination mechanisms for physically interconnected municipal separate storm sewers (MS3s).
- Coordinating stormwater management for shared water bodies among other MS4 permittees and Secondary Permittees to avoid conflicting plans, policies and regulations.
- Documenting the coordination efforts.

### III.3.2 Coordination Program

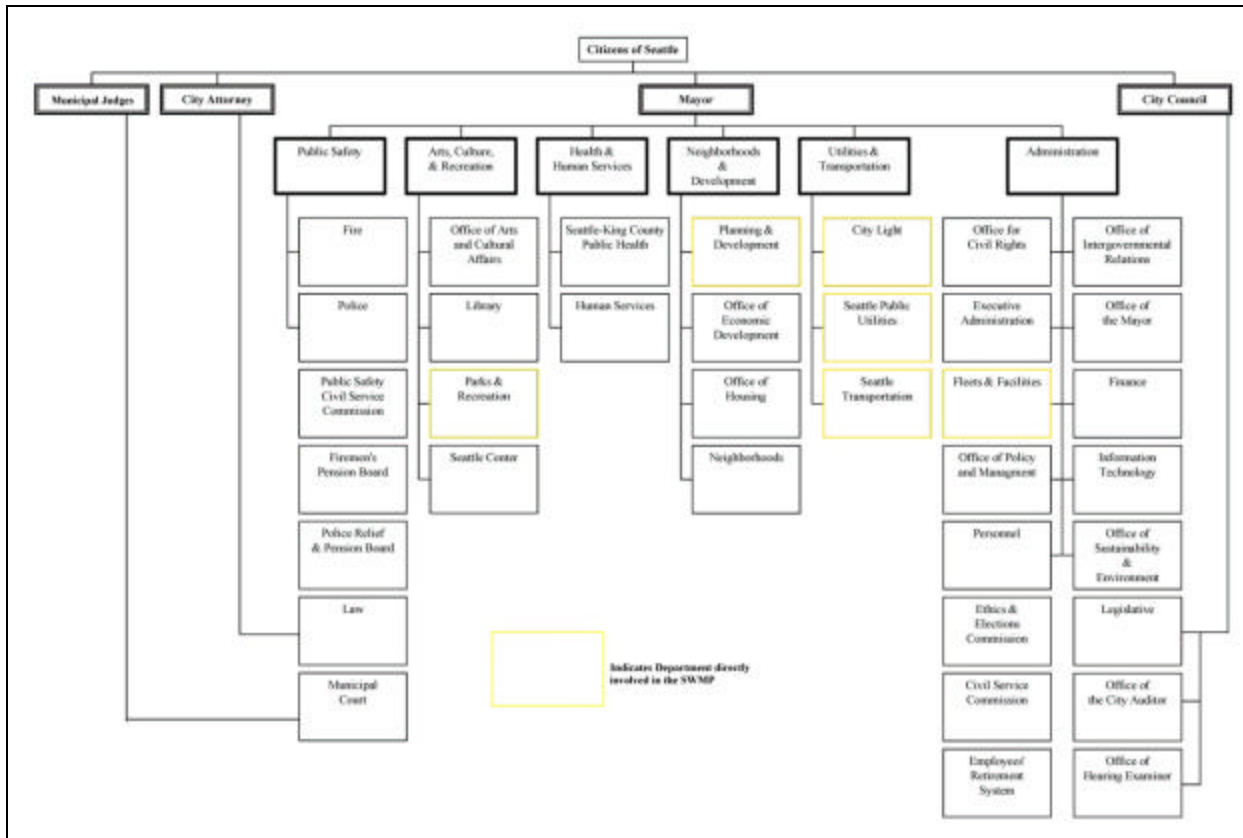
SPU is the lead department for coordinating Permit and stormwater related activities among City departments, as designated by a mayoral Executive Order dated January 29, 2008 (Appendix 1). External coordination mechanisms and coordinated stormwater actions are required no later than 2009 and will be documented in the 2009 SWMP submittal.

### III.3.3 Responsible City Departments

SPU is the lead City department for implementing Permit coordination requirements in the SWMP. Among the many City departments serving the residents of Seattle, there are six departments (highlighted on Figure III.3.1) primarily responsible for implementation of programs and projects for stormwater management within the City's MS4. These are SPU, DPD, Parks, FFD, SCL, and SDOT.



Figure III.3-1. City Organizational Chart



### III.3.3.1 Seattle Public Utilities

SPU is the City-designated lead department for managing stormwater, including meeting Phase I Permit requirements, conducting water quality programs, and managing drainage-related capital projects. SPU conducts inspections, maintenance and repair of stormwater facilities in the right-of-way.

### III.3.3.2 Department of Planning and Development

DPD is the City department responsible for developing, administering, and enforcing development standards. The DPD issues development permits as required under the Stormwater Code and other ordinances and inspects sites prior to and during construction. SPU and DPD share complaint response and enforcement (i.e., inspection and response) responsibilities. Both SPU and DPD have authority to issue notices of violation and initiate enforcement for drainage related issues. DPD manages customer complaints and inquiries related to current construction activities. SPU manages customer complaints and inquiries unrelated to the development permit as well as all complaints and inquiries related to existing facilities are directed to SPU Customer Service.



### III.3.3.3 Seattle Parks and Recreation

Parks is responsible for several hundred parks and park facilities and plays a key role in environmental stewardship. Parks trains its staff in comprehensive BMPs for various maintenance activities, works in partnership with SPU on creek improvement projects, and is involved in programs designed to reduce pesticide use, remove invasive plants, and replant native species on property managed by Parks.

### III.3.3.4 Seattle Department of Fleets and Facilities

FFD manages the City's non-utility real estate portfolio, oversees the design, construction and occupancy of City facilities, maintains City buildings, and purchases, maintains and repairs the City's fleet of vehicles. FFD trains its staff in BMPs related to its business activities and works to reduce impacts on stormwater. FFD is responsible for implementation of the Stormwater Code at facilities under its management.

### III.3.3.5 Seattle City Light

Created by the citizens of Seattle in 1902, SCL provides customers with electricity and related services. SCL is dedicated to managing all of its activities in an environmentally responsible manner. SCL trains its staff in BMPs related to its business activities and works to reduce adverse impacts on stormwater. SCL is responsible for implementation of the Stormwater Code at facilities under its management.

### III.3.3.6 Seattle Department of Transportation

SDOT is responsible for the City's streets, bridges, sidewalks, bike paths, street trees, and traffic operations. SDOT performs such roadway maintenance activities as street sweeping and snow and ice control. The Capital Projects Division of SDOT oversees all aspects of Transportation Capital Improvement Programs (CIPs) and coordinates development and implementation of large-scale City projects. SPU works with SDOT during implementation of projects to design stormwater facilities in the right-of-way. At project completion, SPU takes over operation and maintenance of all stormwater facilities in the right-of-way.

## III.3.4 Current and Planned Coordination Activities

### III.3.4.1 Internal Coordination

SPU leads inter-departmental meetings to coordinate the City's stormwater management and Permit reporting efforts. These meetings are typically held bi-weekly, and have enabled the different departments to better coordinate stormwater-related policies, programs and projects.

### III.3.4.2 Executive Directive

The Permit requires SPU to "establish, in writing...intra-governmental (internal) coordination agreement(s) or Executive Directive(s) to facilitate compliance with the terms of the permit." Executive Order # 01-08 (Appendix 1)(City of Seattle, 2008) was issued on January 29, 2008, by the Mayor of Seattle to meet this Permit requirement. The Executive Order prescribes the following responsibilities and orders all departments to coordinate all stormwater-related policies, programs, and projects:

- Each department director will be responsible for meeting the Permit requirements that apply to his or her respective department.
- SPU will serve as the lead department for overseeing City compliance with the Permit.
- SPU will provide each department with information, technical support, and a forum for inter-departmental coordination.



- All City departments must provide SPU with all necessary reporting elements and supporting material necessary to comply with the reporting requirements and associated deadlines of the Permit.

SPU will continue to coordinate with the various departments to facilitate the stormwater management program for the City. Figure III.3-2 outlines current and future coordination mechanisms.

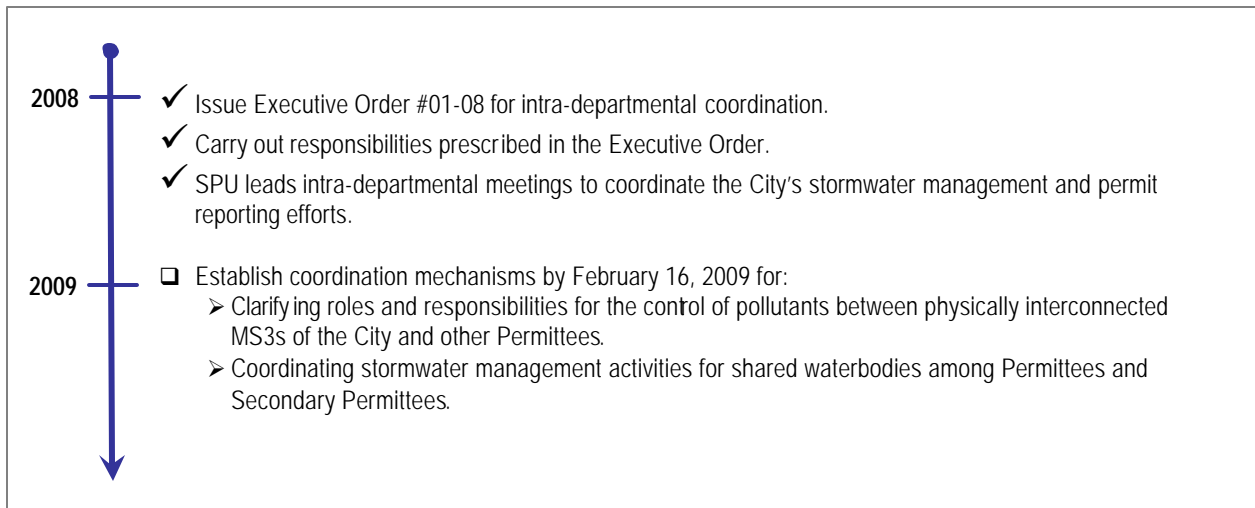
### III.3.4.3 King County as Co-Permittee

King County is listed as Co-Permittee with the City in S1.C of the Permit for discharges from outfalls that King County owns or operates within the City of Seattle. King County’s activities as co-permittee are further explained in S6.F which states: “King County, as a Co-Permittee with the City of Seattle for the discharges from outfalls King County owns or operates in the City, shall participate in the City of Seattle’s Stormwater Management Program in accordance with the Joint Stormwater Management Program element of the Memorandum of Agreement between the City and County dated September 25, 1995. The apportionment of responsibilities for stormwater management within the City shall be governed solely by the MOA or its amendment, provided the City’s stormwater management program, including King County participation, shall fully comply with Section S5 of this permit. Any amendments to the MOA shall be approved by Ecology before becoming effective.”

There have been no amendments to the MOA between the City and King County. The City and King County have and will continue to meet and coordinate on King County’s participation in SWMP activities in the Lander and Densmore basins per the MOA. The City has and will continue to comply with S5 to implement the stormwater management activities detailed in this SWMP in the Lander and Densmore basins.

The City has been informed that in 2007, King County conducted catch basin monitoring, business inspections and public education activities per the MOA. King County provided the City with a letter detailing these activities (Appendix 2). The City anticipates that King County will report to Ecology per their permit requirements as a Phase I and Co-Permittee and include information on their activities in the Lander and Densmore Basins in this report.

Figure III.3-2. Timeline Showing Progress and Next Steps



Legend:      ✓ Implemented      ☐ Planned

Current Activities

Planning Ahead



*For More Information*

- ❖ City of Seattle: <http://www.seattle.gov/>
- ❖ Seattle Public Utilities: <http://www.seattle.gov/util/services/>
- ❖ Department of Planning and Development: <http://www.seattle.gov/dpd/>
- ❖ Seattle Parks and Recreation: <http://www.seattle.gov/parks/>
- ❖ Fleets and Facilities Department: <http://www.seattle.gov/fleetsfacilities/>
- ❖ Seattle City Light: <http://www.seattle.gov/light/>
- ❖ Seattle Department of Transportation: <http://www.seattle.gov/transportation/>
- ❖ For general questions about this SWMP or more information about this section, email [swmp@seattle.gov](mailto:swmp@seattle.gov) or visit [www.seattle.gov/util](http://www.seattle.gov/util) **keywords:** Stormwater Management Plan.



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## III.4 Public Participation During SWMP Development – S5.C.4

### III.4.1 Requirements

The Permit (Section S5.C.4) requires the City to provide ongoing opportunities for public involvement in the SWMP and input on implementation priorities. The minimum performance measures include:

- Developing and implementing a public participation process for considering input on the SWMP.
- Making the SWMP and all Permit-required submittals available to the public on the City's web site or via electronic submittals for posting on Ecology's web site.

### III.4.2 Public Participation Program

Starting in February 2007 and continuing into the future, the City will provide a variety of opportunities for public involvement in the stormwater management program, e.g., neighborhood planning, watershed action plans and citizen advisory committees. Public comments on budget, Stormwater Codes and this SWMP also help to refine ongoing development of stormwater management activities.

### III.4.3 Responsible City Departments

SPU is the lead City department responsible for implementing the public involvement and participation program for the SWMP and Permit-related activities. The City Council provides opportunities for public participation in public hearings. A series of public meetings are being held as part of the external stakeholder involvement process for the Stormwater Code Revision Project, and DPD is posting information on the revised draft Stormwater Code and Directors' Rules on their web site.

### III.4.4 Current and Planned Public Participation Activities

The public has several means of participating in the SWMP development process and associated activities. As described below, these opportunities have been in place since early 2007.

#### III.4.4.1 City Budget Process

The City budget process provides opportunities for public input on how monies are allocated for implementation of NPDES-related stormwater management. Adoption of the City Budget - one of the most important products of the work of City Council - always requires public hearings to be scheduled on two or more days. All meetings are held in Council Chambers unless otherwise noted. The public is encouraged to attend Council meetings, hear the debate, and offer public comment on issues. The City Council meeting schedule and methods for providing comments are listed on the City Council's web site.

#### III.4.4.2 Opportunities for Comments on Stormwater Code Revisions

Outreach to the public and other interested parties regarding the revised Stormwater Code has been conducted since late 2006. SPU personnel have spoken to groups that include: Master Builders, Ballard-



Interbay Northend Manufacturing and Industrial Center (BINMIC), American Council of Engineering Companies (ACEC), American Society of Civil Engineers (ASCE), Puget Soundkeeper Alliance, representatives from Creeks Councils, Restore our Waters (external), SPU's Creeks Drainage/Wastewater Advisory Committee (CDWAC), and others. In December 2007 and January 2008, two open forums were held to discuss the proposed Stormwater Code revisions and take questions and comments. SPU has engaged Ecology regarding the equivalency of the City's revised Stormwater Code and Directors, Rules to the 2005 Stormwater Management Manual for Western Washington, and has met with their staff on several occasions.

In early January 2008, SPU posted the External Review of the revised draft Stormwater Code and Directors' Rules on DPD's web site to allow continued stakeholder involvement well in advance of the legislative public process. SPU plans to begin the formal public review process after Ecology has reviewed and approved the revised draft Stormwater Code and Directors' Rules as equivalent to their 2005 Stormwater Management Manual for Western Washington (Ecology, 2005). Under Section III.5 of this SWMP, SPU must submit the revised Stormwater Code within one year of the Permit effective date (February 19, 2008). Thus, the earliest opportunity for commencing public review would be sometime in April-May 2008.

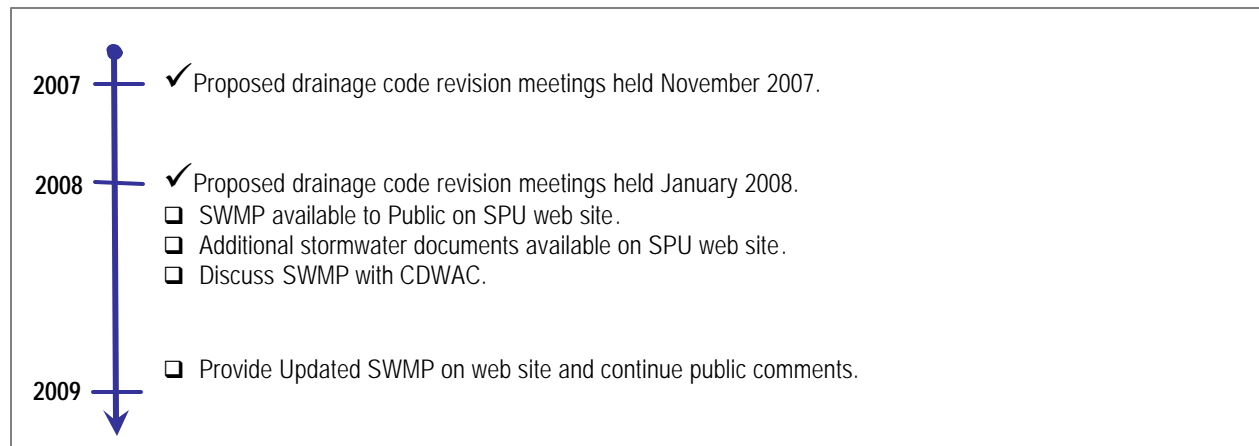
#### III.4.4.3 Creeks Drainage/Wastewater Advisory Committee

SPU facilitates several citizen advisory groups that provide an opportunity for citizens to participate in planning and development of policies and programs and to advise SPU and other pertinent City entities of its findings and recommendations. While many groups are watershed specific (e.g., Pipers Creek Watershed Advisory Committee), CDWAC covers issues City wide. CDWAC membership includes citizens with professional backgrounds in the subject area and representatives of relevant stakeholder groups to provide a diversity of viewpoints. SPU plans to continue to engage CDWAC for review and advice on developing and implementing the SWMP.

#### III.4.4.4 Public Participation during SWMP Development

To provide for additional public input beyond that provided by CDWAC, SPU has created a stormwater management web site to host an electronic version of the SWMP and other related stormwater management information and documents (see link in the "For More Information" box below). In addition, the web site provides contact information for citizens to provide comments and ask questions.

Figure III.4-1. Timeline Showing Progress and Next Steps



Legend:      ✓ Implemented      ☐ Planned



### *For More Information*

- ❖ City Council : <http://www.seattle.gov/council/councilcontact.htm> , or via email at: [budget@seattle.gov](mailto:budget@seattle.gov) , or call Council reception at (206) 684-8888
- ❖ Stormwater Code information on DPD web site: <http://www.seattle.gov/dpd/>
- ❖ Creeks, Drainage/Wastewater Advisory Committee:  
[http://www.seattle.gov/util/About\\_SPU/Drainage\\_&\\_Sewer\\_System/Drainage\\_Advisory\\_Committee/DRAINAGEA\\_200312021306423.asp](http://www.seattle.gov/util/About_SPU/Drainage_&_Sewer_System/Drainage_Advisory_Committee/DRAINAGEA_200312021306423.asp)
- ❖ For general questions about this SWMP or more information about this section, email [swmp@seattle.gov](mailto:swmp@seattle.gov) or visit: [www.seattle.gov/util](http://www.seattle.gov/util) **keywords:** Stormwater Management Plan.



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## III.5 Controlling Runoff from New Development, Redevelopment and Construction Sites -S5.C.5

### III.5.1 Requirements

The Permit (Section S5.C.5) requires the City to develop, implement, and enforce a program to prevent and control the impacts of stormwater runoff from new development, redevelopment and construction site activities. The minimum performance measures include the following main areas with more detailed requirements included in the Permit text:

- Adopt enforceable regulations (codes and/or standards) to meet or exceed the minimum technical requirements (thresholds) in Appendix 1 of the Permit, or equivalent as determined by Ecology.
- Implement a plan review process and a BMP selection and design process that meets maximum extent practicable (MEP) and all known, available and reasonable methods of prevention, control and treatment (AKART) conditions.
- Allow non-structural preventive actions and source reduction approaches such as Low Impact Development (LID) techniques.
- Adopt a local program that meets the requirements above (enforceable requirements, technical standards, and manual(s)). The program must be reviewed and approved by Ecology.
- Establish legal authority to inspect private stormwater facilities and enforce maintenance standards for all new development and redevelopment approved by the local program.
- A process of permits, plan review, inspections, enforcement capability and record keeping to meet permit conditions during and post construction for public and private new development and redevelopment.
- Make Ecology's Notice of Intent (NOI) documents for construction and industrial activities available to project proponents. Enforce local ordinances for these sites covered by other Ecology permits.
- Provide training to staff whose primary job duties are implementing the program to control runoff from new development, redevelopment and construction sites, and document the training. Training to include revisions to the Stormwater Code, and resulting new standards, processes and procedures.

### III.5.2 Development Standards Program

SMC Chapters 22.800 through 22.808 contains the City's Stormwater Code. The purpose of the Stormwater Code is to protect, to the greatest extent practicable, life, property, and the environment from loss, injury, and damage by pollution, erosion, flooding, landslides, and other adverse impacts from urban stormwater runoff. Seattle's Stormwater Code includes the following requirements: (1) to practice stormwater pollution prevention during construction; (2) to reduce the introduction of pollutants into stormwater runoff as close to the source as possible; and (3) to install flow control and/or stormwater treatment facilities, depending on the size and nature of a project. The Stormwater Code is implemented through the four Directors' Rules, promulgated jointly by the Director of SPU and the Director of DPD. These Directors' Rules provide specifications, guidelines, and additional information needed for meeting the requirements of the Stormwater Code. The four Directors' Rules currently in place are:



- Construction Stormwater Control Technical Requirements Manual: DPD Director's Rule 16-2000
- Source Control Technical Requirements Manual: DPD Director's Rule 17-2000/SPU Director's Rule 01-00
- Flow Control Technical Requirements Manual: DPD Director's Rule 26-2000, SPU Director's Rule 03-00
- Stormwater Treatment Technical Requirements Manual: DPD Director's Rule 27-2000, SPU Director's Rule 04-00

### III.5.3 Responsible City Departments

The DPD is the City department responsible for developing, administering, and enforcing development standards. The DPD issues development permits as required under the Stormwater Code and other ordinances and inspects sites prior to and during construction. SPU and DPD share complaint response and enforcement (inspection and response) activities. Both SPU and DPD have authority to issue notices of violation and initiate enforcement for drainage related issues. DPD manages customer complaints and inquiries related to current construction activities. SPU manages customer complaints and inquiries unrelated to the development permit. All complaints and inquiries related to existing facilities are directed to SPU Customer Service.

### III.5.4 Current and Planned Activities

The following sections outline completed or planned activities needed to meet the key Permit requirements.

#### III.5.4.1 Stormwater Code Revision Project

The City is currently engaged in a project to revise the Stormwater Code. This project is directed by SPU and is being conducted in close collaboration with DPD and other internal and external stakeholders. Both the Stormwater Code and the Directors' Rules are being revised to account for advances in BMPs for the control and management of stormwater runoff, and are intended to be equivalent to the Stormwater Management Manual for Western Washington (Ecology, 2005). The City's Stormwater Code draft revisions were submitted to Ecology in February 2008 for review and approval.

In addition to revisions to the Stormwater Code, four new Joint SPU/DPD Directors' Rules will be promulgated to replace the current Rules, as listed under III.5.2.

The multi-year project has involved a cross-departmental effort involving SPU, DPD, SDOT, Parks, Seattle Attorney's Office, and other City departments. Beginning in late 2006, a series of briefings and public meetings were conducted to provide information to, and obtain feedback from developers, builders, contractors, designers, engineers, consultants, public agencies, and representatives of environmental advocacy groups. A revised Stormwater Code is scheduled for adoption by The Seattle City Council in August 2008, based upon Ecology's anticipated approval of the revised Stormwater Code in April 2008.

#### III.5.4.2 Legal Authority to Inspect Private Facilities

Legal authority for inspection of private facilities for new and redevelopment is already established by SMC 22.802.090.B, which states:

"The Director of SPU may establish inspection programs to insure compliance with the requirements of this subtitle and accomplishment of its purposes. Inspection programs may



be established on any reasonable basis, including but not limited to: routine inspections; random inspections; inspections based upon complaints or other notice of possible violations; inspection of drainage basins or areas identified as higher than typical sources of sediment or other contaminants or pollutants; inspections of businesses or industries of a type associated with higher than usual discharges of contaminants or pollutants or with discharges of a type which are more likely than the typical discharge to cause violations of state or federal water or sediment quality standards or the City's NPDES stormwater permit; and joint inspections with other agencies inspecting under environmental or safety laws. Inspections may include, but are not limited to: reviewing maintenance and repair records; sampling discharges, surface water, groundwater, and material or water in drainage control facilities; and evaluating the condition of drainage control facilities and other best management practices." Entry onto properties is subject to the requirements and limitations of local, state and federal laws.

#### III.5.4.3 Permitting Program

DPD is the City's department responsible for issuance of permits for new development and redevelopment. Routine permitting procedures are outlined below;

##### III.5.4.3.1 Permit Application

Step 1. The permitting process begins with an optional but recommended step of applicant coaching. In this step, a DPD land use planner meets with the potential applicant to identify unique or particular issues of the proposed project. Coaching helps to determine what is allowed on a piece of property, what development standards apply, whether the project will require a land use permit, and what the permit process will entail. If the project is a multifamily or commercial building and there are special circumstances or issues unresolved during coaching, the proponent will request a pre-submittal conference for project review.

Step 2. The next step for an applicant is to research and prepare a preliminary site plan. The site plan describes where the structure(s) and BMPs will be located, the amount of new impervious surfaces that will result, the general topography of the site, and the existing level of street and alley improvements in the rights-of-way abutting the site.

For those projects that involve ground disturbance, DPD requires two separate on-site steps in the permitting process. First, a Pre-Application Site Visit (PASV) is performed by a DPD site inspector prior to permit intake. The PASV identifies existing site conditions, including steep slopes, sensitive areas, and erosion control issues that can be anticipated with the project due to site conditions. A PASV report is generated for the applicant and plan reviewer's use. Second, after a permit is issued for projects with ground disturbance, but prior to any ground disturbance, the applicant is required to schedule a first ground disturbance (FGD) inspection with a DPD Site Inspector. The FGD inspection requirement is codified in the Seattle Building Code (SMC 22.100 – 22.204). The purpose of the FGD inspection is for the applicant and inspector to identify potential erosion control issues that may be encountered during construction and map out BMPs that are acceptable to prevent sediment from leaving the site.

Step 3. At this time the project proponent submits an application to DPD.

Step 4. For projects that have ground disturbance and a high likelihood of erosion control issues due to steep slopes, a geotechnical special inspector is assigned the project. The geotechnical special inspector is charged with determining that adequate temporary and permanent erosion control measures are in place throughout the construction of the project.





- Step 5. The final step in the permit process is to submit an application to the DPD Applicant Services Center on the 20<sup>th</sup> Floor of the Seattle Municipal Tower, which will issue a building permit as appropriate.

#### III.5.4.3.2 Inspections of Permitted Projects

After all required PASVs are completed and a building permit is issued, a DPD site inspector checks to make sure that work is done according to code. Customers with permits are responsible for arranging inspections.

There are five types of site inspections that occur after a permit is issued.

1. FGD inspection - DPD inspectors conduct a site visit prior to ground disturbance to determine erosion potential and review and tailor temporary erosion and sediment control (TESC) measures to the site.
2. Pre-construction inspection – This inspection is conducted with DPD geotechnical and environmental scientists to establish a clear understanding of the project, DPD requirements, and point of contact for the permitted project.
3. Side sewer inspection - This is a key inspection to prevent cross-connections between side sewers and storm drains that have been partially or completely separated
4. Special inspection - This type of inspection is usually applied to structural work but may be required for special grading, excavation and filling involved with ground disturbance.
5. Final inspection - After successful completion of all inspections, the permitted is granted approval to occupy or certificate of occupancy.

#### III.5.4.3.3 Enforcement

DPD's Code Compliance staff enforces the Stormwater Code and Directors' Rules that govern construction, land use, and environmental protection. Enforcement can take the form of notices, fines and legal action.

#### III.5.4.4 Ecology Notice of Intent

DPD has made and will continue to make available copies of the Notice of Intent for Construction Activity (Ecology, 2007b) and/or "Notice of Intent for Industrial Activity" (Ecology, 2007c) to City permit applicants in the Applicant Services Center.

#### III.5.4.5 Training

DPD will continue to educate applicants on the requirements and the importance of erosion and sediment control measures. DPD offers TESC workshops to the general public that emphasize TESC standard plans, review of environmental concerns, TESC inspection, and methods for applying TESC measures.

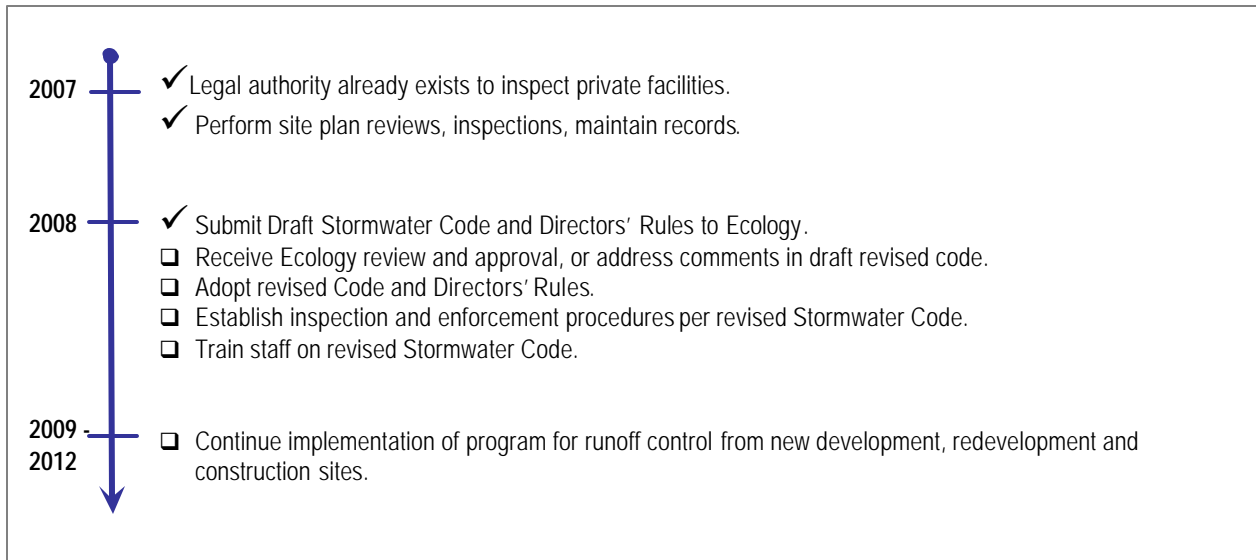
DPD conducts on the job and classroom training for all staff whose primary job duties relate to implementing the City's program to Control Stormwater Runoff from New Development, Redevelopment, and Construction Sites, which helps confirm that those individuals are properly trained. Training topics include permitting, plan review, construction site inspections, and enforcement procedures. After Ecology reviews and approves the revised Stormwater Code and it is adopted by City Council, SPU and DPD will be providing training to staff on the revised Stormwater Code and its associated Directors' Rules.

City staff who routinely conducts ground disturbing activities as part of their duties will be trained during a City-wide training session occurring during spring 2008. The training will consist of classroom and field exercises that are designed to provide instruction on the requirements of the Stormwater Code and Directors' Rules, with a focus on BMPs for construction projects.





Figure III.5-1. Timeline Showing Progress and Next Steps



Legend:      ✓ Implemented      ☐ Planned

*For More Information*

- ❖ Proposed revisions to the Stormwater Code and Draft Directors' Rules are available on the DPD web site at:  
[http://www.seattle.gov/dpd/Planning/Stormwater\\_Grading\\_and\\_Drainage\\_Code\\_Revisions/Overview/default.asp](http://www.seattle.gov/dpd/Planning/Stormwater_Grading_and_Drainage_Code_Revisions/Overview/default.asp)
- ❖ Information on the permitting process for new and redevelopment is available on the DPD web site at: [http://www.seattle.gov/dpd/Site\\_Development/Overview/default.asp](http://www.seattle.gov/dpd/Site_Development/Overview/default.asp)
- ❖ For general questions about this SWMP or more information about this section, email [swmp@seattle.gov](mailto:swmp@seattle.gov) or visit [www.seattle.gov/util](http://www.seattle.gov/util) **keywords:** Stormwater Management Plan.



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## III.6 Structural SW Controls-S5C.6

### III.6.1 Requirements

The Permit (Section S5.C.6) requires the City to:

- Develop a Structural Stormwater Control Program (SSCP) that is designed to control stormwater impacts that are not adequately controlled by other required actions of the SWMP. The SSCP may also include a program designed to implement small scale projects that are not planned in advance.
- Describe the SSCP in the SWMP document, including goals, planning process, budgets, and public involvement.
- Provide a list of planned SSCP projects to be implemented during the term of the Permit; update the list annually.
- For each planned project, provide information on estimated pollution reduction, expected outcomes, environmental benefits, and planned or completed monitoring or evaluation.
- Include updated information on the SSCP in each annual report.

### III.6.2 Structural Stormwater Control Program

The key elements of the City's SSCP are described below under Current and Planned Activities. The SSCP includes water quality and flow control projects.

### III.6.3 Responsible City Departments

SPU is the lead City department for development and implementation of the SSCP.

### III.6.4 Current and Planned Activities

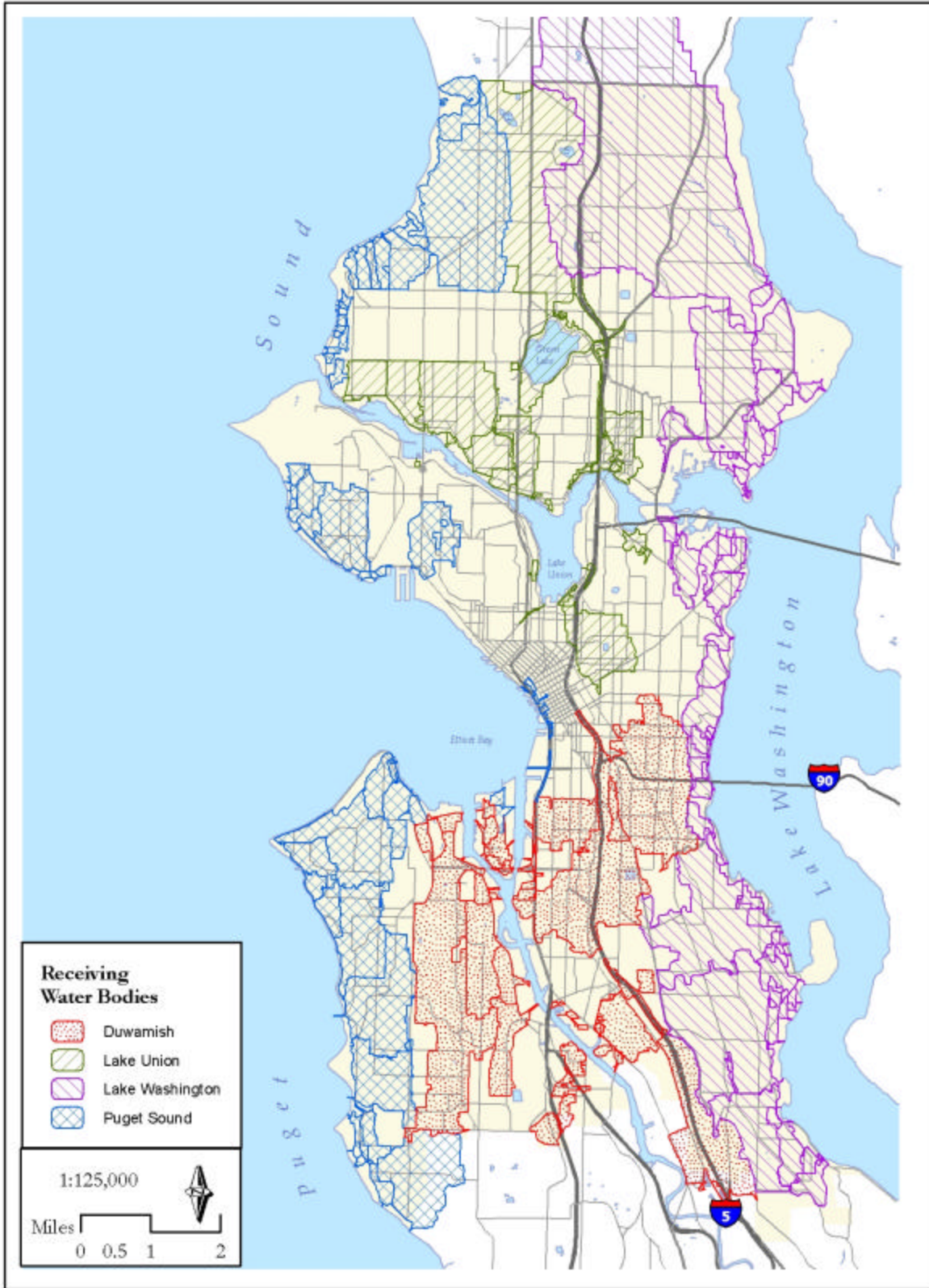
The following sections outline the goals of the City's SSCP, which is to implement projects that protect and/or improve the beneficial uses of certain receiving water bodies, reflect asset management principles and are not otherwise required actions in the SWMP.

#### III.6.4.1 Planning Process and Considerations

A comprehensive planning process is in place to support the SSCP. The geographic scale of the program is the area served by the City's MS4 and the MS4-related receiving water bodies. This area is evaluated based on the watersheds of the four major receiving water bodies; Puget Sound, Lake Washington, Duwamish River, and the Ship Canal/Lake Union (Figure III.6-1). Regulations and issues considered during the SSCP development process included: 303 (d) listed and other impaired water bodies, TMDLs, Stormwater Code requirements, Superfund and MTCA sites, as well as opportunity, feasibility, and available funding.



Figure III.6-1. Major Receiving Water Bodies



The SSCP program develops and prioritizes projects by using asset management principles. Projects are prioritized by SPU staff based on an assessment of receiving water body conditions, anticipated benefits of the project, regulatory compliance needs, opportunity, and application of asset management principles that have been adopted by SPU under the guidance of the Asset Management Committee (AMC). Projects must pass through several AMC evaluation screens and funding allocation phases before they are formally approved by SPU management for implementation. Asset management is the process by which projects are evaluated for their whole-life cycle cost benefit including social, economic, and environmental factors (the triple bottom line). This rigorous process assures that the City's SSCP needs are being addressed with the most effective use of ratepayer dollars by the time a project breaks ground. Additionally, project implementation is dependent upon City Council budget approval.

The public involvement process related to SSCP development includes (as appropriate): Seattle City Council budget process, public review of the Comprehensive Drainage Plan (Seattle, 2005b), involvement of the CDWAC, State Environmental Policy Act (SEPA) review, and Joint Aquatic Resources Permit Application (JARPA) review.

#### III.6.4.2 Structural Project List

SSCP projects are summarized in Table III.6-1. The projects are grouped by status. SSCP projects currently in construction have a high probability of being constructed on the anticipated schedule. For those projects currently in preliminary engineering (PE) or design, there is greater uncertainty associated with technical issues, schedule, available funding, and other unforeseen items that may result in changes to the project.

For projects that are primarily intended to provide stormwater treatment, the estimated pollutant load reduction (total suspended solids [TSS] kg/year) is shown in Table III.6-1. The concentration of TSS is used to represent estimated pollutant load because it is the target pollutant for "basic" stormwater treatment (Ecology, 2005) and is often related to other particle-bound pollutants such as total metals, total phosphorus, and certain organic chemicals. For projects that are primarily intended to provide flow control, the expected outcome of the project is shown in Table III.6-1. For all projects, other expected environmental benefits are shown in Table III.6-1. Anticipated monitoring or evaluation and anticipated construction dates are shown in Table III.6-1. The estimated annual budget (2008 – 2012) for each project is presented in Table III.6-2. A brief summary of each project included in the SSCP is provided below.



Table III.6-1. Structural Stormwater Control Projects – Summary

Project	Stormwater Treatment	Flow Control	Other Expected Environmental Benefits	Planned Monitoring or Evaluation?	Anticipated Construction
	Estimated median TSS Reduction (kg/year)	Expected Outcome			
<b>Construction Phase</b>					
Thornton Creek Water Quality Channel	7,000 – 13,000		<ul style="list-style-type: none"> <li>Stormwater treatment of other pollutants (in addition to TSS)</li> <li>Increased green space</li> </ul>	Water Quality and Vegetation	ongoing - 2009
<b>PE or Design Phase</b>					
South Park Water Quality	27,000 – 67,000		<ul style="list-style-type: none"> <li>Stormwater treatment of other pollutants</li> </ul>		2009 -2010
Martin Luther King (MLK) Way - Norfolk Water Quality	22,000 – 64,000		<ul style="list-style-type: none"> <li>Stormwater treatment of other pollutants</li> </ul>		2009
Aurora Ave and 125th	1,000 – 3,000		<ul style="list-style-type: none"> <li>Stormwater treatment of other pollutants</li> </ul>	Water Quality	2010
Capital Hill Water Quality	20,000 – 43,000		<ul style="list-style-type: none"> <li>Stormwater treatment of other pollutants</li> <li>Increased green space</li> </ul>	Water Quality	2009 - 2011

Table III.6-2. Structural Stormwater Control Projects – Estimated Budget Projections

Project	Estimated Budget (\$K)				
	2008	2009	2010	2011	2012
<b>Construction Phase</b>					
Thornton Creek Water Quality Channel	\$9,920	\$920			
<b>PE or Design Phase</b>					
South Park Water Quality	\$320	\$2,090	\$520		
MLK Way - Norfolk Water Quality	\$480	\$4,690			
Aurora Ave and 125th	\$350	\$100	\$1,580		
Capital Hill Water Quality	\$1,260	\$1,140	\$2,410	\$2,480	





### Thornton Creek Water Quality Channel

The Thornton Creek Water Quality Channel (TCWQC) project is a regional stormwater treatment facility located just upstream of the South Branch of Thornton Creek. The project involves conversion of an 8 acre paved parking lot to a biofiltration facility along with other site improvements (Figure III.6-2 and Figure III.6-3). Stormwater from a 680-acre drainage area will be diverted from the existing drainage pipe under the project site to a series of modified biofiltration swales planted with native vegetation. The modified swales are approximately 30-feet wide with a total length of approximately 200 feet. High flows exceeding the capacity of the biofiltration swales will be bypassed (i.e., remain in the existing drainage pipe). The TCWQC design also includes native landscaping and pedestrian pathways. SPU plans to monitor stormwater treatment performance and vegetation establishment post-construction. Construction began in 2007 and is scheduled for completion in 2008 with vegetation establishment complete in 2009.

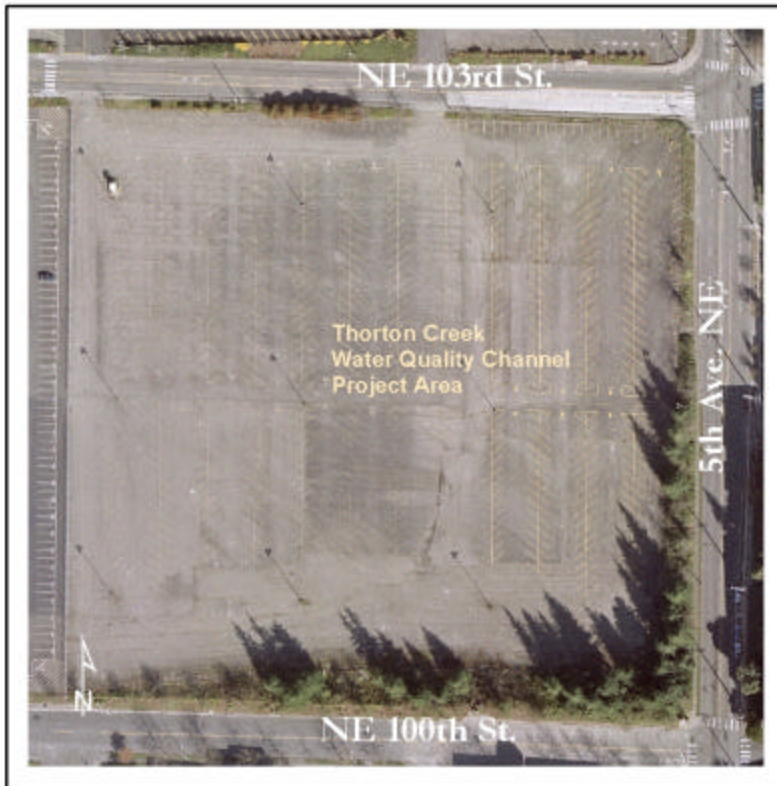


Figure III.6-2. TCWQC Project Site (Pre-project)



Figure III.6-3. TCWQC Schematic Drawing

#### South Park Water Quality Project

The South Park Water Quality Project will be a regional water quality treatment facility located at the downstream end of the existing 7<sup>th</sup> Avenue South drainage basin (220 acres) which drains to the Duwamish River. Stormwater will be conveyed to the water quality facility by a new pump station which draws from just upstream of the drainage basin's existing outfall to the Duwamish Waterway. The South Park Water Quality Facility is intended to provide water quality treatment using Stormfilters® zeolite/perlite/granular activated carbon (ZPG) filter media cartridges in an above grade concrete structure measuring approximately 50-feet wide by 100-feet long by 12-feet high. Treated stormwater will mix with untreated flow from the high flow bypass and will gravity flow back to the existing outfall. The South Park Water Quality Project is currently in Design. The South Park Water Quality Project is associated with other conveyance improvements in the 7<sup>th</sup> Avenue South basin.

#### MLK Way - Norfolk Water Quality Project

The Martin Luther King (MLK) Way – Norfolk Water Quality Project is a regional stormwater wet pond that will treat water draining to the Duwamish Waterway from a 216-acre industrial basin. The MLK Way – Norfolk Water Quality Project is currently in the design phase. The MLK Way-Norfolk Water Quality Project is a component of the Norfolk-MLK Way Stormwater Improvement Project which will also provide conveyance improvements.





### Aurora Avenue and 125th Water Quality Project

The Aurora and North 125<sup>th</sup> Street Water Quality project is a partnership between SPU and SDOT. SDOT is undertaking a major street improvement project along Aurora Avenue North, a major transportation corridor within the City. SPU is teaming with SDOT to provide stormwater quality treatment beyond Stormwater Code requirements for the first phase (northern seven blocks) of the project. This project is currently in PE. The current design concept includes using a StormFilters® vault with ZPG filter media cartridges that would potentially treat all the right of way and off-site flows. The project is also considering pilot testing two new treatment BMP technologies: a Filterra® “tree box” and/or a linear, amended sand filter. If pilot technologies are utilized, performance monitoring may be conducted post-construction.

### Capital Hill Water Quality Project

The Capital Hill Water Quality Project is a regional treatment facility that will treat a portion of the runoff from a 630-acre subbasin which drains to South Lake Union. Runoff from small storms and a portion of larger storms will be diverted from an existing storm drain and routed to a pretreatment device where trash and large particulates will be removed. From there, the runoff will flow through four blocks of modified biofiltration swales in the right-of-way. This project is currently in design and is a public/private partnership associated with the redevelopment of South Lake Union. It is anticipated that post-construction performance monitoring will be conducted.

Figure III.6-4. Timeline Showing Progress and Next Steps



Legend:      ✓ Implemented      ☐ Planned

#### For More Information

- ❖ For general questions about this SWMP or more information about this section, email [swmp@seattle.gov](mailto:swmp@seattle.gov) or visit [www.seattle.gov/util](http://www.seattle.gov/util) **keywords:** Stormwater Management Plan.



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## III.7 Source Control Program for Existing Development-S5C.7

### III.7.1 Requirements

The Permit (Section S5.C.7) requires the City to continue implementing an ongoing program to reduce pollutants in runoff from areas that drain to the municipal separate storm sewers owned or operated by the City. The minimum performance measures include these areas with more detailed requirements included in the Permit text:

- Adopt and begin enforcement of an ordinance, or other enforceable documents, requiring the application of source control BMPs for pollutant generating sources associated with existing land uses and activities as detailed in Appendix 8 of the Permit.
- Establish a program to identify land uses/businesses, based on Appendix 8 of the Permit, which are potentially pollution generating, including a complaint based response to identify other pollution generating sources such as mobile or home based businesses.
- Implement an audit/inspection program for the identified land uses/businesses and provide information about activities that may generate pollutants and the source control requirements applicable to their land uses/businesses. The program should inspect 20% of the identified land uses/businesses annually to determine BMP effectiveness and compliance with source control requirements. Inspect all sites identified by legitimate complaints.
- Implement a progressive enforcement policy to require sites to come into compliance with stormwater requirements within a reasonable time period.
- All staff whose primary job duties are implementing the source control program are trained to conduct the following activities: legal authority, source control BMPs and their proper application, inspection protocols, and enforcement procedures.

### III.7.2 Source Control Program

Source control is regulated by the Stormwater Code and associated Directors' Rules. The Stormwater Code regulates activities that have the potential to impact the quality and quantity of stormwater runoff and define the operational and structural BMPs for source control.

Both the Stormwater Code and Directors' Rules are being revised to account for advances in BMPs for the control and management of stormwater runoff and to be equivalent to the Stormwater Management Manual for Western Washington (Ecology, 2005). The Stormwater Code revisions are currently under review by Ecology for approval. (See III.5 of this SWMP.)

The previous Stormwater Code identified eight High Risk Pollution Generating Activity (HRPGA) categories and required businesses that conduct one or more of these activities to implement spill prevention and clean

up measures (including a spill kit and spill plan), maintain drainage structures and identify and eliminate illicit connections, as well as implement operational source controls specific to their activity.

The revised Stormwater Code will identify 44 activities that require source control measures. With this change, the City will offer more specific guidance based on the actual activity (such as ‘cleaning or washing of food service establishment equipment’) occurring on site, rather than a more generic activity (such as ‘vehicle, equipment and building washing and cleaning operations’). The revised draft Stormwater Code contains a checklist that can be provided to a business to help identify activities that may generate pollutants and the source control requirements applicable to those activities.

In addition to the activities outlined above, the City conducts education and outreach activities to the public on issues related to stormwater; specifically how individuals can adopt new behaviors or change existing behaviors to reduce their impacts on water quality. Examples of education and outreach activities related to source control include the publicly-listed Water Quality Hotline (206-684-7587) and on-site business inspections where SCM staff provide information about source control BMPs based on a review of the business activities.

Documentation on the City’s proposed Source Control Program was submitted to Ecology on February 15, 2008 as required by S5.C.7.b.i.

### III.7.3 Responsible City Departments

SPU is the lead department for development and implementation of the City’s Source Control Program

### III.7.4 Current and Planned Activities

The following sections outline completed or planned activities needed to meet the key Permit requirements.

#### III.7.4.1 Business Inspection Program

The Source Control and Monitoring (SCM) Team within SPU has been and will continue to conduct business inspections within areas of the City served by the MS4. SCM works with businesses and residents to reduce the risk of pollutants reaching surface waters. SCM conducts inspections of businesses to help educate property managers and business owners about the requirement of the Stormwater Code and Directors’ Rules and operational source control BMPs that can be implemented onsite. An enforcement process is in place to address non-compliance.

Education and technical assistance provided by SCM is delivered in person during site visits, inspections, or complaint investigations. Enforcement is used when the education and technical assistance elements have failed to gain compliance voluntarily. The Resource Venture, a free resource conservation program for Seattle businesses that is currently being implemented by Cascadia Consulting under contract with SPU, provides outreach and education to the business community regarding stormwater pollution prevention. The Resource Venture also facilitates the Spill Kit Incentive Program (SKIP), which provides free spill kits and spill plans to Seattle businesses.

To meet the 2007 Permit requirements as defined in S5.C.7.b.ii and iii, *establish a program to identify sites which are potentially pollution generating and implementation of an audit/inspection program for identified sites*, SPU has done a preliminary review and has identified the HRPGB’s (High Risk Pollutant Generating Businesses) in the Seattle Metropolitan area in accordance with the NPDES Municipal Stormwater Permit requirements. Of these HRPGB’s approximately 36% will be self certification. The self certification process is under development, but at a minimum will consist of a packet of information on source control BMPs, information on how to self-inspect their business, and an inspection sheet that the business will sign and submit back to SPU. Of the remaining HRPGB’s, 27% will be sent a targeted mailing specific to their business sector



BMP's, 23% will be sent a generic mailing about BMP's and 13% will receive formal site visits. SCM anticipate that this process will result in a 10% verification inspection rate of the entire HRPGB group. The 20% inspection rate requirement will be achieved through targeted site inspections, verification inspections, inspections from complaints and spills as well as inspections in the Duwamish within the separated system.

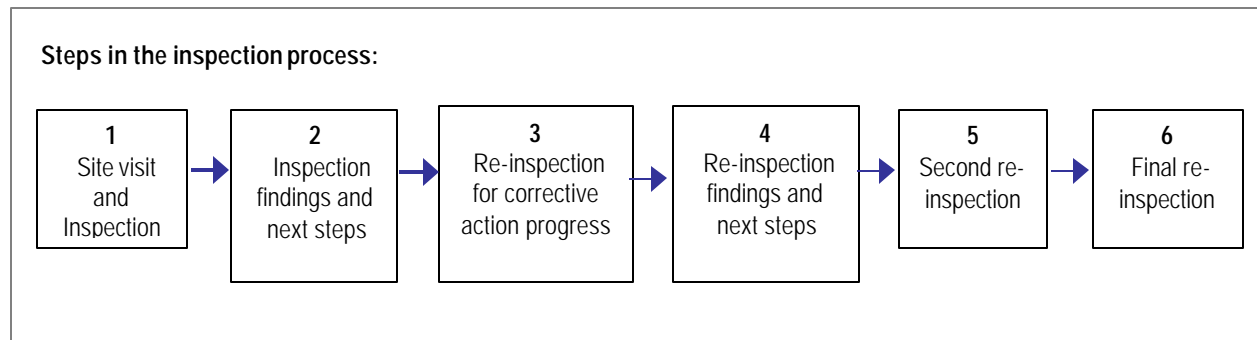
Mobile and home-based businesses are included in this program in one of two ways. Mobile and home-based businesses that are registered with the City as a business and have provide a SIC code are included in the business inspection program. The second way that these business types are included is if a call is made to the City's Water Quality Hotline (206-684-7587). Inspectors will respond to these calls and treat the mobile and home-based business in the same manner as other businesses.

#### III.7.4.2 Progressive Enforcement Program

SCM uses a progressive enforcement program to achieve source control objectives at inspected business locations. Operational and or structural BMPs may be required by the Stormwater Code based upon the nature of the source control issue. In general, SCM will start by prescribing operational BMPs to solve issues unless the nature of the problem is such that a structural BMP is the most appropriate option. In some cases, a structural BMP is more appealing to a business because maintenance activities and costs may be minimal and in general, structural BMPs often do not require management oversight to be effective. The current version of the Stormwater Code provides authority to require structural BMPs if follow-up inspections determine that the operational BMPs are not effective.

The enforcement process is closely linked to the inspection process. Figure III.7-1 summarizes the steps in the inspection process.

Figure III.7-1. Inspection Process



#### III.7.4.3 Enforcement Criteria and Procedure

If a serious violation occurs, or if the corrective action process does not result in compliance, a Notice of Violation (NOV) will be considered and can be issued at any time for serious violations found during the business inspection process. An inspector who believes that a NOV is necessary to achieve compliance consults with the program lead to determine the merits of proceeding with enforcement. The professional judgment of the SCM inspector working with the business owner or property manager plays an important role in determining when to proceed with enforcement. In some cases, cost recovery may be appropriate to pursue in violation situations.



#### III.7.4.3.1 Voluntary Compliance Agreement

As specified in the Stormwater Code, a Voluntary Compliance Agreement can be issued after a NOV in an effort to lay out specific compliance steps and deadlines. Another use of the Voluntary Compliance Agreement is to formalize compliance steps in an attempt to resolve a pollution issue before issuing a NOV.

A Voluntary Compliance Agreement may be appropriate in situations where the property owner has significant financial or situational difficulty in achieving compliance, or where the steps in compliance are difficult or technically complex, or where obvious alternatives are not available. SCM will work with the property owner at each of the steps in the agreement to ensure that milestones are met and the business owner or property manager is making progress toward compliance. If the Voluntary Compliance Agreement target dates pass without compliance, a NOV may be issued.

#### III.7.4.3.2 Records Management

The Source Control Program tracks its inspection and enforcement records through a database and file management system. The inspection database is based in Microsoft Access and tracks information for both source control inspections and drainage system maintenance inspections. The database was developed in 2001 and records all site inspection information, generates corrective action letters, tracks compliance deadlines and reports inspections outcomes and other information. The database also has a QA/QC element built in to check data entry and reduce errors. In addition, all hard copy inspection records are kept in a filing system by address. In general, the file includes all previous inspection information, correspondence, maps and other relevant site information. Records are managed in accordance with the state record keeping codes.

#### III.7.4.3.3 Changes in Enforcement Process

In 2008, the City will be revising its enforcement process in an effort to streamline enforcement and penalty assessment. Currently, the Stormwater Code only allows for penalties to be assessed through the Municipal Court System. With the planned new process and matrix for assessing penalties (adopted from Ecology's enforcement process), the penalties will be assessed directly by the Departments (either SPU or DPD) and appealable to the Director, with further appeal going to Municipal Court. Through this change, the departments would be able to both consistently and efficiently assess and collect penalties.

### III.7.5 Training for Staff Involved in Source Control Program

The SCM group will use the following training methods and classes to ensure that all staff whose primary job duties are involved in implementation of the Source Control Program are knowledgeable of the current policies and procedures.

#### III.7.5.1 Basic Inspector Training

Each SCM staff member involved in inspections attends a basic inspector training course. The course provides an overview of all aspects of inspection preparation, conduct, and follow-up. The course also introduces various federal environmental laws and regulations. SCM anticipates filling two-full time positions in 2008 and both individuals will attend this training.

#### III.7.5.2 On-the-job Training

All SCM staff that are responsible for implementing the source control program are trained in the use of the Inspection Procedure Manual to help establish that the program is implemented in a consistent, repeatable manner.



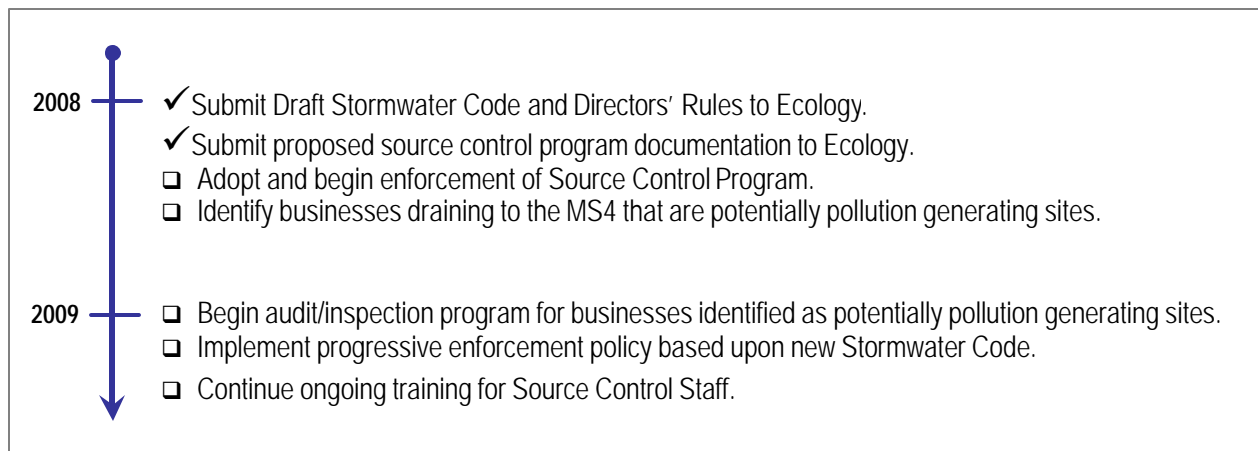
### III.7.5.3 Periodic Meetings

SCM staff hold meetings on a regular basis to present information and discuss issues, problems and lessons learned during field visits. Staff present and discuss investigations and assist each other with troubleshooting. Presentations on new information related to Illicit Discharge Detection and Elimination (IDDE) are included as appropriate.

### III.7.5.4 Ongoing Training

As new inspection training opportunities arise, typically through Interagency Resource for Achieving Cooperation or the U.S. Environmental Protection Agency (EPA), inspectors take advantage of these opportunities. Such training topics include environmental chemistry and sampling protocol.

Figure III.7-1. Timeline Showing Progress and Next Steps



Legend:      ✓ Implemented      ☐ Planned

#### For More Information

##### ❖ Business Inspection Program:

<http://www.seattle.gov/util/Services/Drainage & Sewer/Stormwater Related Inspections/Pollution Control Inspections/index.asp>

❖ For general questions about this SWMP or more information about this section, email [swmp@seattle.gov](mailto:swmp@seattle.gov) or visit [www.seattle.gov/util](http://www.seattle.gov/util) **keywords:** Stormwater Management Plan.







## III.8 Illicit Connections and Illicit Discharge Detection and Elimination Program-S5C.8

### III.8.1 Requirements

The Permit (Section S5.C.8) requires the City to continue implementing an ongoing program to detect, remove and prevent illicit connections, illicit discharges, connections, including any spills into the municipal separate storm sewers owned or operated by the City. The minimum performance measures include these nine main areas with more detailed requirements included in the Permit text:

- Continue implementing an ongoing IDDE program.
- Evaluate and update if necessary update, existing ordinances or other regulatory mechanisms to effectively prohibit non-stormwater, illegal discharges, and/or dumping into the City's MS4. Certain non-stormwater discharges are subject to meeting Permit conditions in order to be permissible and these must be addressed in the SWMP.
- Train all municipal field staff who are responsible for identification, investigation, termination, cleanup and reporting of illicit discharges, including spills, improper disposal and illicit connections are trained to conduct these activities.
- Train all municipal field staff, which as part of their normal duties, may come into contact with or otherwise observe an illicit connection or illicit discharge to the storm sewer system, on identification and proper procedures for reporting and responding. Provide ongoing training and maintain training records.
- Publicly list a hotline or other local telephone number for public reporting of spills and other illicit discharges.
- Conduct on-going screening to detect illicit connections, including field screening and source tracing. Prioritize conveyances and outfalls for screening, and screen at least 60 percent during the term of the Permit.
- Upon receiving a report of a suspected illicit connection, initiate an investigation within 21 days to determine sources and the nature of the connection, and the responsible party.
- Upon confirmation of the illicit nature of a connection, use enforcement authority in a documented effort to eliminate the illicit connection within six months.
- Contact Ecology immediately upon discovering an illicit connection that presents a severe threat to human health or the environment.
- Participate in a regional emergency response program, or develop and implement procedures to respond to spills and improper disposal into the City's MS4.
- Track and maintain records of illicit discharge detection and elimination program, including documentation of inspections, complaint/spill response and other enforcement records.





### III.8.2 IDDE Program

The City continues to implement the Illicit Connection and Discharge Detection and Elimination (IDDE) Program developed under the previous Cedar/Green NPDES general permit issued by Ecology in 1995. SPU's Source Control and Monitoring group (SCM) is responsible for the development and implementation of the City's IDDE program. The IDDE program is focused on preventing and eliminating non-stormwater discharges to the MS4 (permissible non-stormwater discharges are described below). The IDDE program addresses the following illicit discharges:

- Illicit connections –any man-made conveyance that is connected to a municipal separate storm sewer without a permit, excluding roof drains and other similar type connections. An example is an industrial floor drain connected into the stormwater system instead of the separated or combined sanitary sewer system.
- Illegal dumping – discharge of solid or liquid waste into the City's MS4. Examples include washing trash or dumping used motor oil into a storm drain.
- Spills – an unintentional discharge of any size into the City's MS4. Examples include fluids released from a vehicle involved in an accident.

Reports of illicit discharges are received from a variety of sources such as the SPU Complaint Hotline, SPU Spill Response Program, as well as the SPU Business Inspection Program and SPU Private Drainage Facility Inspection Program. Each program is tracked using a database which documents each event and enforcement records. A major component of the IDDE program is the publicly-listed, 24-hour citizen complaint telephone number (Water Quality Hotline 206-684-7587) and web form for reporting water quality complaints. In addition to citizen reports, the hotline can be and is used to capture complaints from other departments and agencies.

### III.8.3 Responsible City Departments

SPU is the lead department for development and implementation of the IDDE Program.

### III.8.4 Current and Planned Activities

The following sections outline completed or planned activities needed to meet the key Permit requirements.

#### III.8.4.1 Field Screening and Source Tracing

SCM staff review literature and research existing programs to determine the best methods to implement a comprehensive IDDE program and to meet the Permit requirement for field screening of 60 percent of the conveyance system over the next four (4) years. Information from comparable municipalities as well as a review of the IDDE Guidance Manual for Program Development and Technical Assessments (Brown et. al., 2004) and other appropriate literature will help to refine the program. SCM will continue to utilize an inspection procedure manual to define procedures for conducting and documenting investigations, gaining rights of entry, conducting source tracing, collecting samples, pursuing enforcement measures, and managing data. The manual also contains information and contacts for interagency cooperation. In addition to the inspection procedure manual, SCM currently utilizes decision and sampling guidance as part of program implementation. This guidance will be expanded and modified based upon staff research and GIS data to prepare preliminary prioritization criteria for field screening the conveyance system and outfalls. Stormwater Code Revisions and Permissible Non-stormwater Discharges



The City is engaged in revisions to the Stormwater Code and associated Directors' Rules. IDDE is covered in SMC 22.802.030 and 22.803.030 and in Volume 1, Source Control Technical Requirements Manual, of the Directors' Rules. The draft Stormwater Code revisions were submitted to the Ecology in February of 2008 and are currently under review by Ecology. The Stormwater Codes and Directors' Rules have been proposed to be revised to prohibit non-stormwater discharges except for the following permissible non-stormwater categories when specific conditions are met, as is allowed by the Permit.

#### III.8.4.1.1 Potable Water Sources

As proposed, discharges from potable water sources, including flushing of potable water lines, hyperchlorinated water line flushing, fire hydrant system flushing, and pipeline hydrostatic test water must meet the following conditions. Planned discharges shall be de-chlorinated to a concentration of 0.1 ppm or less, pH-adjusted if necessary, and volumetrically and velocity controlled to prevent resuspension of sediments in the drainage system. (Draft SMC 22.802.020.A.1). BMP 7 in the revised Volume I, Source Control Technical Requirements Manual, of the Directors' Rules addresses this discharge.

#### III.8.4.1.2 Lawn and Other Irrigation Runoff

The revised draft Stormwater Code allows discharges of runoff from lawn watering and discharges from irrigation runoff, including irrigation water from agricultural sources that is commingled with urban stormwater (Draft SMC 22.802.020.A.8 and 9). Education and outreach on these subjects are provided to the public, landscapers, and property owners by a variety of City programs and are explained in Section III.10 of this document. BMP 20 in the revised Volume I, Source Control Technical Requirements Manual, of the Directors' Rules addresses these types of discharges.

#### III.8.4.1.3 Swimming Pool Discharges

The revised draft Stormwater Code allows discharges from swimming pools, hot tubs, fountains, or similar aquatic recreation facilities and constructed water features, are allowed provided the discharges have been dechlorinated to a concentration of 0.1 ppm or less, pH-adjusted and reoxygenated if necessary, and volumetrically and velocity controlled to prevent resuspension of sediments in the drainage control system (Draft SMC 22.802.020.A.13). BMP 39 in the revised Volume I, Source Control Technical Requirements Manual, of the Directors' Rules addresses this discharge.

#### III.8.4.1.4 Street and Sidewalk Wash Water

The revised draft Stormwater Code allows discharges of runoff from street and sidewalk wash-water that do not use detergents or chemical additives, water used to control dust, and water from routine external building washdown that does not use detergents or chemical additives (Draft SMC 22.802.020.A.14, 15, and 16). Education and outreach on these subjects are provided to the public, landscapers, and property owners by a variety of City programs and are explained in Section III.10 of this document. BMP 9 in the revised Volume I, Source Control Technical Requirements Manual, of the Directors' Rules addresses this discharge.

#### III.8.4.1.5 Other Non-Stormwater Discharges

The revised draft Stormwater Code addresses discharges of runoff from other non-stormwater discharges, and discharges that are in compliance with the requirements of an approved stormwater pollution prevention plan (SWPPP) that addresses such discharges (Draft SMC 22.802.030). The following types of other non-stormwater discharges are allowed:

- Discharges from surface waters, including diverted stream flows
- Discharges of uncontaminated groundwater, including uncontaminated groundwater infiltration (as defined at 40 CFR 35.2005(2)), uncontaminated pumped groundwater, and rising ground waters



- Discharges from foundation drains
- Discharges of air conditioning condensation
- Discharges from springs
- Discharges of uncontaminated water from crawl space pumps
- Discharges from riparian habitats and wetlands
- Discharges from approved footing drains and other subsurface drains or, where approval is not required, installed in compliance with this subtitle and rules promulgated pursuant to this subtitle
- Discharges that are in compliance with a separate individual or general NPDES permit
- Discharges that are from emergency fire fighting activities

#### III.8.4.2 Training

The City provides the following levels of IDDE training.

##### III.8.4.2.1 SCM Group Training

The SCM group staff members are responsible for identification, investigation, termination, cleanup and reporting of illicit discharges, including spills, improper disposal and illicit connections. SCM will use the following training methods and classes to provide that Environmental Compliance Inspectors within SCM involved in identification, investigation, termination, cleanup and reporting associated with the IDDE program are knowledgeable of the current policies and procedures.

- Basic Inspector Training – Each SCM staff member involved in inspections attends a basic inspector training course. The course provides an overview of all aspects of inspection preparation, conduct, and follow-up. The course also introduces various federal environmental laws and regulations. SCM anticipates filling two full-time positions in 2008, and both new hires will participate in this training.
- On the job training – All SCM staff that are responsible for identification, investigation, termination, cleanup and reporting are trained in the use of an inspection procedure manual to help establish that the IDDE program is implemented in a consistent, repeatable manner.
- The SCM group holds bimonthly meetings to present information and discuss issues, problems and lessons learned during field visits. Staff present and discuss investigations and assist each other with troubleshooting. Presentations on new information related to IDDE are included as appropriate.
- Spill Training – Spill Training for SCM staff includes attending a course on oil spill response and 40-hour Hazardous Waste Operations and Emergency Response Standard (HAZWOPER) training. Staff attends an 8 hour HAZWOPER refresher as needed.

##### III.8.4.2.2 City Staff Training

City staff that, as part of their normal job duties, may come into contact with or otherwise observe an illicit connection or illicit discharge to the storm sewer system will be trained during a City-wide Federal Permit Training session occurring spring 2008. The training will consist of classroom and field exercises designed to provide instruction on how to identify illicit discharges and connections and how to properly report and/or respond to them.



### III.8.4.3 Water Quality Hotline

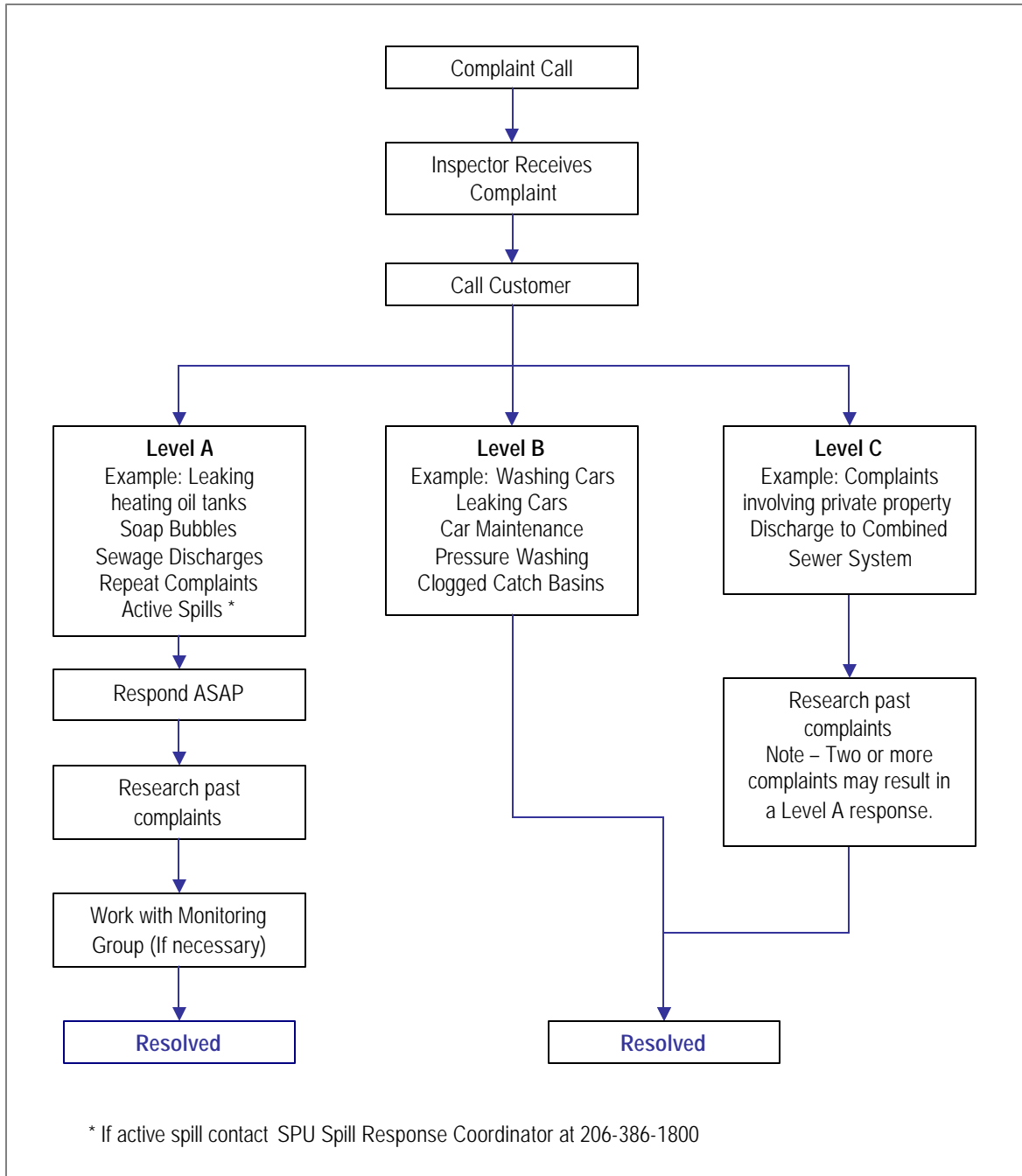
The City provides a publicly listed Water Quality Hotline and web form for reporting potential stormwater, illicit discharge, spills and other water related violations. The phone number is listed in the government section of the phone book and is available on the SPU web page. SPU maintains the hotline and responds to calls, which are left on a message system and retrieved every hour by an administrative staff. The information is then forwarded directly to an inspector who begins response. SCM also receives complaints directly from other City departments and agencies. A complaint call decision tree (Figure III.8-1) is used to prioritize calls. SCM has a staff of Environmental Compliance Inspectors who respond to water quality complaints within Seattle City limits. The inspectors attempt to locate the source of the water quality problem and the responsible party, and then provide technical assistance including education on best management practices for pollution prevention and information on the Stormwater Code and Directors' Rules, and provide clean up assistance when necessary. If a spill is reported, the caller is directed by staff at the Water Quality Hotline to call the Operation Response Center (ORC) to report the spill so that a Spill Coordinator can be dispatched immediately.



All of the complaints, regardless of the suspected cause, are responded to within three business days and in no case would SCM respond to a complaint more than 21 days after receiving the call. In most cases, the person reporting the potential violation is notified of investigation results.

The SCM database was revised in 2007 to allow additional data entry, enhanced tracking, and analysis of the complaints that are received. A query of the SCM database reported that the Water Quality Hotline received 322 surface water quality complaints in 2007. This complaint hotline will continue through 2008 and beyond.

Figure III.8-1. Complaint Call Decision Tree



#### III.8.4.4 Response to Illicit Connections

Illicit connections are considered a top priority complaint and are most often responded to the same business day or within 24 hours. It is a SCM policy to notify Ecology anytime an illicit connection has the potential to reach a receiving water body, regardless of the threat potential. The contact date, time and Environmental

Response Tracking System (ERTS) number assigned are recorded on the SPU Complaint Inspection form and tracked in the SCM database.

#### III.8.4.5 Emergency Response

Spill response at the City is handled by a variety of departments dependent on the source and type of spill. SPU is responsible for spills that have the potential to enter, or have entered the City's MS4. In cases where a City Department other than SPU responds and cleans up a spill, their procedures direct them to notify SPU of all spills that enter or have the potential to enter the MS4.

The SPU Spill Response Program is staffed by a Senior Spill Coordinator and a network of on-call Spill Coordinators. Spill Coordinators work in 3 or 4 day on-call shifts and are available 24 hrs/ 7 days week. The Spill Coordinator is responsible for responding to the spill, coordinating cleanup and filing a report form to the Senior Spill Coordinator.

Spill response calls are dispatched through the SPU ORC and are received via a publicly available phone number (206-386-1800). If a citizen calls in to report an active spill, they are directed by the Water Quality Hotline to call the ORC to report the spill. Once a spill call is received, the Dispatcher contacts the SPU on-call Spill Coordinator and advises them of the situation.

Spill Coordinators follow written procedures for investigation, clean up and reporting to appropriate agencies. Spill Response Guidelines were established by SPU in 2000 and cover spill classifications, training requirements, safety procedures, documentation, disposal, interagency cooperation and regulatory notification.

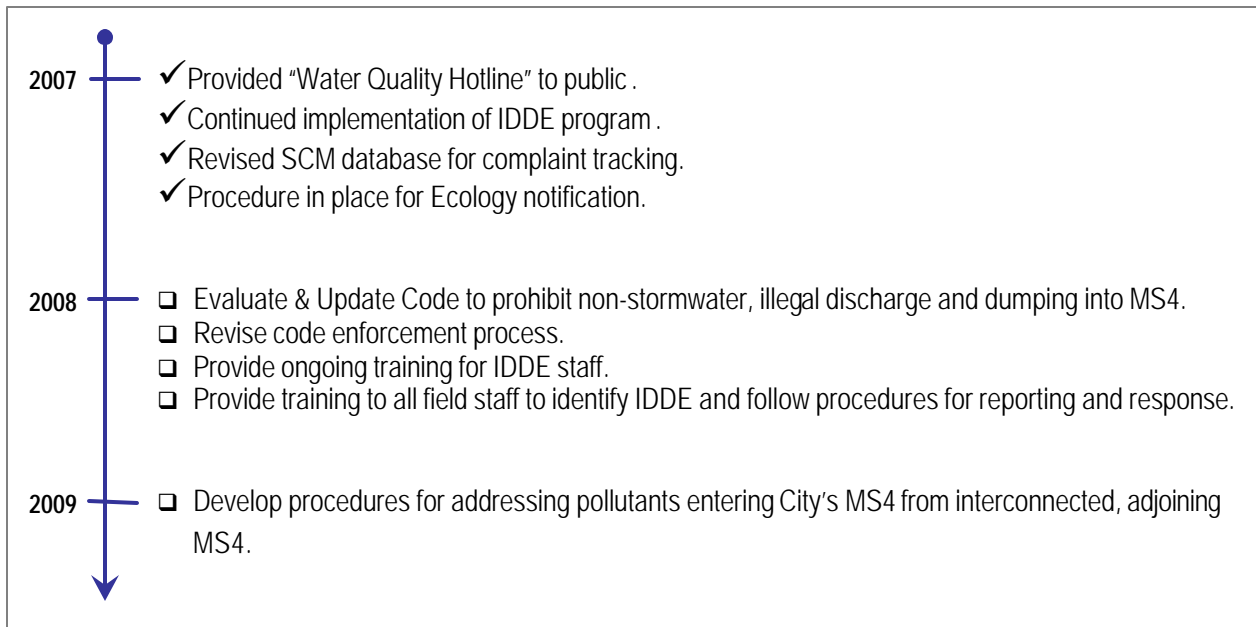
#### III.8.4.6 Record Tracking

In 2008, SPU will be revising its enforcement process in an effort to streamline enforcement and penalty assessment. Currently, the Stormwater Code only allows for penalties to be assessed through the municipal court. Using the revised Stormwater Code, and the new process and matrix for assessing penalties (adopted from Ecology's enforcement process), the penalties will be assessed directly by the departments (either SPU or the DPD) and maybe appealed to the director of the appropriate department, with the further appeal then going to Municipal Court. Through this expected change, the departments will be able to consistently and efficiently assess and collect penalties. However, the draft revised Stormwater Code is currently under review by Ecology and will be followed by review by the City Council and may consequently be revised.

Enforcement actions are tracked both in the SCM database and electronically in a separate folder on the City network. All enforcement documentation, inspection reports, warning letters, notices of violations, and other enforcement records are kept on file.



Figure III.8-2. Timeline Showing Progress and Next Steps



Legend:      ✓ Implemented      ☐ Planned

*For More Information*

- ❖ Water Quality Hotline: 206-684-7587
- ❖ Report a Spill - SPU Operations Control Center: 206-386-1800
- ❖ Water Quality Hotline information and online form:  
[http://www.seattle.gov/util/Services/Drainage & Sewer/Keep Water Safe & Clean/COS\\_002180.asp](http://www.seattle.gov/util/Services/Drainage & Sewer/Keep Water Safe & Clean/COS_002180.asp)
- ❖ For general questions about this SWMP or more information about this section, email [swmp@seattle.gov](mailto:swmp@seattle.gov) or visit [www.seattle.gov/util](http://www.seattle.gov/util) **keywords:** Stormwater Management Plan.







## III.9 Operation and Maintenance-S5C.9

### III.9.1 Requirements

The Permit (Section S5.C.9) requires the City to develop and implement an operations and maintenance (O&M) program to reduce stormwater impacts from the municipal separate stormwater system and regulate municipal operations and maintenance activities. The minimum performance measures include nine main areas with more detailed requirements included in the Permit text:

- Establish maintenance standards for facilities that are as protective, or more protective of facility function than those specified in Chapter 4 of Volume V of the 2005 Stormwater Management Manual for Western Washington (Ecology, 2005).
- Evaluate and, if necessary, update existing ordinances or other enforceable documents to require maintenance of existing permanent stormwater facilities regulated by the City. Establish an initial and ongoing inspection program for stormwater facilities and catch basins regulated by the City.
- Develop and implement an inspection schedule for all known, permanent stormwater treatment and flow control facilities (other than catch basins) regulated by the City to inspect each facility at least once during the term of the Permit to enforce compliance with adopted maintenance standards as needed based on the inspection.
- Implement an inspection schedule for all known, permanent stormwater treatment and flow control facilities (other than catch basins) regulated by the City to inspect each facility starting in February 2011 to enforce compliance with adopted maintenance standards as needed based on the inspection.
- Manage maintenance activities to inspect all new permanent stormwater treatment and flow control facilities, including catch basins, in new residential development every 6 months during the period of heaviest construction to identify maintenance needs and enforce compliance.
- Require cleaning of catch basins regulated by the City if found to be out of compliance during source control program activities.
- Implement an inspection process for all permanent stormwater facilities owned or operated by the City. Conduct spot checks of potentially damaged stormwater facilities after storm events. Conduct repairs or maintenance actions in compliance with maintenance standards.
- Implement a program to annually inspect all catch basins and inlets owned or operated by the City.
- Maintain records of inspections and repair activities conducted by the City.
- Establish and implement processes and procedures to reduce stormwater impacts associated with runoff from municipal operation and maintenance activities including but not limited to streets, parking lots, roads or highways owned or maintained by the City, and to reduce pollutants in discharges from all lands owned or maintained by the City.
- Train employees who have primary construction, operations or maintenance job functions that could impact stormwater quality. Track and maintain training records.





- Develop and implement SWPPPs for all heavy equipment maintenance or storage yards, and material storage facilities owned or operated by the City in areas covered by the Permit that are not covered by another Ecology-issued stormwater discharge permit.

### III.9.2 O&M Program

The City's stormwater O&M program is comprised of the activities outlined below.

### III.9.3 Responsible City Departments

SPU is responsible for operation and maintenance of stormwater facilities located in the right of way. SPU is responsible for conducting inspections of private stormwater facilities and works with the public so that private facilities will meet operation and maintenance standards. Other City Departments, SDOT, FFD, Parks, and SCL implement operation and maintenance policies and procedures specific to the properties they manage.

### III.9.4 Current and Planned Activities

The following sections outline completed or planned activities needed to meet the key Permit requirements.

#### III.9.4.1 Maintenance Standards

The City has maintenance programs in place to reduce stormwater impacts associated with runoff from impervious surfaces and operation and maintenance of stormwater facilities. This program follows the current Stormwater Code and the current Director's Rule Volume 1, Source Control Technical Requirements Manual. The City is in the process of revising the maintenance standards to be included in the revised 2008 Directors' Rule on Stormwater Flow Control and Water Quality Treatment Technical Requirements Manual (Volume 3). The revised draft Directors' Rule outlines inspection, maintenance, and record keeping requirements for stormwater management facilities, both public and private, in the City. In some cases, the City has facilities with site-specific maintenance requirements that require facility-specific maintenance standards. In addition to maintenance standards, the City has procedural manuals in place that detail information such as the location and access restrictions of facilities, necessary equipment, safety procedures and maintenance procedures.

The SCM group at SPU is responsible for inspecting private facilities regulated by the City. During a facility inspection, all aspects of the system are inspected; flow control devices, catch basins, etc. When any part of that system (including catch basins) is found to be out of compliance with Stormwater Code requirements for maintenance, a corrective action letter is sent to the facility owner and a re-inspection is conducted to confirm Stormwater Code compliance.

SPU and other City departments will be revising the public and private facility maintenance programs to reflect the new requirement of the Permit and the expected revised Stormwater Code in 2008.

#### III.9.4.2 Maintenance Standards for Private Stormwater Facilities Regulated by the City

There are approximately 1,500 privately-owned water quality and flow control facilities regulated by the City (hereafter facilities) and up to 400 added each year due to new development or redevelopment requirements. Maintenance standards for private stormwater facilities regulated by the City are defined and described in proposed Appendix D of the revised 2008 Directors' Rule on Stormwater Flow Control and Water Quality Treatment Technical Requirements Manual (Volume 3). The Directors' Rule provides a summary of the maintenance requirements. The inspection and maintenance requirements include information about what features to inspect at each facility, when and how often these private systems should be inspected, and how to



identify specific defects that warrant corrective action. Corrective actions are described that should be taken to maintain system performance.

#### III.9.4.3 Maintenance of Catch Basins Owned or Operated by the Permittee

SPU has continued its catch basin maintenance and inspection program that focuses on maintaining catch basins for public health, safety and property and by nature includes water quality benefits. Staff are currently investigating and developing a strategy to modify its existing catch basin inspection and maintenance program to meet new Permit requirements.

#### III.9.4.4 Records of Inspections, Maintenance, or Repair

##### III.9.4.4.1 Private Stormwater Facilities

The SCM group tracks private facility inspection and enforcement records through a Microsoft Access database and file management system. The database tracks information for both source control inspections and drainage system maintenance inspections. Records are managed in accordance with the State record keeping codes. Enforcement actions are tracked both in the database and electronically in a separate folder on the City network. Any enforcement paperwork is kept with the file.

##### III.9.4.4.2 City-Owned Stormwater Facilities

SPU has asset managers that oversee inspection and maintenance of conventional and innovated (e.g., NDS) facilities. The asset managers track inspection data and facilitate maintenance as needed following the applicable maintenance standard.

Inspection and maintenance of stormwater facilities are tracked by the computer program MAXIMO. This program is used to generate work orders for facility inspections and maintenance and to record the results of these activities.

#### III.9.4.5 Stormwater Practices to Reduce Impacts Associated with Parking Lots, Streets, and Roads

The City's existing Stormwater Code and Chapter 2 of Director's Rule 17-2000, Volume 1 Source Control Technical Requirements Manual to establish practices to reduce the stormwater impacts associated with parking lots, streets and roads.

In addition to the Stormwater Code, the SDOT established practices in 2002 to reduce stormwater impacts associated with runoff from City road maintenance activities. These practices are manifested as Maintenance Management System Performance Sheets and are used by City staff to identify appropriate BMPs for their roads maintenance activities. SDOT is planning a review for 2008 of these BMPs and references in the Maintenance Management System Performance Sheets to include the revised Stormwater Code and Director Rule requirements and meet the intent of the Permit.

Parks, FFD and SCL follow the Stormwater Codes and Directors' Rules in place for management of stormwater from roads and parking lots under their departments' management outside the City rights of way. The departments follow the Stormwater Code and use appropriate BMPs when conduct construction and maintenance activities on or near streets, parking lots and roads. City managed capital projects are inspected for Stormwater Code compliance and BMPs by the responsible department. The individual City Departments have and will continue to implement a spill program and provide training on spill and source control.



#### III.9.4.6 Policies and Procedures to Reduce Pollutants from City-Owned or Maintained Lands

The Office of Sustainability and Environment (OSE) collaborates with City agencies, to protect and enhance Seattle's distinctive environmental quality and livability. For example OSE has established a Pesticide Reduction Program for the City. This program has two main goals; (1) to eliminate the use of the most potentially hazardous herbicides and insecticides and (2) to achieve a 30 percent reduction in overall pesticide use by City departments.

The following Policies and Procedures have been established by OSE for use by City departments.

##### Environmental Management Program Chemical Use Policy

The purpose of this policy is to establish a chemical use program to provide for consistent evaluation of hazardous materials used by City employees, to phase out products that pose human health or environmental risks, and to promote the use of non-hazardous alternatives by the City that are protective of human health and the environment (Seattle, 2008e).

##### Landscape and Grounds Management Policy

The purpose of this policy is to establish that City landscapes are designed, constructed, and maintained in a manner that protects and enhances our region's natural resources and public health; that City landscapes are models of environmental stewardship in the eyes of the public; that the City establishes a leadership role in developing both aesthetically pleasing and ecologically sensitive landscapes; and that there is a consistent standard of environmental stewardship observed by City departments managing landscapes and other grounds (Seattle, 2008e).

##### Landscape and Grounds Management Guidelines

The guidelines are intended to provide a framework for environmental responsibility in how the City plans, designs, constructs, commissions, manages, and maintains parks, rights of way, and other landscaped areas. The focus of the guidelines is on environmental stewardship of City-owned lands.

The SDOT's Street Use and Urban Forestry Division limits the use of fertilizers, pesticides and herbicides in accordance with City policies and procedures. This division also has policies and procedure in place to address erosion and sediment control, landscape maintenance, and vegetation disposal on lands owned and maintained by SDOT. Urban Forestry uses Resource-efficient Natural Landscaping: Design – Build – Maintain (Seattle, 2007a), as a BMP reference. These practices will continue during 2008 and into the future.

Parks operates under City regulations, policies and procedures including but not limited to the Stormwater Code, Parks BMPs for Landscape Horticulture and Forestry (Seattle, 2000a) and the Seattle Biological Evaluation BMPs (Seattle, 2007b). Parks has an active Integrated Pest Management program to control and reduce pesticide use. Parks has been maintaining 14 parks without the use of any pesticides since 2001. The program is expanding to include eight more parks and about 25 more acres, for a total of 22 parks and about 50 acres.

#### III.9.4.7 Training Program

SPU, SDOT, Parks, FFD and SCL all have spill prevention training and source control training in place. These departments are evaluating their existing training and updating as needed to comply with the Permit.



### III.9.4.8 Stormwater Pollution Prevention Plans

The City is in the process of developing SWPPPs for all City-owned or operated heavy equipment maintenance or storage yards and material storage facilities by 2009. A generic SWPPP template that includes operational BMPs that meet the Stormwater Code and Directors' Rules will be developed and then customized for each facility to include site specific requirements and structural BMPs.

Figure III.9-1. Timeline Showing Progress and Next Steps



Legend:      ✓ Implemented      □ Planned

Current Activities

Planning Ahead



*For More Information*

- ❖ **Private Stormwater Facility Inspections:**  
[http://www.seattle.gov/util/Services/Drainage\\_&\\_Sewer/Stormwater\\_Related\\_Inspections/Maintenance\\_Inspections/index.asp](http://www.seattle.gov/util/Services/Drainage_&_Sewer/Stormwater_Related_Inspections/Maintenance_Inspections/index.asp)
- ❖ **Office of Sustainability and Environment:** <http://www.seattle.gov/environment/>
- ❖ For general questions about this SWMP or more information about this section, email [swmp@seattle.gov](mailto:swmp@seattle.gov) or visit [www.seattle.gov/util](http://www.seattle.gov/util) **keywords:** Stormwater Management Plan.





## III.10 Education and Outreach-S5C.10

### III.10.1 Requirements

The Permit (Section S5.C.10) requires the City to perform the following minimum performance measures:

- Implement or participate in an education and outreach program that uses a variety of methods to target the audiences to educate them to help reduce or eliminate behaviors and practices that cause or contribute to adverse stormwater impacts.
- Have program elements designed to measure understanding and adoption of the targeted behaviors by the targeted audience. Use this information to direct education and outreach resources and evaluate changes in adoption of targeted behaviors.
- Track and maintain records of public education and outreach activities.

### III.10.2 Education and Outreach Program

The City is using a variety of educational programs (Table III.10-1) to engage the citizens of Seattle in source control and stormwater management. These programs provide educational materials, instruction or designs that citizens can use at their home, business or in the community at large. The City will be using community based social marketing approaches audiences targeted by the education and outreach program, then developing methods to determine if these approaches are achieving measurable improvements in the audiences' understanding of how their actions can have negative impacts on stormwater and how they can take an active role in the improvement of stormwater quality.

### III.10.3 Responsible City Departments

SPU is the lead department for implementation of the education and outreach programs for Permit compliance. Several programs have cooperative elements in other departments.

### III.10.4 Current and Planned Activities

The City has and will be conducting the activities outlined in Table III.10-1 and described in the following sections for each target audience.



Table III.10-1 – Education and Outreach Activities

Audience	Target Behavior/Practice	City Education and Outreach Program	
General Public	General Impacts of Stormwater	Urban Watershed Schools Program	
	Impacts from Impervious Surfaces		
	Source Control BMPs	Pet Waste	Mutt Mitts
		Vehicle Maintenance	Local Hazardous Waste Management Program (LHWMP)
Landscaping/Buffers		Planting Strip Pilot	
General Public and Businesses including Mobile	Chemical Storage BMPs	Spills	Resource Venture
		Car Wash Soap	
		Cleaning Supplies	Environmental Justice Network in Action
		Automotive Products	Local Hazardous Waste Management Program
		Illicit Discharges	Water Quality Hotline
Homeowners, Landscapers and Property Managers	Yard care Techniques	Green Gardening Program and Natural Yard Care Neighbors	
	BMPs for Storage of Pesticides and Fertilizers		
	BMPs for Carpet Care	Green Your Rug Education Program and Business Inspections	
	BMPs for Auto Repair and Maintenance	Business Inspections	
	Low Impact Development	Planting Strip Pilot and Natural Landscaping Professional Development	
	Stormwater Treatment and Flow Control	Private Stormwater Facility Inspections	
Engineers, Contractors, Developers, Review Staff, and Land Use Planners	Technical Standards for Stormwater Site and Erosion Control Plans	Temporary Erosion and Sediment Control Plans, City Wide Training Integrated Federal Permit Training (IFPT), and On-The-Job (OJT) Training	
	Stormwater Treatment and Flow Control BMPs		
	Low Impact Development	Natural Landscaping Professional Development	





### III.10.4.1 Audience: General Public

#### III.10.4.1.1 The Urban Watershed School Programs

The school programs conducted on Longfellow and Piper's Creeks educate the general public about the general impacts of storm water flows into surface waters and the impacts associated with impervious surfaces. This program is conducted via a partnership between SPU, Parks and Seattle Public Schools. The program is linked closely with school science curriculum and consists of a two-hour long class field trip to a local urban stream. Outcomes are measured through teacher evaluations, and a take home two-way interview to assess student learning from the field trip and educate adults in their home. The adult-child interview is designed to provide a vehicle for the students to share the information learned on the field trip at home. This program reaches a diverse geographic audience and engages the public in hands on learning with a take home message to share with others. SPU pays for program costs and bus transportation to the sites.

#### III.10.4.1.2 Mutt Mitts

Mutt Mitts is implemented in public places city-wide and is used to educate and engage the public on the topic of source control BMPs and environmental stewardship actions and opportunities in the area of pet waste. Signage in public places and on the web explains the impacts of bacteria from pet waste on water quality. Currently restocking rates are tracked to measure adoption. Additional measures to track understanding of this BMP will be implemented in 2008.

#### III.10.4.1.3 Local Hazardous Waste Management Program in King County

The City is an active partner in the Local Hazardous Waste Management Program (LHWMP) in King County. LHWMP works to keep used motor oil, automotive products, pesticides and other materials out of storm water and wastewater through a variety of educational and outreach programs targeted at businesses and residents as well as by collecting these wastes. The City will continue to work with King County on this program and determine ways to measure understanding and adoption of the program.

#### III.10.4.1.4 Planting Strip Pilot

EPA, Ecology, and the City are all committed to exploring low impact development techniques for stormwater management. The planting strip pilot will test the potential for changing existing planting strips of lawn into ecological corridors that could reduce stormwater and non-point source pollution impacts, protect surface water quality, increase habitat and provide other public benefits. This program will also provide the larger public with reference materials and demonstration sites on the proper construction and maintenance of biofiltration facilities. Outreach products include recruitment materials to engage pilot participants and educational materials (planting lists and plans, how-to install and maintain, and monitoring fact sheets). Classes will teach participants how to install plants and maintain strips. Outreach tools will include participant feedback to evaluate success of planting strips, and determine barriers to installation and maintenance. Since this is a new program for SPU, evaluation will also include researching the logistics and costs to make physical changes to right of way space. This could include elements such as soil excavation and amendment as well as curb cuts to allow for stormwater intake and outtake.

### III.10.4.2 Audience: General Public and Business

#### III.10.4.2.1 Resource Venture

To supplement inspections and provide outreach to small businesses, SPU funds Resource Venture, a free resource conservation program for Seattle businesses, currently being implemented by Cascadia Consulting,





under contract with SPU<sup>1</sup>. Under this contract, Resource Venture provides supplemental site specific technical assistance to businesses, develops targeted outreach materials in multiple languages, organizes and hosts industry-specific stormwater pollution prevention workshops, and implements SPU's Spill Kit Incentive Program, which provides free spill kits and assistance in developing a spill plan. Since its inception in 2005, SPU and Resource Venture have reached over 700 Seattle businesses that have created spill plans and received free spill kits. The spill kit program is promoted on the web and a workshop for high risk potential polluters group is offered each year. In the workshop, spill plans are reviewed and businesses receive training with the spill kit.

Resource Venture also provides free car wash kits to the general public and organizations. The car wash kits capture car wash water and direct it to the sanitary system rather than allowing the wash water to flow into the MS4. Resources and information on use and storage of automotive chemicals, hazardous cleaning supplies, carwash soaps and other hazardous materials are provided directly to the general public and business owners to help reduce behaviors that cause or contribute to adverse stormwater impacts. Car Wash kits are advertised on an RV web site, in Camp Long and Carkeek Park seasonal program brochures, and on the Parks' web site. Business visits, participation, and use of Car Wash kits are tracked to measure adoption. Additional measures to track understanding of these BMP will be implemented in 2008.

#### **III.10.4.2.2 Environmental Justice Network in Action**

The Environmental Justice Network in Action (EJNA) program targets immigrant and refugee populations and community-based organizations. This program supports the City's Race and Social Justice Initiative (RSJI) by engaging the public and business owners through fieldtrips and festivals, giving away green home kits, and promoting the eco-village project. The EJNA program provides BMPs for use and storage of automotive chemicals, hazardous cleaning supplies, carwash soaps and other hazardous materials; it is useful because resources and information are provided directly to the general public, specifically immigrant and refugee populations. The information and resources provided will help to reduce behaviors that cause or contribute to adverse stormwater impacts. Pre- and post-surveys are distributed with green home kits to confirm target audiences understanding of the impacts of these hazardous materials and adoption of the BMPs. Numbers of contacts and program participation are tracked annually.

#### **III.10.4.2.3 Local Hazardous Waste Management Program**

Please see description for this program in Section III.10.4.1.3.

#### **III.10.4.2.4 Water Quality Hotline**

The City staffs a 24-hour Water Quality Hotline to allow citizens and businesses to report illicit discharges, illegal dumping, and spills into the MS4. Violators receive education and technical assistance to help address violations voluntarily; continued non-compliance can potentially result in legal action. This BMP provides a mechanism for the public to take an active role in stormwater pollution prevention and help the City increase awareness of activities that have negative impacts on stormwater. The Water Quality Hotline is promoted mainly to residents. Outreach to the public includes stickers, magnets and creek-watershed newsletters. Calls are tracked and resolution information is recorded to evaluate changes in program performance.

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<sup>1</sup> The Resource Venture contract is administered by Cascadia Consulting, but also subcontracts to ECOSS (Environmental Coalition of South Seattle) and Herrera Consulting as sub-contractors of the contract. The utilization of these 3 companies is available through the Resource Venture Contract.



### III.10.4.3 Audience: Homeowners, Landscapers, and Property Managers

#### III.10.4.3.1 Green Gardening Program

The Green Gardening Program specifically targets landscapers as well as horticulture students in training. This program utilizes multiple languages broadening the audience and incorporating the City's goals for RSJI. The program promotes environmentally sensitive landscaping practices, with particular emphasis on reducing pesticide use, conserving water, and reusing/recycling landscaping materials. Green Gardening activities have included slide show presentations and brochures for homeowners, professional training and resources for landscapers and nursery staff, and garden tours. Understanding is tracked through in class evaluation.

#### III.10.4.3.2 Natural Yard Care Neighbors

This program is targeted at homeowners and property managers. It focuses on reducing water and pesticide use on lawns and gardens. The program holds up to four workshops each year in different neighborhoods which are selected using SPU and City priorities with a focus on RSJI. This BMP provides information and resources to the public that inform them on how to change their behaviors to reduce the impact of their yard on stormwater quality. Attendance is monitored and attendees have been contacted for follow up surveys to track adoption and understanding of the BMP.

#### III.10.4.3.3 Green Your Rug

SPU will be addressing BMPs related to carpet cleaning for homeowners, landscapers and property managers through a variety of tools and programs. The City's Source Control Program will be conducting an inventory of all businesses served by the City's MS4 to determine if they fall under one of the SIC codes listed in Appendix 8 of the Permit. As part of this effort, carpet cleaning businesses will be identified and provided with education and outreach materials on proper operational and structural BMPs for their work activities. Follow up interviews and in some cases inspections will be conducted to determine if these businesses modified their behaviors to include the suggested BMPs. This is an appropriate program because in most cases homeowners and property managers hire private businesses to clean their carpets.

To target do-it-yourselfers, SPU will create an educational hand out and survey to be distributed with carpet cleaning machine rentals. Businesses will provide the renter with a self-addressed stamped survey to fill out on carpet cleaning BMPs when they return the machine. This will be a random survey based on the quality of our hand out and understanding of the impacts of carpet cleaning activities on stormwater. The handouts will be piloted at businesses that serve the Venema Creek sub-basin in 2008.

#### III.10.4.3.4 Business Inspections

SPU inspects businesses, including mobile businesses, and works with them to prevent pollutants from entering private and public storm drains. Inspections include those performed in response to complaints and concerns from the Water Quality Hotline. Inspections are focused on HRPAGAs, and include providing education and outreach on Stormwater Code requirements and use of BMPs. In the next year, SPU will use Ecology funding to conduct additional business inspections focused on auto repair and maintenance. This program will provide information and resources directly to businesses, with the goals of helping change their behaviors to comply with Stormwater Code and reduce the impact of their activities on stormwater quality. Business inspections are tracked and evaluated. Additional measures to track understanding of this BMP will be implemented in 2008.

#### III.10.4.3.5 Planting Strip Pilot

Please see description for this program in Section III.10.4.1.4.



### III.10.4.3.6 Natural Landscaping Professional Development

This program is a series of well attended professional workshops focused on LID techniques including: sustainable site design, soil BMPs and retention of native vegetation, plant selection and maintenance options that reduce pesticide and fertilizer use, and Natural Drainage/LID strategies for on-site stormwater management, stormwater treatment and flow control. These workshops specifically target engineers, design professionals, landscape contractors (including Spanish-speakers), developers, builders, and land use planners. The program is built on extensive barriers and opportunities surveys and focus group work with these professionals and customers. Participants fill out in-class evaluations to measure their understanding, and identify (pledge) the actions they intend to take as a result of the training. The program is funded by SPU's stormwater, solid waste, and water funds, as well as the LHWMP, and integrates messages from across those programs.

### III.10.4.3.7 Private Facility Inspections

SPU conducts inspections of private stormwater and flow control facilities to confirm that they are installed and maintained to Stormwater Code. In addition to conducting the inspection, SPU provides education and outreach on how to change behaviors to comply with Stormwater Code and maintain facilities to function properly and reduce the impacts to water quality. Outreach materials include handouts on BMPs and codes. Inspections are tracked and reviewed. Additional measures to track understanding of this BMP will be implemented in 2008.

III.10.4.4 Audience: Engineers, Contractors, Developers, Review Staff and Land Use Planners.

### III.10.4.4.1 Temporary Erosion and Sediment Control

DPD provides short courses to engineers, contractors, and developers on appropriate BMPs for temporary erosion and sediment control related to new development and redevelopment sites. This training exposes professionals to Stormwater Code requirements and is an appropriate BMP for the control of sediment and erosion. These courses were not offered in 2007. Starting in 2008, course participants will fill out an in class evaluation and an implementation plan for an upcoming job. Follow up interviews with a sample of participants will track adoption of the BMP.

### III.10.4.4.2 City Wide Training

The City will train staff who are engineers, review staff and land use planners at a City wide training to be held in spring 2008. City Staff will receive training on the revised draft Stormwater Code and Directors' Rules including, technical standards for stormwater site and erosion control plans, LID techniques, and stormwater and flow control BMPs. A strategy to track understanding and adoption of this training will be implemented in 2008.

### III.10.4.4.3 On the Job Training

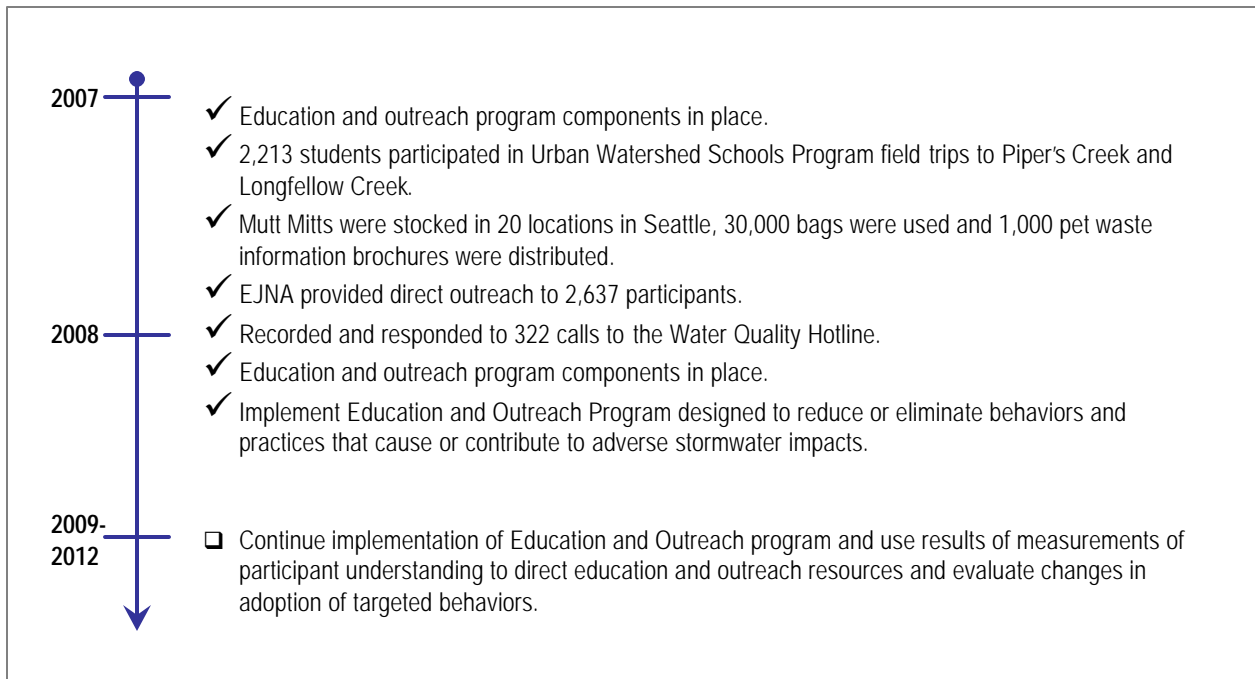
All Departments within the City engage in on the job training to insure that staff members are current on policies, procedures, rules and requirements related to the management of stormwater. This training can take the form of classroom, informal meeting, and tailgate session. In addition, the City encourages employees to attend professional development training related to their business area. A strategy to track understanding and adoption of these trainings will be implemented in 2008.

### III.10.4.4.4 Natural Landscaping Professional Development

Please see description for this program in Section III.10.4.3.6.



Figure III.10-1. Timeline Showing Progress and Next Steps



Legend:      ✓ Implemented      ☐ Planned

*For More Information*

- ❖ For more information on the Resource Venture, a free resource conservation program for Seattle businesses, visit [www.resourceventure.org](http://www.resourceventure.org).
- ❖ For general questions about this SWMP or more information about this section, email [swmp@seattle.gov](mailto:swmp@seattle.gov) or visit [www.seattle.gov/util](http://www.seattle.gov/util) **keywords:** Stormwater Management Plan.

Current Activities

Planning Ahead

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## V. LIST OF DEFINITIONS AND ACRONYMS



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# V.1 Definitions and Acronyms

All of the definitions listed in the table below are directly from the 2007 NPDES Phase I Permit. Acronyms in the Table of Acronyms that are specific to SPU that were added beyond what was listed in the Permit are denoted with an asterisk.

**Table V.1-1. Definitions**

Term	Definition
40 CFR	Title 40 of the Code of Federal Regulations, which is the codification of the general and permanent rules published in the Federal Register by the executive departments and agencies of the federal government.
AKART	All Known, Available and Reasonable methods of prevention, control and treatment. See also State Water Pollution Control Act, Chapter 90.48.010 and 90.48.520 RCW. "All Known, Available and Reasonable methods of prevention, control and treatment" refers to the State Water Pollution Control Act, Chapter 90.48.010 and 90.48.520 RCW.
Applicable TMDL	A TMDL which has been approved by EPA on or before the date permit coverage is granted.
Beneficial Uses	Uses of waters of the state, which include but are not limited to: use for domestic, stock watering, industrial, commercial, agricultural, irrigation, mining, fish and wildlife maintenance and enhancement, recreation, generation of electric power and preservation of environmental and aesthetic values, and all other uses compatible with the enjoyment of the public waters of the state.
Best Management Practices	The schedules of activities, prohibitions of practices, maintenance procedures, and structural and/or managerial practices approved by Ecology that, when used singly or in combination, prevent or reduce the release of pollutants and other adverse impacts to waters of Washington State.
Bypass	The diversion of stormwater from any portion of a stormwater treatment facility.
Clean Water Act	The federal Clean Water Act (formerly referred to as the Federal Water Pollution Control Act or Federal Water Pollution Control Act Amendments of 1972) Pub.L. 92-500, as amended Pub. L. 95-217, Pub. L. 95-576, Pub. L. (6-483 and Pub. L. 97-117, 33 U.S.C. 1251 et.seq.
Component or Program Component	The elements of the stormwater management program listed in Special Condition S5 Stormwater Management Program for Permittees or S6 Stormwater Management Program for Co-Permittees and Secondary Permittees.
Co-Permittee	An owner or operator of a municipal separate storm sewer that has co-applied for permit coverage with another permittee, and that is only responsible for permit conditions relating to the discharge for which it is operator. See also 40 CFR 122.26(b)(1).
Director	The Director of the Washington State Department of Ecology, or an authorized representative.
Discharge	For the purpose of this permit, unless indicated otherwise, refers to discharges from municipal separate storm sewers of the Permittees. See also 40 CFR 122.2
Ecology	The Washington State Department of Ecology
Entity	A governmental body or a public or private organization.
Equivalent document	A technical stormwater management manual developed by a state agency, local government or other entity that includes the Minimum Technical Requirements in Appendix 1 of this permit and BMPs approved by Ecology.
General Permit	Permit which covers multiple dischargers of a point source category within a designated geographical area, in lieu of individual permits being issued to each discharger.
Ground water	Water in a saturated zone or stratum beneath the surface of the land or below a surface water body.
Heavy equipment maintenance or storage yard	An area where any heavy equipment, such as mowing equipment, excavators, dump trucks, backhoes, or bulldozers are washed or maintained, or where at least five pieces of heavy equipment are stored on a long term basis.
Hyperchlorinated	Water that contains more than 10 mg/Liter chlorine.



Term	Definition
Illicit connection	An Illicit Connection is the discharge of pollutants or non-storm water materials into a storm sewer system via a pipe or other direct connection. Sources of illicit connections may include sanitary sewer taps, wash water from laundromats or carwashes, and other similar sources
Illicit discharge	Any discharge to a municipal separate storm sewer that is not composed entirely of storm water except discharges pursuant to a NPDES permit (other than the NPDES permit for discharges from the municipal separate storm sewer) and discharges resulting from fire fighting activities.
Industrial or Construction Activity	Manufacturing, processing or raw materials storage areas at an industrial plant; or clearing, grading and/or excavation. These activities are required to have NPDES permit coverage in accordance with 40 CFR 122.26.
Integrated Pest Management	<p>A coordinated decision-making and action process that uses the most appropriate pest control methods and strategy in an environmentally and economically sound manner to meet agency programmatic pest management objectives. The elements of integrated pest management include:</p> <ul style="list-style-type: none"> <li>(a) Preventing pest problems;</li> <li>(b) Monitoring for the presence of pests and pest damage;</li> <li>(c) Establishing the density of the pest population, that may be set at zero, that can be tolerated or correlated with a damage level sufficient to warrant treatment of the problem based on health, public safety, economic, or aesthetic thresholds;</li> <li>(d) Treating pest problems to reduce populations below those levels established by damage thresholds using strategies that may include biological, cultural, mechanical, and chemical control methods and that must consider human health, ecological impact, feasibility, and cost-effectiveness; and</li> <li>(e) Evaluating the effects and efficacy of pest treatments.</li> </ul>
Low Impact Development (LID)	A stormwater management and land development strategy applied at the parcel and subdivision scale that emphasizes conservation and use of on-site natural features integrated with engineered, small-scale hydrologic controls to more closely mimic pre-development hydrologic functions.
Material Storage Facilities	An area where bulk materials (liquid, solid, granular, etc.) are stored in piles, barrels, tanks, bins, crates, or other means.
Maximum Extent Practicable (MEP)	Refers to paragraph 402(p)(3)(B)(iii) of the federal Clean Water Act which reads as follows: Permits for discharges from municipal storm sewers shall require controls to reduce the discharge of pollutants to the maximum extent practicable, including management practices, control techniques, and system, design, and engineering methods, and other such provisions as the Administrator or the State determines appropriate for the control of such pollutants.
Municipal Separate Storm Sewer (MS3)	<p>A conveyance, or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels, or storm drains):</p> <ul style="list-style-type: none"> <li>- owned or operated by a state, city, town borough, county parish, district, association, or other public body (created by or pursuant to State Law) having jurisdiction over disposal of wastes, storm water, or other wastes including special districts under State Law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges to waters of the U.S.</li> <li>- designed or used for collecting or conveying stormwater</li> <li>- which is not a combined sewer; and</li> <li>- which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR 122.2.</li> </ul>
Municipal separate storm sewer system (MS4)	All separate storm sewers that are defined as large" or "medium" or "small" municipal separate storm sewer systems. See also 40 CFR 122.26(b)(18).
National Pollutant Discharge Elimination System (NPDES)	The national program for issuing, modifying, revoking, and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under sections 307, 402, 318, and 405 of the Federal Clean Water Act, for the discharge of pollutants to surface waters of the state from point sources. These permits are referred to as NPDES permits and, in Washington State, are administered by the Washington Department of Ecology.
Notice of Intent	The application for, or a request for coverage under a General NPDES Permit pursuant to WAC 173-226-200.
Outfall	Point source as defined by 40 CFR 122.2 at the point where a municipal separate storm sewer discharges to waters of the State and does not include open conveyances connecting two municipal separate storm sewers, or pipes, tunnels, or other conveyances which connect segments of the same stream or other waters of the State and are used to convey waters of the State.



Term	Definition
Permittee	Any Primary Permittee, Co-Permittee, or Secondary Permittee unless specifically stated otherwise for a particular section of this permit.
Pest	But is not limited to, any insect, rodent, nematode, snail, slug, weed, and any form of plant or animal life or virus, bacteria, or other microorganisms on or in a living person or other animal or in or on processed food or beverages or pharmaceuticals, which is normally considered to be a pest, or which the director of the department of agriculture may declare to be a pest.
Physically Interconnected	One municipal separate storm sewer is connected to a second municipal separate storm sewer in such a way that it allows for direct discharges to the second system. For example, the roads with drainage systems and municipal streets of one entity are physically connected directly to a municipal separate storm sewer belonging to another entity.
Qualified Personnel	Staff members or contractors who have had professional training in the aspects of stormwater management for which they are responsible and are under the functional control of the Permittee.
Runoff	Water that travels across the land surface, or laterally through the soil near the land surface, and discharges to water bodies either directly or through a collection and conveyance system. Runoff includes stormwater and water from other sources that travels across the land surface. See also "Stormwater."
Secondary Permittee	An operator of municipal separate storm sewer which is not a city, town or county. Secondary Permittees include special purpose districts and other public entities identified in S1.D which operate municipal separate storm sewers.
Shared Waterbodies	Waterbodies, including downstream segments, lakes and estuaries, that receive discharges from more than one permittee.
Stormwater	Runoff during and following precipitation and snowmelt events, including surface runoff, drainage, and interflow.
Stormwater Associated with Industrial and Construction Activity	The discharge from any conveyance which is used for collecting and conveying stormwater, which is directly related to manufacturing, processing or raw materials storage areas at an industrial plant, or associated with clearing grading and/or excavation, and is required to have an NPDES permit in accordance with 40 CFR 122.26.
Stormwater facilities regulated by the Permittee	Permanent stormwater treatment and flow control BMPs located in the geographic area covered by the permit and which are not owned by the Permittee, and are known by the permittee to discharge into municipal separate storm sewers owned or operated by the Permittee.
Stormwater Management Manual for Western Washington	The 5-volume technical manual (Publication Nos. 05-10-029 through 05-10-033) published by Ecology in February 2005.
Stormwater Management Program (SWMP)	A set of actions and activities designed to reduce the discharge of pollutants from the regulated small MS4 to the maximum extent practicable and to protect water quality, and comprising the components listed in S5 or S6 of this Permit and any additional actions necessary to meet the requirements of applicable TMDLs.
Total Maximum Daily Load (TMDL)	A water cleanup plan. A TMDL is a calculation of the maximum amount of a pollutant that a water body can receive and still meet water quality standards, and an allocation of that amount to the pollutant's sources. A TMDL is the sum of the allowable loads of a single pollutant from all contributing point and nonpoint sources. The calculation must include a margin of safety to make certain that the water body can be used for the purposes the state has designated. The calculation must also account for seasonable variation in water quality. Water quality standards are set by states, territories, and tribes. They identify the uses for each water body, for example, drinking water supply, contact recreation (swimming), and aquatic life support (fishing), and the scientific criteria to support that use. The Clean Water Act, section 303, establishes the water quality standards and TMDL programs.
Urban/higher density rural sub-basins	All areas within or proposed to be within the urban growth area (UGA), or any sub-basin outside the UGA with 50 percent or more area comprised of lots less than 5 acres.
Vehicle Maintenance or Storage Facility	An uncovered area where any vehicles are regularly washed or maintained, or where at least 10 vehicles are stored.
Water Quality Standards	Surface Water Quality Standards, Chapter 173-201A WAC, Ground Water Quality Standards, Chapter 173-200 WAC, and Sediment Management Standards, Chapter 173-204 WAC.
Waters of the state	Includes those waters as defined as "waters of the United States" in 40 CFR Subpart 122.2 within the geographic boundaries of Washington State and "waters of the state" as defined in Chapter 90.48 RCW which includes lakes, rivers, ponds, streams, inland waters, underground waters, salt waters and all other surface waters and water courses within the jurisdiction of the State of Washington.



**Table V.1-2. Acronyms**

<b>Acronym</b>	<b>Definition</b>
ACEC*	American Council of Engineering Companies
ASCE*	American Society of Civil Engineers
AKART	All known, available and reasonable methods of prevention, control and treatment (See definition in definitions table.)
AMC*	Asset Management Committee
BINMIC*	Ballard-Interbay Northend Manufacturing and Industrial Center
BMP	Best Management Practice (See definition in definitions table.)
CDWAC*	Creeks, Drainage Water and Wastewater Authority Committee
CIP*	Capital Improvements Program
DPD*	Department of Planning and Development
DWU*	Drainage and Wastewater Utility, a department within the SPU Engineering Department
DWW*	Drainage and Waste Water, a division within USM of SPU
Ecology*	Washington State Department of Ecology
EJNA*	Environmental Justice Network in Action
EPA*	U.S. Environmental Protection Agency
ERTS*	Environmental Response Tracking System
FFD*	Department of Fleets and Facilities, a department within SPU
FGD*	first ground disturbance
GIS*	Geographic Information System
HAZWOPER*	Hazardous Waste Operations and Emergency Response
HRPGA*	High risk pollution generating activity
HRPGB*	High risk pollutant generating business
IDDE	Illicit Connection and Discharge Detection and Elimination
IDP*	Integrated Drainage Plan
IFPT*	Integrated Federal Permit Training
JARPA*	Joint Aquatic Resources Permit Application
LHWMP*	Local Hazardous Waste Management Program
LID	Low Impact Development (See definition in definitions table.)
MEP	Maximum Extent Practicable (See definition in definitions table.)
MLK*	Martin Luther King
MS3	Municipal separate storm sewer (See definition in definitions table.)
MS4	Municipal separate storm sewer system (See definition in definitions table.)
MTCA*	Model Toxics Control Act
NDS*	Natural Drainage System
NOI*	Notice of Intent (See definition in definitions table.)
NOV*	Notice of Violation
NPDES	National Pollutant Discharge Elimination System (See definition in definitions table.)
O&M*	operations and maintenance
ORC*	Operations Response Center
OSE*	Office of Sustainability and Environment
Parks*	Seattle Parks and Recreation
PASV*	Pre-Application Site Visit
PCHB*	Pollution Control Hearings Board
PE*	preliminary engineering
Permit*	NPDES Phase I Municipal Stormwater Permit

\* Acronyms that are specific to SPU that were added beyond what was listed in the Permit.





Acronym	Definition
QA/QC*	quality assurance/quality control
RCW	Revised Code of Washington State
RSJI*	Race and Justice Initiative
SCL*	Seattle City of Light
SCM*	Source Control and Monitoring
SDOT*	Seattle Department of Transportation
SEPA*	State Environmental Policy Act
SIC*	standard industrial classification
SKIP*	Spill Kit Incentive Program
SMC*	Seattle Municipal Code
SPU*	Seattle Public Utilities
SSCP*	Structural Stormwater Control Program
Stormwater Code*	Seattle Municipal Code, Chapter 22.800 – 22.808, <i>The Stormwater, Grading and Drainage Control Code</i>
SWMP	Stormwater Management Program (See definition in table.)
SWPPP*	Stormwater Pollution Prevention Plan
TCWQC*	Thornton Creek Water Quality Channel
TESC*	Temporary erosion and sediment control
TMDL	Total Maximum Daily Load (See definition in table.)
TSS*	total suspended solids
USM*	Utility System Management, an organization within SPU
WSDOT*	Washington State Department of Transportation
ZPG*	zeolite/perlite/granular activated carbon, a trademarked term by CONTECH Stormwater Solutions, Inc.

\* Acronyms that are specific to SPU that were added beyond what was listed in the Permit.



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APPENDIX 1

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Mayor's Executive Order



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**Office of the Mayor**  
**City of Seattle**  
Gregory J. Nickels, Mayor

**Executive Order: 01-08**  
**NPDES Municipal Stormwater Permit**

*An Executive Order directing all City Departments to coordinate together to comply with the requirements of the City's National Pollutant Discharge Elimination System (NPDES) Municipal Stormwater Permit, which has been issued to the City of Seattle by the Washington State Department of Ecology under the provisions of the federal Clean Water Act.*

WHEREAS, the City of Seattle has long prided itself on its commitment to the environment;

WHEREAS, the Mayor's Executive Order 03-04 directs City departments with responsibilities for and connections to water quality and aquatic habitat issues to develop a shared, broad-based strategy know as 'Restore our Waters' to better protect and restore water quality and aquatic habitat within the City;

WHEREAS, managing municipal stormwater runoff is a critical component of any strategy to meet the City of Seattle's long-standing objective to protect, improve, and enhance the City's lakes, creeks, bays, rivers, and other surface and ground waters;

WHEREAS, the Washington State Department of Ecology has issued to the City a permit under the National Pollutant Discharge Elimination System (NPDES) of the federal Clean Water Act that contains a suite of conditions and requirements for managing municipal stormwater runoff;

WHEREAS, compliance with the City's NPDES Municipal Stormwater Permit is a responsibility of the entire city and all City departments;

WHEREAS, the City's NPDES Municipal Stormwater Permit contains a specific requirement to establish in writing an Executive Directive requiring internal coordination among all departments affected by the permit;

NOW, THEREFORE, I, GREGORY J. NICKELS, Seattle Mayor, do order all City departments to coordinate all stormwater-related policies, programs, and projects to the maximum extent practicable and I order all City departments to eliminate barriers to compliance with the terms of the permit.

FURTHERMORE, I direct all City departments to review the NPDES Municipal Stormwater Permit that has been issued by Ecology and to identify all requirements for which they are responsible and each Director will be responsible for meeting those requirements and associated deadlines that apply to his or her respective department.

FUTHERMORE, I direct Seattle Public Utilities to serve as the lead department in all matters related to overall City compliance with the permit.

FURTHERMORE, I direct Seattle Public Utilities to provide sufficient information to each department, including technical support, and providing a forum for intra-governmental coordination so the City is able to meet the requirements of the permit.

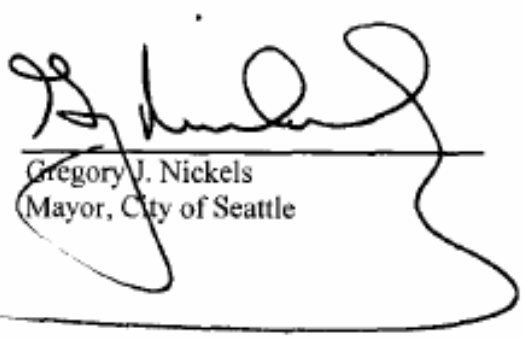
FURTHERMORE, I direct all City departments to provide to Seattle Public Utilities all necessary reporting elements and supporting material necessary to comply with the reporting requirements and associated deadlines of the permit.

FURTHERMORE, Seattle Public Utilities is directed to compile information received from other departments, and to prepare and submit on my behalf all reports to Ecology under the terms of the permit.

FURTHERMORE, the City of Seattle, is required by the permit to certify that all reports submitted to Ecology are true, accurate and complete. And the City of Seattle can be subject to penalties for submitting false information. Therefore, each department must ensure that documents and all attachments prepared in compliance with this permit are true, accurate, and complete before submitting them to Seattle Public Utilities. Seattle Public Utilities may issue additional direction to departments to ensure compliance with this requirement.

Questions regarding this Executive Order should be directed to Trish Rhay at 206-386-1832 (SPU), Darla Inglis, Ph.D. 206-233-7160 (SPU), and Robert D. Chandler, Ph.D., P.E., 206-386-4576 (SPU).

Dated this 29<sup>th</sup> day of January, 2008



Gregory J. Nickels  
Mayor, City of Seattle

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King County Co-permittee Report



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## King County

**Wastewater Treatment Division**  
Industrial Waste Program  
Department of Natural Resources and Parks  
130 Nickerson Street, Suite 200  
Seattle, WA 98109-1658  
**206-263-3000** Fax 206-263-3001  
TTY Relay: 711

# Received

FEB 21 2008

## Utility Systems Management

February 14, 2008

Kevin Buckley  
NPDES Technical Support  
Drainage & Wastewater Division  
Seattle Public Utilities  
P.O. Box 94018  
Seattle, WA 98124-4018

Dear Mr. Buckley:

This report is submitted by the King County Industrial Waste Program (KCIW) as a co-permittee with the City of Seattle for discharges from the Densmore storm drain basin.

There are four elements of King County's source control efforts in the Densmore drainage basin: monitoring, inspections, enforcements, and public outreach.

King County continues to follow the sampling and inspection protocols we adapted from the city's efforts as part of the Lower Duwamish Waterway Superfund Project in the Lander basin.

We are monitoring to establish historical concentration levels for stormwater pollutants discharged from the basin and to determine concentration ranges for individual pollutants. If there are any unusual concentrations of pollutants, then an investigation would be done to trace the pollutants to the source. In 2007, we sampled four catch basins in the Densmore basin. The data from the 2005-2007 sampling activities has not resulted in any follow up so far. KCIW staff will summarize and report the data collected so date with the 2008 activities report to Seattle Public Utilities (SPU).

In 2007, KCIW staff conducted 36 inspections in the Densmore basin. Twenty-three of the inspections were initial site visits. Seven of the twenty-three businesses were sent letters requesting corrective action items be completed. Follow up inspections were conducted at the seven sites to verify that the corrective action items were completed. The majority of corrective action items requested were for cleaning catch basins, washing vehicles with soap, oil in catch basin, obtaining spill kits and developing spill plans. Letters sent to the businesses were also shared with SPU as routine position. No formal enforcement actions were necessary, and for the most part, businesses appeared to be doing a good job of promoting stormwater conservation. Copies of the full source control inspections are provided to SPU at the end of each year.

Kevin Buckley  
February 14, 2008  
Page 2

This year, public outreach was conducted as our normal course of operations in the King County Industrial Waste and Local Hazardous Waste Management Programs (LHWMP). This included our inspections, site visits, and complaint responses. KCIW continues to participate in the Inter-Agency Regulatory Committee (IRAC), and the Lake Union Action Team, working together to understand issues related to areas of mutual interest to all the agencies. In 2007, one business in the Densmore area was visited by a team of inspectors from the IRAC Interagency Compliance Team. In addition, King County LHWMP distributed two vouchers to businesses in the Densmore drainage basin. Qualified businesses are reimbursed for fifty percent of the amount spent, up to a maximum of \$500, on hazardous waste management. Expenses covered by the voucher include waste disposal, testing and recycling, and the lease or purchase of equipment to manage, reduce, or recycle waste.

If you have any questions about our report or our source control efforts, please contact Industrial Waste Compliance Investigator, Dave Haberman at 206-263-3007 or [dave.haberman@kingcounty.gov](mailto:dave.haberman@kingcounty.gov).

Sincerely,



Despina Strong  
Supervisor  
Industrial Waste Program

cc: Christie True, Division Director, Wastewater Treatment Division (WTD), King County Department of Natural Resources and Parks (KCDNRP)  
Greg Bush, Manager, Environmental and Community Services Section (ECSS), WTD, KCDNRP  
Betsy Cooper, Project/Program Manager IV, ECSS, WTD, KCDNRP  
Dave Haberman, Compliance Investigator I, Industrial Waste Program, ECSS, WTD, KCDNRP  
Luanne Coachman, Water Quality Planner III, Stormwater Services Section, Water and Land Resources Division, KCDNRP  
Rachel McCrea, Northwest Regional Office, Washington State Department of Ecology