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# Stormwater Management Program Plan

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March 2015



**King County**

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Water and Land Resources Division  
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## EXECUTIVE SUMMARY

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Since 1995, the Washington State Department of Ecology (Ecology) has issued Phase I Municipal National Pollutant Discharge Elimination System (NPDES) Stormwater permits (Permit) to King County authorizing stormwater discharges from the County's stormwater system. The United States Environmental Protection Agency (US EPA) delegated the authority to issue these permits to Ecology under the Clean Water Act's NPDES program. The goal of these permits is to protect Washington's Water Resources from negative impacts caused by stormwater runoff collected and discharged by the County's drainage system; particularly those related to stormwater quality and quantity from developed land. The County currently operates under a Permit that was issued August 1, 2012 and took effect on August 1, 2013 (2013 Permit). This permit has several new or significantly expanded permit requirements in comparison to recent permits issued to King County. This permit was recently modified, and reissued with an effective date of January 16, 2015. The permit expires on August 1, 2018 at which point Ecology will have issued a new Permit which will take effect upon expiration of the current permit.

The modified 2013 Permit requires King County to develop and implement a Stormwater Management Program (SWMP) designed to minimize impacts caused by stormwater runoff. The Permit also requires the County to document its stormwater management program in a Stormwater Management Program Plan (SWMP Plan). This SWMP Plan documents our compliance actions for 2015. As required by the Permit, the SWMP Plan is updated annually to reflect changes in King County programs and addresses the following permit requirements:

Legal Authority: Demonstrate the authority to enforce compliance with water quality standards through statute, ordinance, permit, or similar means.

Mapping: Must map and document stormwater system, including stormwater treatment and flow control facilities, conveyance systems, outfalls, and connections between the County's system and other public and private stormwater systems.

Coordination: Use a written agreement or executive order to implement intragovernmental coordination on compliance activities. Intergovernmental coordination with other permitted jurisdictions and agencies is also required.

Public involvement and participation: Provide the public with opportunity to participate in the decision-making process on stormwater policies and programs that comprise the County's stormwater management program.

Controlling runoff from new development, redevelopment, and construction sites: Must minimize development impacts from stormwater runoff using a permitting process that includes design standards, plan review, site inspections, and enforcement; require development and redevelopment projects to incorporate

Low Impact Development (LID) principles and practices to the maximum extent feasible; and coordinate a watershed-scale stormwater planning exercise for one of the basins listed in the permit and approved by Ecology. The plan must develop a stormwater management strategy for the approved watershed.

Structural stormwater controls: Implement a structural stormwater control program to reduce impacts to water resources caused by discharges from our stormwater system that are not adequately addressed by other elements of the stormwater management program. There is also a requirement to compile and submit a list of all structural stormwater control retrofit projects planned for implementation during the permit term.

Source control program for existing development: Inspect potential pollution generating properties to ensure that onsite activities do not pollute stormwater, with application of best management practices (BMPs) and the necessary maintenance activities. We must develop BMPs for activities that can generate stormwater runoff pollutants. Deficiencies observed during inspections shall be corrected through technical assistance and progressive enforcement, as necessary.

Illicit connections and illicit discharges detection and elimination: Identify and eliminate non-stormwater discharges and illicit connections to the stormwater system. The program must include screening of the stormwater system, a complaint hotline for the general public, and spill response protocols.

Operation and maintenance program: Maintain stormwater treatment facilities and conveyance systems that it owns or operates in a manner consistent with Permit requirements and standards found in current version of King County's Surface Water Design Manual. The County must also enforce compliance with these standards on privately-owned stormwater facilities and ensure that activities and properties owned by the County have practices and policies in place that reduce pollutant runoff.

Education and outreach: Engage in education and outreach activities on specified stormwater topics targeted to specified audiences. The County must also measure the effectiveness of its education and outreach on at least one targeted issue and audience combination.

Compliance with Total Maximum Daily Load (TMDL) requirements: Implement actions specified by the Permit to protect and restore four impaired water bodies: Bear Creek, Cottage Lake, Issaquah Creek, and the Puyallup and White Rivers.

Monitoring: Conduct stormwater monitoring on a regional scale and evaluate the effectiveness of select permit requirements.

Reporting: Document its SWMP through both a written SWMP Plan (this document) and an Annual Report. The Annual Report reviews the County's compliance actions over the prior year. The SWMP Plan outlines the County's compliance actions planned for the coming year.

This SWMP Plan outlines the programs developed and implemented by King County to address the permit elements listed above. King County is committed to upholding the standards for the protection of the region's water quality. King County will have put into place the actions described herein that supports compliance with all permit requirements.

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# LIST OF ACRONYMS AND ABBREVIATIONS

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Airport	King County International Airport (KCIA), Airport Division
AKART	All Known, Available Reasonable methods of Treatment
APWA	American Public Works Association
BMP	Best management practice
CBIMP	Catch Basin Inspection and Maintenance Program
CESCL	Certified Erosion and Sediment Control Lead
CSP	Conveyance Screening Program
DES	Department of Executive Services
DPER	Department of Permitting and Environmental Review
DNRP	Department of Natural Resources and Parks
Ecology	Washington State Department of Ecology
EPA	United States Environmental Protection Agency
ESA	Endangered Species Act
FMD	Facilities Management Division
GPS	Geographic Positioning System
IC	Illicit connection
IC/IDDE	Illicit Connection / Illicit Discharges Detection and Elimination
ID	Illicit discharges
KCC	King County Code
KCD	King Conservation District
KCIA	King County International Airport
LID	Low impact development
MEP	Maximum Extent Practicable
MIS	Maintenance Information System
MS4	Municipal separate storm sewer system
NPDES	National Pollution Discharge Elimination System
ODDS	Outfall, Discharge point and Ditch Screening
ORI	Outfall Reconnaissance Inventory
Parks	Parks and Recreation Division
Permit	NPDES Phase I Municipal Stormwater Permit
PGIS	Pollution Generating Impervious Surface
PGPS	Pollution Generating Pervious Surface
PHSKC	Public Health - Seattle & King County
PSP	Puget Sound Partnership
Roads	Road Services Division
ROADMAP	Regional Operations and Maintenance Program
ROW	Right-of-Way
RSMP	Regional Stormwater Monitoring Program
SIMPla	Site Management Plan
SPPM	Stormwater Pollution Prevention Manual

STORM	Stormwater Outreach for Regional Municipalities
SWD	Solid Waste Division
SWDM	Surface Water Design Manual
SWG	Stormwater Work Group
SWMP	Stormwater Management Program
SWMP Plan	The documentation of the SWMP
SWPPP	Stormwater Pollution Prevention Plan
SWSS	Stormwater Services Section
TMDL	Total Maximum Daily Load
Transit	Transit Division
WAC	Washington Administrative Code
WLRD	Water and Land Resources Division
WRIA	Water Resource Inventory Area
WTD	Wastewater Treatment Division

# 1.0 INTRODUCTION

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This document, King County's 2015 Stormwater Management Program (SWMP) Plan (Plan) describes the actions and programs King County will implement in 2015 to comply with the Phase I Municipal National Pollutant Discharge Elimination System (NPDES) Stormwater Permit (Permit). These actions will protect stormwater in unincorporated King County and on King County facilities located in other jurisdictions. The Permit covers King County's municipal operations and facilities that have the potential to impact the quantity and/or quality of stormwater runoff that is eventually discharged to the receiving waters of the Puget Sound Basin—and into Puget Sound. The Permit defines a SWMP as “a set of actions and activities comprising the components listed” in Sections S5, S7 and S8 of the Permit. In the SWMP Plan, King County is required to describe its programs and efforts which address the permit requirements found in these sections. King County must annually update and submit the SWMP Plan to the Washington State Department of Ecology (Ecology) as part of the Annual Report. The County also makes the SWMP Plan available on the web at <http://www.kingcounty.gov/environment/wlr/sections-programs/stormwater-services-section/stormwater-program.aspx>. The SWMP Plan is a forward-looking document, describing the actions and activities King County plans to carry out over the coming year.

## 1.1 NPDES Program Background

The federally mandated NPDES program was established by Congress as part of the Clean Water Act with the intent to preserve and restore the beneficial uses of the waters of the United States. The NPDES program regulates numerous sources of water pollution through a series of permits focused on different activities, industries and other waste water and stormwater discharge sources. The U.S. Environmental Protection Agency (EPA) delegates NPDES permitting authority directly to Washington State which manages the NPDES permit program through Ecology.

The municipal NPDES stormwater program was implemented nationally in two phases. Under Phase I, only municipalities whose 1990 census populations exceeded 100,000 were covered under the Permit. In Washington, this included Clark, King, Pierce, and Snohomish counties, the cities of Seattle and Tacoma, and the Washington State Department of Transportation. Phase II was implemented in 2007 and extended municipal stormwater permit coverage to municipalities across the state with populations in excess of 10,000 as of the 2000 census. There are currently 101 Phase II cities and 11 Phase II counties in Washington State. NPDES municipal stormwater permits require permittees to use stormwater best management practices (BMPs), which range in scope from constructing new drainage structures to educating the public, for the purpose of reducing the discharge of pollutants to the maximum extent practicable.

## **1.2 Stormwater Management: Traditional vs. LID**

Early stormwater management strategies focused on reducing the risk of localized flooding. Stormwater conveyance systems were designed to allow stormwater runoff to flow away from its sources quickly and be conveyed to receiving water bodies, without concern for potential impacts on those receiving water bodies caused by the stormwater discharges.

Over time, stormwater and environmental professionals recognized the harm stormwater discharges were imparting on receiving water bodies. In response, progressively more stringent requirements were implemented to manage stormwater runoff in a way such that impacts from stormwater discharges were reduced. The measures used, such as stormwater treatment and flow control facilities, did help, but they did not solve the problems associated with stormwater discharges completely.

Stormwater and environmental groups have been advocating Low Impact Development (LID) as a tool to help reduce the volume and velocity of stormwater runoff leaving a development site, with the understanding that this should help remedy the problems caused by the pollutant loads and excessive flows discharged by traditional stormwater systems. LID is an approach to land development that focuses on how water enters a site, is stored on-site, and leaves a site, incorporates practices that minimize impervious surface, protect and enhance native vegetation and soils, and management of stormwater at its source.

## **1.3 NPDES Applied to King County**

This document describes our compliance with the Phase I Municipal Stormwater Permit, which covers discharges from the municipal separate storm sewer system (MS4) that unincorporated King County owns and operates. In most areas of King County, stormwater and wastewater drain in separate conveyance systems. Wastewater is routed to a treatment plant and stormwater typically flows directly into a receiving water body without treatment. While the *municipal* stormwater permit applies to most of unincorporated King County, some King County sites are covered by other types of NPDES permits. These include individual permits for King County's wastewater outfalls and for discharges at the Cedar Hills Regional Landfill; Industrial Sand and Gravel Permits for gravel pits operated by the Road Services Division (Roads); General Industrial Permits held by the Metro Transit Division (Transit) for regional bus facilities and Wastewater Treatment Division (WTD) for its treatment plants; and the Construction Stormwater Permit for King County-initiated construction projects disturbing one or more acres of land.

Municipal stormwater discharges from unincorporated King County have been covered by a Permit since 1995. However, on February 16, 2007 a new, significantly more comprehensive permit (2007 Permit) took effect. The 2007 Permit required the County

to significantly increase its level of effort and funding for stormwater management programs and actions, and included a compliance timetable that began in 2007. The 2007 Permit was modified slightly as a result of legal challenges and this modified permit (2009 Permit) took effect on June 17, 2009. Upon its expiration in 2012, Ecology issued two new permits. The first one was effective from September 1, 2012 to July 31, 2013 (2012 Permit). The second permit took effect on August 1, 2013 and will expire on July 31, 2018 (2013 Permit). Due to appeals the Permit issued in 2013 was modified and reissued with an effective date of January 2015. The 2012 Permit largely continued the requirements of the 2009 Permit, whereas, the 2013 Permit contains significant revisions and new requirements over the 2007/2009 and 2012 permits, including changes related to:

- Mapping
- New development, redevelopment, and construction
- Structural stormwater controls
- Illicit connections/illicit discharges detection and elimination (IC/IDDE)
- Operations and maintenance
- Education and outreach
- Basin planning
- Total Maximum Daily Load (TMDL)
- Monitoring

King County began the planning and budgeting needed to carry out the new permit requirements nearly three years ago when the first drafts of the 2013 Permit were distributed. The County has undertaken a significant internal process to ensure that the requirements of the 2013 Permit are able to be fully implemented as the requirements include significant new bodies of work. Many of the new requirements will phase in throughout the current permit term. As these requirements take effect, the program descriptions will be included in the corresponding year's SWMP Plan.

The 2013 Permit affects King County in a number of its roles, including:

1. Have appropriate codes, land use regulations, enforcement, and education capacity to reduce water polluting practices and to increase or promote practices that protect water quality.
2. Ensure that its own property management practices meet regulatory standards.
3. Monitor stormwater pollutants and the effectiveness of commonly-used BMPs, assess the appropriateness of the BMPs to determine their effectiveness, and identify needed changes.
4. Works in coordination with other municipalities to ensure cooperation between the various departments within the County to achieve compliance with permit requirements.
5. Section S5.C of the 2013 Permit contains the ten required SWMP components. For convenience, and to comply with S5.A.1, the County's SWMP is organized

by these ten permit components. Each is described below with reference to the 2013 Permit conditions:

- i. Legal Authority. Codes and regulations must be in place giving the County the power to control discharges to its storm drain system.
  - ii. Mapping. The County must continue completing various components of its MS4 mapping effort.
  - iii. Governmental Coordination. The County must have a written intra-governmental coordination agreement in addition to intergovernmental coordination mechanisms with other permitted agencies and jurisdictions.
  - iv. Public Involvement. The County's SWMP is updated annually and the public must be provided with an opportunity to participate in the County's decision making process each year.
  - v. Control of runoff from new development, redevelopment and construction sites. The County must use drainage design and source control rules equivalent to those in Ecology's 2012 and 2014 Stormwater Management Manuals for Western Washington (2012 and 2014 Manuals) and must meet established standards for staff training and inspections. All County development projects (including those located in other jurisdictions) must comply with the County's equivalent manual if it is more stringent than that of the jurisdiction in which the development is occurring.
  - vi. Structural Stormwater Controls. The County must provide details about the goals of capital projects aimed at reducing the quantity and quality impacts of stormwater from past, present and future land development, and the estimated benefits of those projects must be quantified.
  - vii. Source Control Program for Existing Development. County source control BMPs must be equivalent to those in Ecology's 2012 and 2014 Manuals, and standards for staff training must be set. The Permit also requires a source control inspection program for identifying and inspecting pollution-generating sites that discharge to the MS4.
  - viii. Illicit Connections/Illicit Discharge Detection and Elimination. The County must implement stringent water quality codes, and set staff training standards. This section also requires the implementation of an illicit discharge program which includes a spill response program; a screening program focused on County outfalls and conveyance; and, a program to identify and rectify illicit discharges and connections, including a progressive enforcement program.
  - ix. Operation and Maintenance. County maintenance standards must be equal to those in Ecology's 2012 and 2014 Manuals, and standards must be developed for practices that are not covered. Rigorous inspection schedules and maintenance standards are required, and stormwater pollution prevention plans (SWPPPs) are required for certain categories of municipal sites.
  - x. Education and Outreach. Target audiences and topics are specified, along with a requirement to measure program effectiveness and work regionally.
6. King County is required to implement specified actions to help restore four water bodies in unincorporated King County to beneficial uses. The water bodies

include the Bear-Evans watershed, Issaquah Creek, the Puyallup/White watershed, and Cottage Lake. The former three are impaired by elevated levels of fecal coliform bacteria and the latter is impaired by elevated levels of total phosphorous.

7. The Permit requires three types of stormwater monitoring: status & trends; effectiveness; and, source identification and diagnostic monitoring. Permit holders have the option of conducting their own status & trends and effectiveness monitoring or contributing to a regional monitoring fund to meet this requirement. Compliance with the source identification and diagnostic monitoring is achieved by contributing to a regional monitoring fund.
8. Each year, King County must prepare and submit two primary deliverables to the Ecology: an Annual Report and our SWMP Plan (this document). The Annual Report documents compliance with permit requirements over the preceding year and the SWMP Plan outlines planned compliance activities for the coming year.

Various agencies within the County government have been identified as having significant roles in implementing different sections of the 2015 SWMP.

- The Department of Natural Resources and Parks (DNRP), through the Water and Land Resources (WLR) Division, is charged with coordinating the SWMP and annual reporting. WLR also manages the coordination, public involvement, manual equivalency, structural stormwater control, and public education portions of the SWMP. WLR also has a significant role in the County's mapping, source control, IDDE, and operations and maintenance programs.
  - Many King County Divisions manage and develop properties and facilities that are covered under this permit. These divisions include:
    - DNRP
      - Solid Waste Division (SWD)
      - Parks and Recreation Division (Parks)
      - Wastewater Treatment Division (WTD)
      - WLR
        - ◆ Stormwater Services Section (SWSS)
        - ◆ Rivers and Floodplain Management Section
    - Department of Transportation
      - Roads
      - Transit
      - Airport Division (Airport)
    - Department of Executive Services (DES)
      - Facilities Management Division (FMD)
- A. Stormwater control facilities on any lands owned by these County agencies must be designed, mapped, and maintained in a manner consistent with permit requirements and King County's Surface Water Design Manual (SWDM). Activities on King County properties must apply source control BMPs for pollutant-generating activities as found in the County's Stormwater Pollution Prevention Manual (SPPM). Staff training requirements apply to certain job

categories within the County. SWPPPs must be prepared for applicable facilities. SWSS leads the coordination of the County's mapping efforts.

- WLR and Roads partner to develop a significant amount of the training materials used to satisfy the Permit's training requirements. Training opportunities include classes tailored to specific agencies as well as general classes intended for County-wide audiences.
- The Department of Permitting and Environmental Review (DPER) is responsible for ensuring the requirements of the Permit are applied to new development and re-development sites through permitting, inspections and enforcement. For the County, this action includes not just the SWDM and SPPM but also related codes, which are applied to new development and re-development sites within the confines of state vesting law.
- The wastewater program run by the Department of Public Health – Seattle & King County (PHSKC) has oversight of onsite septic systems throughout King County. Corrective actions are taken where there is evidence indicating failing onsite systems are introducing contaminants into King County's MS4.

## 1.4 Funding

Many of the permit compliance activities are conducted by WLR and financed through the County's Surface Water Management (SWM) Fee. Due to increased Permit requirements, a significant increase to the SWM Fee was identified as needed to stay in compliance.

In 2012, the Metropolitan King County Council approved an ongoing 26 percent SWM fee increase to be phased in over two years: 2013-2014. For residential landowners in unincorporated King County, that translated to an increase of \$18 in 2013 and an additional \$20.50 increase in 2014.

The fee increases are resulting in improved water quality, through a stronger facility maintenance program, expanded drainage assistance, and accelerated habitat protection. For further information about the SWM fee, visit <http://www.kingcounty.gov/environment/wlr/surface-water-mgt-fee.aspx>.

Potential future cost increases have not yet been estimated or budgeted. The cost of compliance is expected to rise as new and expanded Permit requirements take effect during the Permit term and the rate payer base shrinks as a result of planned annexations of urban areas.

The County's remaining unincorporated urban areas will continue to include higher-density areas (more than one dwelling unit/acre), which require suburban levels of service and significant traditional stormwater management. Consequently, the County will continue to fund the full range of stormwater management services required by the Permit.

As single-lot and lower-density subdivision development continues in the rural area, there will be an increase in nontraditional stormwater controls. These include forest retention, reduced impervious surface footprints and other LID techniques such as flow dispersion and infiltration, rain gardens, and the use of pervious surfaces. Where stormwater in a subdivision may have traditionally been managed by a few large stormwater ponds or vaults, a similar subdivision built considering LID principles would incorporate many small treatment and flow control devices distributed throughout the neighborhood. Therefore, LID features will require additional construction and maintenance inspections by the County to ensure new types of controls are properly installed and maintained. This will add to the challenges for Permit compliance and public funding.

Increasingly, the stormwater management program will be addressing a landscape made up of agricultural and forest lands interspersed with rural residential and rural town centers with concentrations of suburban service areas. The stormwater and water quality service needs of these diverse landscapes will be quite different but often not less expensive than those defined in more urban areas.

## **2.0 STORMWATER MANAGEMENT PROGRAM REQUIREMENTS**

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This SWMP Plan was prepared by King County to satisfy section S5.A of the 2013 Permit, as modified. It documents the compliance actions and activities King County plans to implement in 2015.

The organization of this SWMP Plan follows the Permit. Permit text is included for reference and is shown in shaded text boxes. King County's corresponding compliance actions and activities are described below each Permit block.

This SWMP Plan covers programs intended to comply with the following Permit sections:

- Stormwater Management Program – S5.
- Compliance with Total Maximum Daily Load Requirements – S7.
- Monitoring and Assessment – S8.
- Reporting Requirements – S9.

See sections 2.1 through 2.4, below, for information about King County's SWMP.

## 2.1 Stormwater Management Program – S5

- A. *Each Permittee listed in S1.B. shall implement a SWMP during the term of this permit. A SWMP is a set of actions and activities comprising the components listed in S5, and additional actions necessary, to meet the requirements of applicable TMDLs pursuant to S7 Compliance with TMDL Requirements, and S8 Monitoring and Assessment.*
1. *Each Permittee shall prepare written documentation of their SWMP, called the SWMP Plan. The SWMP Plan shall be organized according to the program components in S5.C, or a format approved by Ecology, and shall be updated at least annually for submittal with the Permittee's annual report to Ecology (S9 Reporting Requirements). The SWMP Plan shall be written to inform the public of the planned SWMP activities for the upcoming calendar year, and shall include a description of:*
    - a. *Planned activities for each of the program components included in S5.C.*
    - b. *Any additional planned actions to meet the requirements of applicable TMDLs pursuant to S7 Compliance with TMDL Requirements.*
    - c. *Any additional planned actions to meet the requirements of S8 Monitoring and Assessment.*

This SWMP Plan outlines King County's planned actions and activities needed to comply with sections S5 (Stormwater Management Program), S7 (Compliance with TMDL Requirements), and S8 (Monitoring and Assessment) of the 2013 Permit. These responsibilities for these actions and activities are located in multiple King County agencies and the program descriptions contained herein represent efforts that are undertaken across King County.

The County posts its SWMP Plan on the web and during the annual update process the public is invited to read and comment on the draft. It is by this process that public is invited to participate in the County's decision-making process regarding stormwater management in unincorporated King County.

2. *Each Permittee shall track the cost or estimated cost of development and implementation of each component of the SWMP. This information shall be provided to Ecology upon request.*
3. *Each Permittee shall track the number of inspections, official enforcement actions and types of public education activities as required by the respective program component. This information shall be included in the annual report.*

SWMP costs and program metrics (for example, number of inspections completed) are tracked by agency. Program metrics will be submitted to Ecology in King County's Annual Report. Costs associated with SWMP implementation will be available to Ecology upon request.

- B. *The SWMP shall be designed to reduce the discharge of pollutants from MS4s to the MEP, meet state AKART requirements, and protect water quality.*

*Permittees are to continue implementation of existing stormwater management programs until they begin implementation of the updated stormwater management program in accordance with the terms of this permit, including implementation schedules.*

- C. *The SWMP shall include the components listed below. The requirements of the SWMP shall apply to MS4s, and areas served by MS4s owned or operated by the Permittee. To the extent allowable under state and federal law, all SWMP components are mandatory.*

Maximum Extent Practicable (MEP) is the federal statutory standard that establishes the level of pollutant reductions that jurisdictions must achieve. The CWA requires NPDES municipal permit holders to “require controls to reduce the discharge of pollutants [from their MS4s] to the maximum extent practicable, including management practices, control techniques and system design and engineering methods.” All Known, Available, And Reasonable methods of prevention, control and Treatment (AKART) is understood to mean a technology-based approach to limiting pollutants from state wastewater discharges. AKART requires both an engineering judgment and an economic judgment. As the Permit requirements are held to establish MEP and AKART for the permittees, full implementation of the County’s SWMP meets both these standards.

Requirements found in the modified 2013 Permit are a combination of requirements found in previous permits and new or expanded requirements. Some new requirements took effect when the 2013 Permit became effective on August 1, 2013, while others will phase in throughout the Permit term. King County will continue to implement existing programs for areas of the Permit that have not changed. For new or expanded requirements, King County will develop and implement programs to comply with the new Permit language in accordance with the timelines specified in the Permit.

Programs described in this SWMP Plan are applicable in all areas served by a MS4 that is owned or operated by King County.

### 2.1.1 Legal Authority – S5.C.1

- a. Each Permittee shall be able to demonstrate that they can operate pursuant to legal authority which authorizes or enables the Permittee to control discharges to and from MS4s owned or operated by the Permittee.
- b. This legal authority, which may be a combination of statute, ordinance, permit, contracts, orders, interagency agreements, or similar means, shall authorize or enable the Permittee, at a minimum, to:
  - i. Control through ordinance, order, or similar means, the contribution of pollutants to MS4s owned or operated by the Permittee from stormwater discharges associated with industrial activity, and control the quality of stormwater discharged from sites of industrial activity;
  - ii. Prohibit through ordinance, order, or similar means, illicit discharges to the MS4 owned or operated by the Permittee;
  - iii. Control through ordinance, order, or similar means, the discharge of spills and disposal of materials other than stormwater into the MS4s owned or operated by the Permittee;
  - iv. Control through interagency agreements, the contribution of pollutants from one portion of the MS4 to another portion of the MS4;
  - v. Require compliance with conditions in ordinances, permits, contracts, or orders; and,
  - vi. Within the limitations of state law, carry out all inspection, surveillance, and monitoring procedures necessary to determine compliance and non-compliance with permit conditions, including the prohibition on illicit discharges to the MS4 and compliance with local ordinances.

King County Code (KCC) Title 9.12 has been the code used for the County's water quality compliance program since 1992 and addresses S5.C.1.b.i through iii by prohibiting the discharge of contaminants into surface water, stormwater, and groundwater. The intent of this code is the: minimization or elimination of water quality degradation; preservation and enhancement of waters for recreation, fishing, and other beneficial uses; and preservation and enhancement of the aesthetic quality and biotic integrity of the water. The current code may be found at [http://www.kingcounty.gov/council/legislation/kc\\_code/12\\_Title\\_9.aspx](http://www.kingcounty.gov/council/legislation/kc_code/12_Title_9.aspx).

KCC Title 9.12.045 through 080 authorizes implementation and enforcement of Title 9.12. KCC Title 23 provides supplementary authority for the implementation and enforcement of code. Title 23 may be found at [http://www.kingcounty.gov/council/legislation/kc\\_code/32\\_Title\\_23.aspx](http://www.kingcounty.gov/council/legislation/kc_code/32_Title_23.aspx).

King County employees are authorized to carry out inspections, surveillance, and monitoring procedures necessary to determine compliance and non-compliance with permit conditions through KCC Title 9.12 and King County Board of Health code. These codes may be found at the following URLs:

[http://www.kingcounty.gov/council/legislation/kc\\_code/12\\_Title\\_9.aspx](http://www.kingcounty.gov/council/legislation/kc_code/12_Title_9.aspx)

<http://www.kingcounty.gov/healthservices/health/BOH/code.aspx>

## 2.1.2 MS4 Mapping and Documentation – S5.C.2

*The SWMP shall include an ongoing program for mapping and documenting the MS4.*

*Minimum performance measures:*

- a. Ongoing Mapping: Each Permittee shall maintain mapping data for the features listed below.*
  - i. Known MS4 outfalls and discharge points.*
  - ii. Receiving waters, other than ground water.*
  - iii. Stormwater treatment and flow control BMPs/facilities owned or operated by the Permittee.*
  - iv. Geographic areas served by the Permittee's MS4 that do not discharge stormwater to surface water.*
  - v. Tributary conveyances to all known outfalls and discharge points with a 24-inch nominal diameter or larger, or an equivalent cross-sectional area for non-pipe systems. For Counties, this requirement applies to urban/higher density rural sub-basins. For Cities, this requirement applies throughout the City. The following attributes shall be mapped:*
    - (1) Tributary conveyance type, material, and size where known*
    - (2) Associated drainage areas*
    - (3) Land uses*
  - vi. Connections between the MS4 owned or operated by the Permittee and other municipalities or other public entities.*
  - vii. All connections to the MS4 authorized or allowed by the Permittee after February 16, 2007.*
  - viii. Existing, known connections over 8 inches in nominal diameter to tributary conveyances mapped in accordance with S5.C.2.a.v. For Counties, this requirement applies to the area of the county within urban/higher density rural sub-basins mapped under the previous permit. For Cities, this requirement applies throughout the City.*

To comply with previous permits, the County initiated a program to map its MS4. Mapping applies to facilities, conveyance systems, outfalls and discharge points, and connections the County to other systems, including connections to other public systems and to private systems. Mapping includes properties owned and operated by King County, located in either the County or other municipalities. The County will continue current mapping efforts using in-field Geographic Positioning System (GPS) surveys, data aggregation from as-built plans, and desktop analyses.

King County has mapped and collected all known MS4 features that it owns, operates, or maintains, including outfalls, receiving waters, and structural stormwater treatment and flow control BMPs. The County's mapping data were originally collected and maintained by its various custodial agencies. In recent years, the County has

established a central mapping program and has compiled the mapping data collected by the custodial agencies. SWSS has created a central stormwater management system geo-database in King County's Geographic Information System (GIS). The County uses this database for identifying both areas in the County that require further mapping and stormwater system features that require attribute refinement. The County has migrated the majority of custodial data to the central system and uses field data collection and storage processes that produce a more unified and standardized system. This standardized geo-database meets permit requirements while creating a new, efficient central program that enables the County to create new tools to access the data. These tools include user interfaces that streamline map updates and allow County personnel to access stormwater data. Web access to a similar stormwater map interface will in the future make this information easier for the public to access.

The County also uses this geo-database to identify geographic areas that do not discharge to surface water. No catchments within unincorporated King County are allowed to discharge to sanitary sewer systems. As the stormwater systems that do not discharge to surface water continue to be identified, the tributary areas will be determined and mapped. This will not include systems that discharge to groundwater through Underground Injection Control structures. Those systems are mapped and regulated under Chapter 173-218 Washington Administrative Code (WAC).

Additional outfalls, discharge points, conveyance systems, and facilities comprising King County's MS4 are surveyed and added to the geo-database as these are identified. The County has enacted a program to capture additions to the system by private developers and public agencies after they receive final construction approval. As new facilities and conveyance systems are approved and installed, these will be included in the master drainage map. Receiving waters have already been mapped and are available on separate GIS layers.

King County has been coordinating efforts to map connection points with MS4s owned and operated by other municipalities. In 2012, King County received grant funding from Ecology to develop a standardized stormwater management infrastructure framework (Framework) that could be used throughout the Puget Sound region for mapping and asset management. During 2013 and 2014, King County developed a geo-database that accompanies the Framework hierarchy and terminology. The Framework enables permit holders to use a standardized lexicon for stormwater mapping efforts. Use of the Framework is voluntary, but it is a useful step toward an integrated system of mapping data sets region-wide. King County is currently seeking comments on this geo-database, as well as the Framework, so that it may be improved to better serve the needs of the entire region.

Tributary conveyances to all known outfalls and discharge points have been mapped within the urban/higher density rural sub-basins. A map of these basins appears in Appendix A. Ongoing mapping continues to improve spatial coverage and data review improves overall data quality. King County runs a program that identifies new connections to the MS4 through the building permit records process at DPER. The

permit review requires submittal of electronic copies of newly constructed drainage systems that will be turned over to King County post-construction. Private connections allowed under new permits are manually added to the County's MS4 mapping data set by SWSS personnel.

- b. New Mapping: Each Permittee shall complete the following mapping no later than December 31, 2017.*
- i. Counties shall map tributary conveyances, as described in S5.C.2.a.v., for any urban/higher density rural sub-basins not mapped under the previous permit.*
  - ii. Counties shall map existing, known connections greater than 8 inches in nominal diameter to tributary conveyances mapped in accordance with S5.C.2.b.i.*
  - iii. Each Permittee shall map existing, known connections equal to 8 inches in nominal diameter to tributary conveyances mapped in accordance with S.5.C.2.*
  - iv. Each Permittee shall map connections between stormwater treatment and flow control BMPs/facilities and tributary conveyances mapped in accordance with S5.C.2. The Permittee shall map all associated emergency overflows.*

King County has a program to map all tributary conveyances, as described in S5.C.2.a, for any urban/higher density rural sub-basins that includes mapping all connections greater than or equal to 8 inches in nominal diameter. As also described in S5.C.2.a, King County has mapped the stormwater treatment and flow control BMPs/facilities and tributary conveyances and is connecting these systems together as appropriate.

- c. To the extent consistent with national security laws and directives, each Permittee shall make available to Ecology, upon request, available maps depicting the information required in S5.C.2.a and b., above. The required format for mapping is electronic with fully described mapping standards. An example description is available on Ecology's website.*

The County is prepared to respond appropriately to any mapping requests from Ecology. Requests should be addressed to Douglas Navetski, Stormwater Services Environmental Programs Managing Supervisor, Water and Land Resources Division, 201 South Jackson Street, Suite 600, Seattle, WA 98104-3855, or by e-mail at [Doug.Navetski@kingcounty.gov](mailto:Doug.Navetski@kingcounty.gov).

- d. Upon request, and to the extent appropriate, Permittees shall provide mapping information to federally recognized Indian Tribes, municipalities, and other Permittees. This permit does not preclude Permittees from recovering reasonable costs associated with fulfilling mapping information requests by federally recognized Indian Tribes, municipalities, and other Permittees.*

The County is prepared to respond appropriately to any mapping requests of federally recognized Indian Tribes, municipalities, and other Permittees. Requests should be addressed to Douglas Navetski, Stormwater Services Environmental Programs Managing Supervisor, Water and Land Resources Division, 201 South Jackson Street, Suite 600, Seattle, WA 98104-3855, or by e-mail at [Doug.Navetski@kingcounty.gov](mailto:Doug.Navetski@kingcounty.gov). Recovery of reasonable fees associated with fulfilling mapping information request will be treated on a case by case basis.

### 2.1.3 Coordination – S5.C.3

*The SWMP shall include coordination mechanisms among departments within each jurisdiction to eliminate barriers to compliance with the terms of this permit.*

*The SWMP shall also include coordination mechanisms among entities covered under a municipal stormwater NPDES permit to encourage coordinated stormwater-related policies, programs and projects within a watershed.*

*Minimum performance measures:*

- a. Implement intra-governmental (internal) coordination agreement(s) or Executive Directive(s) to facilitate compliance with the terms of this permit. Permittees shall include a written description of internal coordination mechanisms in the Annual Report, due no later than March 31, 2015.*

An order, signed by County Executive Dow Constantine, establishes the mechanism by which the various entities of County government participate in permit compliance. The order that originally took effect November 20, 2007 was superseded by a new order on June 10, 2014, which is still in effect, and may be read at the following website: <http://www.kingcounty.gov/operations/policies/executive/utilitiesaeo/put8191aeo.aspx>.

As directed by Executive Order, King County designated a Stormwater Permit Coordinator for the County and a Municipal Permit Lead in each agency subject to the requirements of the Permit. The Coordinator and Leads meet regularly to coordinate compliance activities. The Leads act as liaisons between the Coordinator and their own agencies, ensuring that each agency understands the implications of the Permit requirements on their operations. The Coordinator and Leads collaborate on development of standardized approaches to permit compliance. Permit deliverables, such as the Annual Report and SWMP Plan, are prepared by the Coordinator with support from the Leads.

- b. Implement; and within 2 years following the addition of a new Secondary Permittee, establish and implement:
 
  - i. Coordination mechanisms clarifying roles and responsibilities for the control of pollutants between physically interconnected MS4s of the Permittee and any other Permittee covered by a municipal stormwater permit.*
  - ii. Coordinating stormwater management activities for shared waterbodies, among Permittees and Secondary Permittees, as necessary to avoid conflicting plans, policies, and regulations.**

*Permittees shall document their efforts to establish the required coordination mechanisms. Failure to effectively coordinate is not a permit violation provided other entities, whose actions the Permittee has no or limited control over, refuse to cooperate.*

King County is instrumental in convening, supporting, and participating in numerous regional forums that develop and implement collaborative stormwater management programs. The breadth of the stormwater permits has inspired the creation of many regional groups focused on different aspects of stormwater management. King County plays an important role in the following forums:

- Stormwater Outreach for Regional Municipalities (STORM) is a regional coordination organization comprised of Phase I and Phase II Municipal NPDES permit holders whose purpose is to coordinate public education and outreach efforts related to stormwater pollution prevention. Ecology has awarded STORM several grants for public education and outreach related to stormwater. Using that funding, STORM built and launched Puget Sound Starts Here ([www.pugetsoundstartshere.org](http://www.pugetsoundstartshere.org)) in 2009 and Don't Drip and Drive (<http://www.piercecountywa.org/index.aspx?NID=3339>) in 2012. STORM has an ongoing relationship with the Puget Sound Partnership (PSP) that focuses on coordinating shared outreach messages and complimentary outreach activities.
- Regional Operations And Maintenance Program (ROADMAP) is a regional coordination organization comprised of Phase I and Phase II municipal stormwater permit holders. Its purpose is to develop coordinated programs and tools to address operations and maintenance requirements. King County coordinates and facilitates ROADMAP meetings.
- The Regional Permit Coordinators Forum is a regional coordination organization comprised of Phase I and Phase II municipal stormwater permit holders whose purpose is to provide a forum to discuss permit- and stormwater-related issues and share information.
- The Phase I Permit Coordinators Group is a regional coordination organization comprised of Phase I municipal stormwater permit holders that have been meeting since before the issuance of the 1995 permit. The purpose of this group is to provide a forum to discuss permit- and stormwater-related issues concerning Phase I permit holders and to share current information.
- The Stormwater Managers Committee of the Washington State Chapter of the American Public Works Association (APWA) is a regional committee of stormwater professionals from both the public and private sector. This group has been an important partner in the region in addressing stormwater issues, developing local consensus on issues, and reporting out to regional agencies and governments. The APWA also provides a forum for the presentation of studies and new products.
- The Water Quality Partnership is a standing policy advisory committee on the State's water quality management functions. This committee is sponsored by Ecology and provides water quality professionals from both the public and private sector an opportunity to review information on Ecology programs presented by senior staff of Ecology. Subject matter includes budget, permits, regulations, state studies, and reports from other programs within Ecology. This group is often drawn upon to provide staffing for stakeholder groups.
- The Stormwater Work Group (SWG) was formed in 2008 to develop a coordinated stormwater monitoring program for the Puget Sound region. This

monitoring program is intended to provide the best scientific information needed to more effectively manage stormwater. The SWG convened at the request of Ecology and the PSP and is comprised of representatives from local, state, and federal governments, environmental and business organizations, tribes, and agriculture. The monitoring requirements in the 2013 Permit are based on recommendations from the SWG and differ substantially from monitoring requirements under previous permits.

- The Puget Sound Partnership was established by the state to highlight and focus recovery efforts for Puget Sound. King County contributes significant staff time and resources to the PSP by serving on multiple committees and groups within the PSP.
- The County also participates in the Salmon Recovery forums in Water Resource Inventory Areas (WRIAs) 7, 8 and 9, and 10. King County is the lead entity for WRIAs 8 and 9 and is the service provider to WRIA 8 and 9 staff as well as the Snoqualmie Forum (the King County portion of WRIA 7). In addition, King County is active in the collaborative planning and stormwater related improvements for the Miller, Walker, and Des Moines Creek basins.

The participation and relationships established within these groups form the basis for the timely coordination mechanisms and coordinated activities required by the Permit.

## 2.1.4 Public Involvement and Participation – S5.C.4

*Permittees shall provide ongoing opportunities for public involvement and participation in the Permittee's SWMP and implementation priorities.*

*Minimum performance measures:*

- a. Permittees shall create opportunities for the public to participate in the decision-making processes involving the development, implementation and update of the Permittee's SWMP.*

As part of the annual update process, King County invites public comment on the contents of the SWMP Plan. King County will advertise the comment period through its website ([www.kingcounty.gov/environment/wlr/sections-programs/stormwater-services-section/stormwater-program/public-review.aspx](http://www.kingcounty.gov/environment/wlr/sections-programs/stormwater-services-section/stormwater-program/public-review.aspx)) and email notifications sent to thousands of potentially interested parties through established distribution lists. All feedback received during the public comment period will be reviewed and considered prior to finalization of the SWMP Plan.

In addition to input received during the SWMP Plan public comment period, King County welcomes feedback year round. Comments may be emailed to [Stormwater@kingcounty.gov](mailto:Stormwater@kingcounty.gov) or mailed to Stormwater Management Team, King County Dept. of Natural Resources and Parks, 601 S. Jackson St., Suite 600, Seattle, WA 98104.

King County also engages the public in decision-making processes when it comes to siting, construction, and maintenance of County-initiated capital projects.

- b. Each Permittee shall post on their website their SWMP Plan, and the annual report required under S9.A no later than May 31 each year. All other submittals shall be available to the public upon request.*

No later than March 31<sup>st</sup> of each year beginning in 2015, King County will post its updated SWMP Plan online at [www.kingcounty.gov/environment/wlr/sections-programs/stormwater-services-section/stormwater-program.aspx](http://www.kingcounty.gov/environment/wlr/sections-programs/stormwater-services-section/stormwater-program.aspx). Other submittals related to the Municipal Permit are available upon request by sending an email to [Stormwater@kingcounty.gov](mailto:Stormwater@kingcounty.gov).

## 2.1.5 Controlling Runoff from New Development, Redevelopment, and Construction Sites – S5.C.5

*The SWMP shall include a program to prevent and control the impacts of runoff from new development, redevelopment, and construction activities. Refer to Appendix 10 for a list of approved manuals and ordinances. The program shall apply to private and public development, including roads.*

*Minimum performance measures:*

*a. Site and subdivision scale requirements:*

*i. The Minimum Requirements, thresholds, and definitions in Appendix 1, or Minimum Requirements, thresholds, and definitions determined by Ecology to be equivalent to Appendix 1, for new development, redevelopment, and construction sites shall be included in ordinances or other enforceable documents adopted by the local government. Adjustment and variance criteria equivalent to those in Appendix 1 shall be included. More stringent requirements may be used, and/or certain requirements may be tailored to local circumstances through the use of Ecology approved basin plans or other similar water quality and quantity planning efforts. Such local requirements and thresholds shall provide equal or similar protection of receiving waters and equal or similar levels of pollutant control as compared to Appendix 1.*

*ii. The local requirements shall include the following requirements, limitations, and criteria that, when used to implement the minimum requirements in Appendix 1, will protect water quality, reduce the discharge of pollutants to the MEP, and satisfy the State requirement under chapter 90.48 RCW to apply AKART prior to discharge:*

- (1) Site planning requirements*
- (2) BMP selection criteria*
- (3) BMP design criteria*
- (4) BMP infeasibility criteria*
- (5) LID competing needs criteria*
- (6) BMP limitations*

*Permittees shall document how the criteria and requirements will protect water quality, reduce the discharge of pollutants to the maximum extent practicable, and satisfy the state AKART requirements.*

*Permittees who choose to use the requirements, limitations, and criteria in the Stormwater Management Manual for Western Washington (SWMMWW), or an equivalent manual approved by Ecology, may cite this choice as their sole documentation to meet this requirement.*

*iii. No later than June 30, 2015, each Permittee shall adopt and make effective a local program that meets the requirements in S5.C.5.a.i through ii, above. The local program adopted to meet the requirements of S5.C.5.a.i through ii shall apply to all applications<sup>2</sup> submitted after June 30, 2015 and shall apply to applications submitted no later than June 30, 2015, which have not started construction<sup>3</sup> by June 30, 2020.*

*Ecology review and approval of the local manual and ordinances is required. Manuals and ordinances approved under this section are listed in Appendix 10, Part 2. Permittees shall provide detailed, written justification of any of the requirements which differ from those contained in Appendix 1 of this permit.*

*The Permittee shall submit draft enforceable requirements, technical standards and manual to Ecology no later than July 1, 2014. Ecology will review and provide written response to the Permittee. If Ecology takes longer than 90 days to provide a written response, the required deadline for adoption and effective date will be automatically extended by the number of calendar days that Ecology exceeds a 90 day period for written response.*

*In the case of circumstances beyond the Permittee's control, such as litigation or administrative appeals that may result in noncompliance with the requirements of this section, the Permittee shall promptly notify Ecology and submit a written request for an extension.*

<sup>2</sup> In this context, "application" means, at a minimum a complete: project description, site plan, and, if applicable, SEPA checklist. Permittees may establish additional elements of a complete application.

<sup>3</sup> In this context, "started construction" means, at a minimum the site work associated with, and directly related to the approved project has begun. For example: grading the project site to final grade or utility installation. Simply clearing the project site does not constitute the start of construction. Permittees may establish additional requirements related to the start of construction.

Under the 2007 Permit, the County chose to adopt an equivalent manual approved by Ecology. The relevant codes and rules are set forth in the following list:

KCC 9.04 Surface Water Runoff Policy

[http://www.kingcounty.gov/council/legislation/kc\\_code/12\\_Title\\_9.aspx](http://www.kingcounty.gov/council/legislation/kc_code/12_Title_9.aspx)

KCC 9.08 Water Quality

[http://www.kingcounty.gov/council/legislation/kc\\_code/12\\_Title\\_9.aspx](http://www.kingcounty.gov/council/legislation/kc_code/12_Title_9.aspx)

KCC 16.82 Clearing and grading

[http://www.kingcounty.gov/council/legislation/kc\\_code/19\\_Title\\_16.aspx](http://www.kingcounty.gov/council/legislation/kc_code/19_Title_16.aspx)

KCC 21A.24 Critical Areas

[http://www.kingcounty.gov/council/legislation/kc\\_code/24\\_30\\_Title\\_21A.aspx](http://www.kingcounty.gov/council/legislation/kc_code/24_30_Title_21A.aspx)

2009 King County SWDM

<http://www.kingcounty.gov/environment/waterandland/stormwater/documents/surface-water-design-manual.aspx>

B. 2009 King County SPPM:

<http://www.kingcounty.gov/environment/waterandland/stormwater/documents/pollution-prevention-manual.aspx>

To meet the requirements of the 2013 Permit, modifications have been made to the SWDM, SPPM and relevant documents. These draft enforceable requirements, technical standards and manuals are currently with Ecology for verification of functional equivalency to the 2012 and 2014 Stormwater Management Manuals for Western Washington.

*iv. The program shall include the legal authority to inspect private stormwater facilities and enforce maintenance standards for all new development and redevelopment approved under the provisions of this section.*

King County currently meets this performance requirement through its adopted surface water code, as listed below:

- KCC 9.04.120 Drainage facilities not accepted by King County for maintenance: a declaration of covenant granting King County authority to inspect private drainage facilities must be recorded at the time of development.
- KCC 9.04.140 Administration: authorizes the County to make inspections and take actions required to enforce the provisions of KCC 9.04 and the SWDM.
- KCC 9.04.180 Enforcement: authorizes the County to enforce the provisions of KCC 9.04 and the SWDM.
- KCC Title 23 Code Compliance: sets forth procedures for enforcing code compliance.

- v. *The program shall include a process of permits, site plan review, inspections, and enforcement capability to meet the following standards for both private and public projects, using qualified personnel:*
- (1) Review all stormwater site plans submitted to the Permittee for proposed development involving land disturbing activity that meet the thresholds in S5.C.5.a.i., above.*
  - (2) Inspect prior to clearing and construction, all permitted development sites that meet the thresholds in S5.C.5.a.i., and that have a high potential for sediment transport as determined through plan review based on definitions and requirements in Appendix 7. As an alternative to evaluating each site according to Appendix 7, Permittees may choose to inspect all construction sites that meet the minimum thresholds in S5.C.5.a.i.*
  - (3) Inspect all permitted development sites involving land disturbing activity that meet the thresholds in S5.C.5.a.i., above, during construction to verify proper installation and maintenance of required erosion and sediment controls. Enforce as necessary based on the inspection.*
  - (4) Inspect all permitted development sites that meet the thresholds in S5.C.5.a.i., upon completion of construction and prior to final approval or occupancy to ensure proper installation of permanent stormwater facilities. Verify that a maintenance plan is completed and responsibility for maintenance is assigned for stormwater treatment and flow control BMPs/facilities. Enforce as necessary based on the inspection.*
  - (5) Compliance with the inspection requirements in (2), (3) and (4) above shall be determined by the presence of an established inspection program designed to inspect all sites involving land disturbing activity that meet the thresholds in S5.C.5.a.i. Compliance during this permit term shall be determined by achieving at least 80% of scheduled inspections. The inspections may be combined with other inspections provided they are performed using qualified personnel.*
  - (6) The program shall include a procedure for keeping records of inspections and enforcement actions by staff, including inspection reports, warning letters, notices of violations, and other enforcement records. Records of maintenance inspections and maintenance activities shall be maintained.*
  - (7) The program shall include an enforcement strategy to respond to issues of non-compliance.*

King County has in place a process of permits, plan reviews, inspections, and enforcement to meet the above standards for both private and public projects. Except for right-of-way (ROW) Construction Permits and Special Use Permits, which are administered by the Real Estate Services Section of the DES, DPER is the permitting agency for unincorporated King County. DPER receives applications for development permits and reviews all required stormwater site plans for projects meeting the thresholds in S5.C.5.a.i. The review process prior to permit issuance includes assessing the sensitivity of a site for elements such as erosion hazard critical areas, proximity to steep slopes, and creeks or wetlands, as well as the temporary erosion and sediment control elements of the project.

Following issuance of a permit for large projects requiring permanent stormwater facilities, DPER's site inspection program is responsible for ensuring that applicants adhere to their approved development plans. A pre-clearing construction meeting is held on-site for each project, and erosion and sediment control measures are reviewed.

Two types of Certified Erosion and Sediment Control Lead (CESCL) inspections occur during construction: those conducted by an applicant-hired CESCL (project CESCL) and those conducted by DPER site inspectors who are CESCL certified.

The project CESCL must inspect the site regularly during construction for the required erosion and sediment controls outlined and reviewed in the permit application, and are documented in Accela Automation, DPER's permit tracking system. These inspections are required weekly during the wet season (October 1<sup>st</sup> to April 30<sup>th</sup>) and after all significant storm events. Bi-weekly or monthly inspections are required during the dry season, depending on the status of the project, with additional inspections following significant storm events. Sites over one acre in size are also required to obtain a NPDES Construction Stormwater Permit from Ecology and copies of the required Ecology reports are also included in the project records.

DPER site inspectors visit the site several times during construction and verify that erosion and sediment control measures are performing effectively. Violations observed and enforcement actions taken during construction are documented in Accela Automation.

Flow charts of some typical DPER permit processes are available in Appendix B to demonstrate how inspections are integrated into the process.

For small projects reviewed under the Small Project Manual (limited to single-family residences and agricultural projects), DPER building inspectors inspect the site for compliance with erosion and sediment control measures in conjunction with their other scheduled inspections, providing documentation in Accela Automation.

Maintenance covenants are required for stormwater facilities and BMPs on every project with privately maintained facilities. These covenants include or reference the approved facility plans and require the facility owner to maintain in accordance with adopted maintenance standards. They also provide access for the County to inspect and enforce maintenance of the facility. SWSS becomes the custodian of facilities that are accepted into the County system. Maintenance inspection activities and records are maintained by SWSS.

- vi. *The Permittee shall make available, as applicable, the “Notice of Intent for Construction Activity” and copies of the “Notice of Intent for Industrial Activity” to representatives of proposed new development and redevelopment. Permittees will continue to enforce local ordinances controlling runoff from sites that are covered by other stormwater permits issued by Ecology.*

Copies of “Notice of Intent for Construction Activity” and the “Notice of Intent for Industrial Activity” are available at DPER’s Permit Counter, located at 35030 SE Douglas St., Suite 210, Snoqualmie, WA 98065-9266.

- vii. *Each Permittee shall ensure that all staff whose primary job duties are implementing the program to Control Stormwater Runoff from New Development, Redevelopment, and Construction Sites, including permitting, plan review, construction site inspections, and enforcement, are trained to conduct these activities. As determined necessary by the Permittee, follow-up training shall be provided to address changes in procedures, techniques, or staffing. Permittees shall document and maintain records of the training provided and the staff trained.*

All DPER staff involved in permitting, plan review, construction site inspections, and construction site enforcement are trained in these activities. The annual training program includes quarterly updates for all staff and weekly or bi-weekly sessions specifically for review staff and inspection staff. Additional training is provided as needed for changes in regulations or procedures. DPER Human Resources maintains department training records.

*b. LID code-related requirements:*

- i. No later than June 30, 2015, or by an alternative date if established in accordance with S5.C.5.a.iii, Permittees shall review, revise, and make effective their local development-related codes, rules, standards, or other enforceable documents to incorporate and require LID Principles and LID BMPs.*

*The intent of the revisions shall be to make LID the preferred and commonly-used approach to site development. The revisions shall be designed to minimize impervious surfaces, native vegetation loss, and stormwater runoff in all types of development situations.*

*Permittees shall conduct a similar review and revision process, and consider the range of issues, outlined in the following document: Integrating LID into Local Codes: A Guidebook for Local Governments (PSP, 2012).*

- ii. Each Permittee shall submit a summary of the results of the review and revision process in S5.C.5.b.i with the Annual Report due on March 31, 2016. This summary shall include, at a minimum, a list of the participants (job title, brief job description, department represented), the codes, rules, standards, and other enforceable documents reviewed, and the revisions made to those documents which incorporate and require LID Principles and LID BMPs. The summary shall include existing requirements for LID Principles and LID BMPs in development-related codes. The summary of revisions shall be organized as follows:*

- (1) Measures to minimize impervious surfaces.*
- (2) Measures to minimize loss of native vegetation.*
- (3) Other measures to minimize stormwater runoff.*

During 2014, representatives of King County agencies involved in development or affected by development regulations reviewed the County’s development related regulations to assess whether updates were necessary to promote the use of LID BMPs. For the most part, the reviewers found that King County already has policies and programs in place to encourage and/or require LID practices for development/redevelopment projects.

- In 1998, King County started recommending the use of LID technologies in the SWDM and since the adoption of the 2005 SWDM; King County has required LID BMPs on projects subject to Core Requirement #3: Flow Control.
- The Green Building and Sustainable Development Ordinance, in effect since 2008, encourages green building practices in all King County building projects, including new construction, renovation, and remodeling.
- The King County Green Tools Program helps builders, residents, businesses, and governments create and sustain green buildings, and sustainability policies and programs.
- The King County zoning code also contains many provisions encouraging or requiring the use of LID.

Based on the review, minor revisions are being recommended to the landscaping portion of the zoning code. Additionally, new standards for LID projects in or near the ROW are being developed for the King County Road Standards. Proposed updates will be presented to the Metropolitan King County Council in time to ensure their adoption by the Permit deadline.

The review also found that the King County Comprehensive Plan (KCCP) contained sufficient language to promote LID, but that existing language could be improved with edits that reflect more current ways of speaking about LID. These edits will be proposed as part of the next scheduled major KCCP update in 2016.

c. *Watershed-scale stormwater planning requirements:*

*The objective of watershed-scale stormwater planning is to identify a stormwater management strategy or strategies that would result in hydrologic and water quality conditions that fully support “existing uses,” and “designated uses,” as those terms are defined in WAC 173-201A-020, throughout the stream system.*

i. *No later than October 31, 2013, each County Permittee listed below shall select one watershed from the following list in which to conduct watershed-scale stormwater planning:*

- *Clark County: Whipple, Salmon*
- *King County: Bear, May, Soos*
- *Pierce County: Clover*
- *Snohomish County: Swamp, North*

*A Permittee may propose an alternative watershed that meets all of the following criteria:*

- (1) *Has a drainage area of at least 10 square miles.*
- (2) *Is partially or wholly within the county Permittee’s existing MS4 service area with discharges to the stream.*
- (3) *Has a stream system that has been impacted by development but retains some anadromous fish resources.*
- (4) *Is targeted to accept significant population growth and associated development, and is partially, if not fully, within the urban growth area established under Chapter 36.70A RCW, or a potential future expansion of the urban growth area.*

*Each County Permittee<sup>3</sup> will notify Ecology in writing of the selected or proposed alternative watershed no later than October 31, 2013. Any proposed alternative watershed is subject to Ecology’s review and approval. The required deadlines for submission of a scope of work and a final plan will be automatically extended by the number of calendar days that Ecology exceeds a 60 day period for written response to the alternative watershed proposal.*

<sup>3</sup> Ecology approved a selected watershed for all four County Permittees. Clark County chose the Whipple Creek watershed which was one of the options listed in the permit. King County and Pierce County chose to do planning on subsets of watersheds listed in the permit that meet the four criteria identified for alternative watersheds. King County chose a portion of the Bear Creek watershed (excluding the Cottage Lake sub-watershed, Evans Creek, and the area downstream of the confluence with Evans Creek), and Pierce County chose the Spanaway Creek/Lake sub watershed of the Clover Creek watershed. Snohomish County proposed a subset of an alternative watershed, Little Bear Creek. Ecology originally approved the entire Little Bear Creek watershed, which meets the four qualifying criteria, but based on the 2014 ruling by the Pollution Control Hearings Board and comments received during the permit modification process, Ecology accepts the originally proposed subset of just that part of Little Bear Creek in Snohomish County.

King County has chosen to conduct watershed-scale stormwater planning on a portion of the Bear Creek watershed. This sub-area is defined as Bear Creek drainage areas above the confluence of Evans Creek tributary but excluding Cottage Lake and its

drainage basin. This planning area totals approximately 26 square miles which is split among five jurisdictions: King County (18.9 square miles); City of Redmond (2.4 square miles); City of Woodinville (1.1 square miles); Washington State Department of Transportation (0.003 square miles); and Snohomish County (3.7 square miles).

- ii. *Each County Permittee shall convene and lead a documented watershed-scale stormwater planning process as described in sections S5.C.5.c.ii through S5.C.5.c.vi. below.*  
*A City or County MS4 Permittee within a Phase I County selected basin must fully participate with the Stormwater planning process as described below. Permittees may choose to participate in a coordinated Scope of Work and schedule with other Permittees within the selected watershed Or conduct their scope of work independently.*
  
- iii. *No later than August 13, 2015, each Permittee within the basin selected by King County must submit to Ecology documentation of their proposed approach to coordinate their efforts with other Permittees within the watershed, including:*
  - (1) *A list of the municipal stormwater permittees with whom the Permittee will undertake watershed-scale planning under a common scope of work; and description of the coordination and dispute resolution procedures agreed to by all of the Permittees operating under the common scope of work; and*
  - (2) *A description of planned coordination and dispute resolution procedures for providing and receiving feedback from other cities, counties, and Permittees operating under different scopes of work within the same watershed, including procedures to:*
    - a) *Review, provide comment, and revise methods and assumptions to meet S5.C.5.c.iv (1) through (4) below;*
    - b) *Review, provide comment, and revise present- and future condition B-IBI scores, pollutant concentrations, temperature and hydrologic metrics;*
    - c) *Share the results of the modeling performed by the Permittee with all other governmental entities with areas of their jurisdiction Permittees in the selected watershed. Failure;*
    - d) *Adjust the Permittee’s proposed changes to effectively involve development-related codes, rules, standards, plans, and potential future structural stormwater control projects in response to feedback from other cities and counties Permittees so that the planning objectives, as described in S5.C.5.c above, are projected to be achieved throughout the watershed.*
  - (3) *It is not a permit violation provided if other entities, over whose actions the Permittee has no or limited or no control over, decline, refuse to participate in the coordination plan described in S5.C.5.c.iii.*
  
- iv. *No later than April 1, 2014No later than April 1, 2014 for Permittees in watersheds selected by Clark and Pierce counties, November 4, 2015, for Permittees in the watershed selected by King county, and March 31, 2015, for Permittees in the watershed selected by Snohomish county, the Permittee shall submit a scope of work and a schedule to Ecology for the complete watershed planning process. The scope of work and schedule are subject to Ecology’s review and approval. If Ecology takes longer than 90 days to provide a written response, the required deadline for submitting a final*

watershed-scale stormwater plan to Ecology will be automatically extended by the number of days Ecology exceeds 90 days, but no later than July 30, 2018.

The scope of work and schedule must apply to the geographic extent of the jurisdictions of the Permittees listed under S5.C.5.c.iii.(1) above and at a minimum, describe:

- (1) An assessment of existing hydrologic, biologic, and water quality conditions within the selected watershed, and an assessment of the current status of the aquatic community. This assessment may be based on existing data where such data are available. Where such data are not available, or are not sufficient, the scope of work and schedule shall include the collection of such data.

The existing conditions assessment shall, at a minimum, include the following:

- a) Water quality conditions as established through sampling during base flows and storm flows for, at a minimum, the following chemical parameters: dissolved copper, dissolved zinc, temperature, and fecal coliform. Permittees shall identify or collect data from locations upgradient and downgradient of stream sections influenced by MS4 discharges.
  - b) Continuous flow monitoring of the stream to provide the data necessary to calibrate a continuous runoff model to the selected watershed. Permittees shall identify or collect flow monitoring data from locations upgradient and downgradient of stream sections influenced by MS4 discharges.
  - c) Macroinvertebrate data for the purpose of estimating current Benthic Index of Biotic Integrity (B-IBI) scores and comparing them with the scores predicted by the existing values of the hydrologic metrics in S5.C.5.c.iv.(4). The status of the aquatic community, including the presence and distribution of salmonid uses, shall be documented using data from existing sources.
  - d) The status of the aquatic community, including the presence and distribution of salmonid uses, shall be documented using data from existing sources.
- (2) Efforts to compile and/or generate maps of the selected watershed to identify the existing distribution and totals of general soil types, vegetative land cover, impervious land covers, MS4s and non-regulated public stormwater systems (if applicable). Maps must be sufficient to allow construction of a rainfall/runoff model representation of the watershed. Maps must also identify areas within the watershed appropriate for special attention in regard to hydrologic and water quality impacts. For example: headwater wetlands and critical aquifer recharge areas.
- (3) How the Permittee will use the existing conditions assessment in S5.C.5.c.iv.(1) and the maps described in S5.C.5.c.iv.(2), to calibrate a continuous runoff model to reflect the existing hydrologic, water quality, and biologic (as represented by B-IBI score) conditions.
- (4) How the Permittee will use the model calibrated in S5.C.5.c.iv.(3), to estimate hydrologic changes from the historic condition; and predict the future hydrologic, biologic, and water quality conditions at full build-out under existing or proposed comprehensive land use management plan(s) for the watershed. Future biologic

conditions shall be estimated by using a correlation of hydrologic metrics with B-IBI scores for Puget Sound Lowland Streams<sup>4</sup>, or other similar correlation if approved by Ecology. Future water quality conditions shall be described through estimation of concentrations of, at a minimum, dissolved copper, dissolved zinc, temperature, and fecal coliform.

(5) How, if the estimation in S5.C.5.c.ii.(4) predicts water quality standards will not be met, the Permittee will use the calibrated watershed model to evaluate stormwater management strategies to meet the standards. The same hydrologic metrics and correlated B-IBI scores, and water quality parameters used in S5.C.5.c.ii.(4) shall be used to evaluate the effectiveness of strategies.

a) Stormwater management strategies to be evaluated for all jurisdictions in the watershed must include:

- Changes to development-related codes, rules, standards, and plans.
- Potential future structural stormwater control projects consistent with S5.C.6.a.

b) Stormwater management strategies evaluated may also include:

- Basin-specific stormwater control requirements for new development and redevelopment as allowed by Section 7 of Appendix 1.
- Strategies to encourage redevelopment and infill, and an assessment of options for efficient, effective runoff controls for redevelopment projects, such as regional facilities, in lieu of individual site requirements.

(6) How the permittee will create an implementation plan and schedule that includes: potential future actions to implement the identified stormwater management strategies, responsible parties, estimated costs, and potential funding mechanisms.

(7) A public review and comment process, at a minimum, focused on the draft watershed-scale stormwater plan. The public review must allow for public comment from all governmental entities with jurisdiction within the watershed.

v. The watershed-scale stormwater planning process, as documented in the scope of work and schedule, may include an evaluation of strategies to preserve or improve other factors that influence maintenance of the existing and designated uses of the stream. Examples include: channel restoration, in-stream culvert replacement, quality of the riparian zone, gravel disturbance regime, and presence and distribution of large woody debris.

vi. Each County Permittee shall submit a final watershed-scale stormwater plan to Ecology no later than September 6, 2017, for the Clark, Peirce, and Snohomish county efforts, and no later than April 4, 2018, for King county effort. The plan must summarize results of the modeling and planning process, describe results of the evaluation of strategies under S5.C.5.c.v.(5), and include the implementation plan and schedule developed pursuant to S5.C.5.c.v.(6).

King County has begun the planning process for Bear Creek watershed and will coordinate with the other jurisdictions and stakeholders to allow for their input during the life of the project. The watershed-scale plan will include assessments of the landscape based on historic, existing, and projected future conditions. Stormwater management

strategies will be evaluated, using these landscape baselines, for stream health based on stream hydrology, water quality, and aquatic biota. The evaluations will be derived from previous studies' outcomes, interpretations of existing and collection of new data, and development of computer models projecting historic and future conditions. These analyses will characterize the effectiveness of stormwater management strategies supportive of beneficial uses. An implementation plan designed using these results will include stormwater management strategies, estimated costs, and identified potential funding mechanisms.

King County submitted a draft scope of work and schedule for the Bear Creek watershed-scale stormwater planning exercise to Ecology in accordance with S5.C.5.c.ii. This document is provided as Appendix C.

The public and stakeholders will have an opportunity to review and comment on the watershed plan prior to final submission to Ecology no later than October 1, 2016.

## 2.1.6 Structural Stormwater Controls – S5.C.6

*Each Permittee shall implement a structural stormwater controls program to prevent or reduce impacts to waters of the state caused by discharges from the MS4. Impacts that shall be addressed include disturbances to watershed hydrology and stormwater pollutant discharges. The program shall consider impacts caused by stormwater discharges from areas of existing development, including runoff from highways, streets and roads owned or operated by the Permittee, and areas of new development, where impacts are anticipated as development occurs.*

*Minimum performance measures:*

- a. *The program shall address impacts that are not adequately controlled by the other required actions of the SWMP.*
  - i. *The program shall consider the following projects:*
    - (1) *New flow control facilities, including LID BMPs.*
    - (2) *New treatment (or treatment and flow control) facilities, including LID BMPs.*
    - (3) *Retrofit of existing treatment and/or flow control facilities.*
    - (4) *Property acquisition for water quality and/or flow control benefits (not associated with future facilities).*
    - (5) *Maintenance with capital construction costs  $\geq$  \$25,000.*
  - ii. *Permittees should consider other projects to address impacts, such as:*
    - (1) *Riparian habitat acquisition.*
    - (2) *Restoration of forest cover and/or riparian buffers.*
    - (3) *Floodplain reconnection projects on water bodies that are not flow control exempt per Appendix 1.*
    - (4) *Capital projects related to the MS4 which implement an Ecology-approved basin or watershed plan.*
    - (5) *Other actions to address stormwater runoff into or from the MS4 not otherwise required in S5.C.*
  - iii. *Permittees may not use in-stream culvert replacement or channel restoration projects for compliance with this requirement.*
  - iv. *The Structural Stormwater Control program may also include a program designed to implement small scale projects that are not planned in advance.*

King County implements a multi-agency Structural Stormwater Control Program that focuses on the types of projects listed in S5.C.6.a.i.

- b. *Each Permittee's SWMP Plan shall describe the Structural Stormwater Control Program including the following:*
  - i. *The Structural Stormwater Control Program goals.*
  - ii. *The planning process used to develop the Structural Stormwater Control Program, including:*
    - (1) *The geographic scale of the planning process.*
    - (2) *Issues and regulations addressed.*
    - (3) *Steps in the planning process.*
    - (4) *Types of characterization information considered.*
    - (5) *Amount budgeted for implementation.*
    - (6) *The public involvement process.*
    - (7) *A description of the prioritization process, procedures and criteria used to select the Structural Stormwater Control projects.*

See Appendix D for a program description that addresses each of the components listed above.

- c. *No later than March 31, 2014 each Permittee shall provide a list of planned, individual projects scheduled for implementation during this permit term. This list must include at a minimum the information and formatting specified in Appendix 11. Each Permittee's annual report shall provide an update of this list.*

Appendix D of King County's SWMP Plan contains King County's list of planned, individual projects scheduled for implementation during the current Permit term. The list is formatted consistent with Appendix 11 of the Permit. This list will be updated annually and updates will be submitted to Ecology as part of the County's Annual Report. In addition to the list, Appendix D contains explanatory text that summarizes the assumptions/factors that influenced the list.

## 2.1.7 Source Control Program for Existing Development – S5.C.7

- a. The Permittee shall implement a program to reduce pollutants in runoff from areas that discharge to MS4s owned or operated by the Permittee. The program shall include the following:*
- i. Application of operational and structural source control BMPs, and, if necessary, treatment BMPs/facilities to pollution generating sources associated with existing land uses and activities.*
  - ii. Inspections of pollutant generating sources at commercial and industrial properties to enforce implementation of required BMPs to control pollution discharging into MS4s owned or operated by the Permittee.*
  - iii. Application and enforcement of local ordinances at sites, identified pursuant to S5.C.7.b.ii, including sites with discharges authorized by a separate NPDES permit. Permittees that are in compliance with the terms of this permit will not be held liable by Ecology for water quality standard violations or receiving water impacts caused by industries and other Permittees covered, or which should be covered under an NPDES permit issued by Ecology.*
  - iv. Practices to reduce polluted runoff from the application of pesticides, herbicides, and fertilizer discharging into MS4s owned or operated by the Permittee.*

King County has had a stormwater source control program since 1995. Referred to as the Business Inspection Program, it identifies multifamily, commercial, and industrial sites that are potentially pollutant generating. On identified sites, it inspects both operational BMPs and onsite drainage facilities to ensure that the appropriate operational and structural source control BMPs are employed and properly maintained. If BMPs are lacking and/or inadequate, written notice is provided along with technical assistance, which details what must be done to achieve compliance. Failure to comply may trigger progressive enforcement. The authority to issue written notices and enforce their contents is found in KCC Chapter 9.12.

The County's SPPM, various King County websites, and King County public outreach efforts all encourage the elimination or reduction of pesticides, herbicides and fertilizers.

*b. Minimum performance measures:*

- i. Permittees shall enforce ordinance(s), or other enforceable documents, requiring the application of source control BMPs for pollutant generating sources associated with existing land uses and activities.*

*Permittees shall update and make effective the ordinance(s), or other enforceable documents, as necessary to meet the requirements of this section no later than February 2, 2018.*

*The requirements of this subsection are met by using the source control BMPs in Volume IV of the Stormwater Management Manual for Western Washington, or a functionally equivalent manual approved by Ecology.*

*Operational source control BMPs shall be required for all pollutant generating sources. Structural source control BMPs shall be required for pollutant generating sources if operational source control BMPs do not prevent illicit discharges or violations of surface water, ground water, or sediment management standards because of inadequate stormwater controls. Implementation of source control requirements may be done through education and technical assistance programs, provided that formal enforcement authority is available to the Permittee and is used as determined necessary by the Permittee, in accordance with S5.C.7.b.iv, below.*

King County uses KCC Chapter 9, KCC Chapter 23, and the SPPM to enforce the application of source control BMPs. The County adopted the SPPM in 1995, with updates occurring in 2005, 2009, and 2014 (currently under review by Ecology). The SPPM identifies potentially polluting activities at residential, commercial and industrial sites and the operational, structural, and/or treatment BMPs required to prevent pollutants from entering surface water, stormwater, and/or groundwater.

- ii. Permittees shall implement a program to identify commercial and industrial properties which have the potential to generate pollutants to the Permittee's MS4. The program shall include a source control inventory which lists businesses and/or properties identified based on the presence of activities that are pollutant generating (refer to Appendix 8). The source control inventory shall also include other pollutant generating sources, such as mobile or home-based businesses and multifamily properties, which are identified based on complaint response. The Permittee shall update the inventory at least once every 5 years.*

SWSS developed an inventory of the land uses/businesses using the categories found in Appendix 8 of the Permit. King County has implemented an approach to develop the inventory list to meet this permit requirement. This approach is detailed in Appendix E.

King County uses a combination of historical inspection and complaint records, information available through the King County Department of Assessments, map review, and field inspections to determine potentially pollutant generating sites within unincorporated King County. Properties within the unincorporated area that are owned

by the County and have the potential to produce pollutants are included in this inventory. The inventory is updated annually. The inventory for 2015 contains approximately 2,200 sites.

- iii. Permittees shall implement an inspection program for sites identified pursuant to S5.C.7.b.ii above.*
- (1) All identified sites with a business address shall be provided, by mail, telephone, electronic communications, or in person, information about activities that may generate pollutants and the source control requirements applicable to those activities. This information may be provided all at one time or spread out over the permit term to allow for some tailoring and distribution of the information during site inspections.*

Direct mailing and telephoning is not an effective means of communication because there are no County records that identify the operator of a given site, their contact information, or the type of business occupying the site. Instead, information about activities that may generate pollutants and the source control requirements applicable to those activities is provided in person during a site inspection, or if no one is present, by mail. This provides the benefit of customizing the information provided to the needs of each particular site. This information is also available on King County's website (<http://www.kingcounty.gov/environment/waterandland/stormwater/documents/pollution-prevention-manual.aspx>).

- (2) The Permittee shall annually complete the number of inspections equal to 20% of the businesses and/or properties listed in their source control inventory to assure BMP effectiveness and compliance with source control requirements. The Permittee may count follow up compliance inspections at the same site toward the 20% inspection rate. The Permittee may select which sites to inspect each year and is not required to inspect 100% of sites over a 5-year period. Sites may be prioritized for inspection based on their land use category, potential for pollution generation, proximity to receiving waters, or to address an identified pollution problem within a specific geographic area or sub-basin.*

Approximately 435 stormwater pollution prevention inspections are planned for 2015, roughly 20 percent of our estimated inventory.

Annexations may occur within King County over the next few years. Combined with the addition of new businesses and the closing of other businesses, there is some uncertainty about the number of businesses in unincorporated King County from year to year. The number of sites under this program will be in constant flux, requiring annual analysis to determine the 20 percent inspection goal.

- (3) *The Permittee shall annually complete the number of inspections equal to 20% of the businesses and/or properties listed in their source control inventory to assure BMP effectiveness and compliance with source control requirements. The Permittee may count follow up compliance inspections at the same site toward the 20% inspection rate. The Permittee may select which sites to inspect each year and is not required to inspect 100% of sites over a 5-year period. Sites may be prioritized for inspection based on their land use category, potential for pollution generation, proximity to receiving waters, or to address an identified pollution problem within a specific geographic area or sub-basin.*

SWSS investigates all water quality complaints from citizens and County agencies as well as those referred to SWSS by outside agencies. Complaints can be made through online submissions

(<http://www.kingcounty.gov/environment/waterandland/stormwater/problem-investigation-line.aspx>) or by calling the published complaint line (206-477-4811). Calls are first screened to determine if the problem is within unincorporated King County and stormwater quality-related (if not, the complainant is given the appropriate contact, whenever possible) and then assigned to an investigator for immediate follow-up. As part of the complaint resolution, technical assistance is provided on any required source control BMPs and a follow up letter and information is sent, if necessary. Additional inspections or enforcement may follow. Depending on the nature of the problem, additional agencies may be brought in to assist in achieving compliance. All legitimate (relevant) complaints are inspected.

- iv. *Each Permittee shall implement a progressive enforcement policy to require sites to come into compliance with stormwater requirements within a reasonable time period as specified below:*
- (1) *If the Permittee determines, through inspections or otherwise, that a site has failed to adequately implement required BMPs, the Permittee shall take appropriate follow-up action(s) which may include: phone calls, reminder letters or follow-up inspections.*
  - (2) *When a Permittee determines that a facility has failed to adequately implement BMPs after a follow-up inspection, the Permittee shall take enforcement action as established through authority in its municipal code and ordinances, or through the judicial system.*
  - (3) *Each Permittee shall maintain records, including documentation of each site visit, inspection reports, warning letters, notices of violations, and other enforcement records, demonstrating an effort to bring facilities into compliance. Each Permittee shall also maintain records of sites that are not inspected because the property owner denies entry.*
  - (4) *A Permittee may refer non-emergency violations of local ordinances to Ecology, provided, the Permittee also makes a documented effort of progressive enforcement. At a minimum, a Permittee's enforcement effort shall include documentation of inspections and warning letters or notices of violation.*

SWSS has had an enforcement program in place since 1995. The procedures for progressive enforcement include issuing a detailed Corrective Action Letter that specifies exactly what needs to be done in order to come into compliance and sets a deadline. King County personnel work with property owners, tenants, and business operators to assist them achieve compliance. Their assistance may include additional site visits, bringing in outside resources such as vouchers for hazardous waste disposal and storage, facilitating conversations between property owners and tenants, providing written materials, posting BMP signs, or phone calls and emails. When compliance is achieved, a Compliance Letter is sent.

King County makes every effort to bring facilities into compliance using site audits and technical assistance but in the very rare instance where compliance is not achieved, notices of violation are issued and additional enforcement action taken. Additionally, commercial sites are denied a discount on their SWM fee if source control BMPs are not implemented and if the onsite stormwater system is not properly maintained.

Records of inspection results, site photos, correspondence, etc., are all kept in paper and electronic formats. There are activity logs for each site, which document inspections dates, contacts, illicit connections, referrals to other agencies, etc.

- iv. Permittees shall train staff who are responsible for implementing the source control program to conduct these activities. The ongoing training program shall cover the legal authority for source control, source control BMPs and their proper application, inspection protocols, lessons learned, typical cases, and enforcement procedures. Follow-up training shall be provided as needed to address changes in procedures, techniques, requirements, or staff. Permittees shall document and maintain records of the training provided and the staff trained.*

King County has an ongoing training program for employees conducting source control work. SWSS, the primary agency implementing the source control program, trains staff and updates staff training, as needed. King County continues to update its list of staff requiring training under this section and addresses their training as they are identified whether current employees or new hires.

### **2.1.8 Illicit Connections and Illicit Discharges Detection and Elimination – S5.C.8**

*The SWMP shall include an ongoing program designed to prevent, detect, characterize, trace, and eliminate illicit connections and illicit discharges into the MS4.*

*Minimum performance measures:*

- a. *The program shall include procedures for reporting and correcting or removing illicit connections, spills and other illicit discharges when they are suspected or identified. The program shall also include procedures for addressing pollutants entering the MS4 from an interconnected, adjoining MS4.*

*Illicit connections and illicit discharges shall be identified through field screening, inspections, complaints/reports, construction inspections, maintenance inspections, source control inspections, and/or monitoring information, as appropriate.*

King County achieves compliance with S5.C.8 through implementation of the programs described in this section.

b. No later than February 2, 2018, each Permittee shall evaluate and, if necessary, update existing ordinances or other regulatory mechanisms to effectively prohibit non-stormwater, illicit discharges, including spills, into the Permittee's MS4.

i. Allowable Discharges: The ordinance or other regulatory mechanism does not need to prohibit the following categories of non-stormwater discharges:

- (1) Diverted stream flows
- (2) Rising ground waters
- (3) Uncontaminated ground water infiltration (as defined at 40 CFR 35.2005(b)(20))
- (4) Uncontaminated pumped ground water
- (5) Foundation drains
- (6) Air conditioning condensation
- (7) Irrigation water from agricultural sources that is commingled with urban stormwater
- (8) Springs
- (9) Uncontaminated water from crawl space pumps
- (10) Footing drains
- (11) Flows from riparian habitats and wetlands
- (12) Non-stormwater discharges authorized by another NPDES or State Waste Discharge permit
- (13) Discharges from emergency firefighting activities in accordance with S2 Authorized Discharges

ii. Conditionally Allowable Discharges: The ordinance or other regulatory mechanism, may allow the following categories of non-stormwater discharges only if the stated conditions are met:

- (1) Discharges from potable water sources including, but not limited to, water line flushing, hyperchlorinated water line flushing, fire hydrant system flushing, and pipeline hydrostatic test water. Planned discharges shall be dechlorinated to a total residual chlorine concentration of 0.1 ppm or less, pH-adjusted if necessary, and volumetrically and velocity controlled to prevent resuspension of sediments in the MS4.
- (2) Discharges from lawn watering and other irrigation runoff. These discharges shall be minimized through, at a minimum, public education activities (see S5.C.10.) and water conservation efforts.

- (3) *Dechlorinated swimming pool, spa, and hot tub discharges. The discharges shall be dechlorinated to a total residual chlorine 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 MS4. Discharges shall be thermally controlled to prevent an increase in temperature of the receiving water. Swimming pool cleaning wastewater and filter backwash shall not be discharged to the MS4.*
  - (4) *Street and sidewalk wash water, water used to control dust, and routine external building washdown that does not use detergents. The Permittee shall reduce these discharges through, at a minimum, public education activities (see S5.C.10.) and/or water conservation efforts. To avoid washing pollutants into the MS4, Permittees shall minimize the amount of street wash and dust control water used.*
  - (5) *Other non-stormwater discharges shall be in compliance with the requirements of a pollution prevention plan reviewed by the Permittee which addresses control of such discharges.*
- iii. The Permittee shall further address any category of discharges in S5.C.8.b.i or ii above if the discharges are identified as significant sources of pollutants to waters of the State.*

KCC 9.12 authorizes the allowable discharges and conditionally allowable discharges but requires the application of BMPs specified in the SPPM at any property discharging hyperchlorinated line flushing, swimming pool water, and street and sidewalk wash water. PHSKC regulates public swimming pools and complies with adopted stormwater standards outlined in the SPPM for dechlorination, pH adjustment, and velocity controls. Discharges from irrigation or lawn watering are addressed as part of the Natural Yard Care education program. Other non-stormwater discharges are also prohibited or conditionally allowed by KCC 9.12.

c. *Each Permittee shall implement an ongoing program designed to detect and identify non-stormwater discharges and illicit connections into the Permittee's MS4. The program shall include the following components:*

i. *Procedures for conducting investigations of the Permittees MS4, including field screening and methods for identifying potential sources. These procedures may also include source control inspections.*

*The permittee shall implement a field screening methodology appropriate to the characteristics of the MS4 and water quality concerns. Screening for illicit connections may be conducted using the Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments, Center for Watershed Protection, October 2004; or another method of comparable or improved effectiveness. The Permittee shall document the field screening methodology in the relevant Annual Report.*

- (1) *Each Permittee shall implement an ongoing field screening program of, on average, 12% of the Permittee's known conveyance systems each calendar year.*
- (2) *Each City shall field screen all the conveyance systems within the Permittee's incorporated area at least once between February 2007 and July 31, 2018.*

King County addresses this MS4 field screening requirement through the implementation of a two-pronged, dual-agency Conveyance Screening Program (CSP). The CSP is comprised of the following programs designed to identify illicit connections and illicit discharges:

#### SWSS ODDS:

SWSS is conducting an Outfall, Discharge Point and Ditch Screening (ODDS) Program in years 2013-2018 to check known stormwater outfalls and other system connections for dry weather flow. On average, 12 percent of known, mapped stormwater outfalls and discharge points per year will be inspected for evidence of illicit connections/illicit discharges (IC/ID) under the ODDS program. Outfalls/discharge points identified for further investigation will trigger follow-up *in situ* field screening to further assess the likelihood of IC/ID. If warranted, laboratory analytical samples will be collected; sampling and analysis depends on both the follow-up screening results and on nearby observed land uses (e.g., potential pollution sources, including failing septic systems, illicit sewer connections, commercial/industrial sites or other possible pollutant sources).

In addition to observing and screening/sampling outfalls and discharge points, the ODDS Program will include some County stormwater conveyance ditches that do not have mapped connections to other stormwater features in the County's MS4. The idea being that isolated ditch segments may not connect to other portions of the County's MS4 and, therefore, would not necessarily be captured by screening focused on outfalls, discharge points, and catch basins. These segments will be assigned to field inspectors for IC/ID screening according to the same protocols developed for outfalls and discharge points.

## Roads CBIMP:

Roads will conduct its annual Catch Basin Inspection and Maintenance Program (CBIMP). Roads plans to inspect 100 percent of known, mapped catch basin circuits on an annual basis, including inspecting a minimum of 25 percent of the catch basins within each circuit. It is anticipated that a minimum of 12 percent of known, mapped catch basins County-wide will be inspected annually during CBIMP tasks. While implementing CBIMP, Roads staff will actively look for evidence of IC/ID and will record whether or not such evidence is observed. Catch basins identified for further investigation will trigger follow-up *in situ* field screening to further assess the likelihood of IC/ID.

County personnel involved in both the ODDS Program and the CBIMP have received and, as needed, will continue to receive comparable training to ensure consistency across the program elements.

(3) *Each County shall field screen all the conveyance systems within the Permittee's urban/higher density rural sub-basins at least once between February 2007 and July 31, 2018.*

Citizen reports are received by the County in a number of ways.

- Roads 24-hour hotline (206-296-8100 or 800-KCROADS)
- SWSS Water Quality hotline (206-477-4811)
- Illegal Dumping Hotline (206-296-SITE or 866-431-7483)
- DPER inspector contact information posted on signage at each development/redevelopment project site in unincorporated King County that is permitted by DPER
- Illegal Dumping web form (<http://your.kingcounty.gov/solidwaste/cleanup/report-dumping.asp>)
- Online report form for drainage and water quality problems (<http://www.kingcounty.gov/environment/waterandland/stormwater/problem-investigation-line/report-form.aspx>)

- ii. A publicly-listed and publicized hotline or other telephone number for public reporting of spills and other illicit discharges.*
- iii. An ongoing training program for all municipal field staff, who, as part of their normal job responsibilities might come into contact with or otherwise observe an illicit discharge or illicit connection to the MS4, on the identification of an illicit discharge and/or connection, and on the proper procedures for reporting and responding to the illicit discharge and/or connection. Follow-up training shall be provided as needed to address changes in procedures, techniques, requirements, or staffing. Permittees shall document and maintain records of the training provided and staff trained.*

Each King County agency with field personnel subject to this requirement is responsible for training those employees to identify an illicit discharge or connection and to properly report and respond. The County continues to review its programs and identify additional personnel that need this training. The County also continues to assess the need for follow-up training as regulations, procedures, or personnel change.

Training records are currently managed by each agency. However, an effort is underway to explore options for standardizing and/or centralizing tracking of permit-related training.

- d. Each Permittee shall implement an ongoing program designed to address illicit discharges, including spills and illicit connections, into the Permittee's MS4. The program shall include:*
- i. Procedures for characterizing the nature of, and potential public or environmental threat posed by, any illicit discharges found by or reported to the Permittee. Procedures shall address the evaluation of whether the discharge must be immediately contained and steps to be taken for containment of the discharge.*
  - ii. Procedures for tracing the source of an illicit discharge; including visual inspections, and when necessary, opening manholes, using mobile cameras, collecting and analyzing water samples, and/or other detailed inspection procedures.*
  - iii. Procedures for eliminating the discharge; including notification of appropriate authorities; notification of the property owner; technical assistance; follow-up inspections; and escalating enforcement and legal actions if the discharge is not eliminated.*
  - iv. Compliance with the provisions in S5.C.8.d.i, ii, and iii, above, shall be achieved by meeting the following timelines:*
    - (1) Immediately respond to all illicit discharges, including spills, which are determined to constitute a threat to human health, welfare, or the environment consistent with General Condition G3.*
    - (2) Investigate (or refer to the appropriate agency with authority to act) within 7 days, on average, any complaints, reports or monitoring information that indicates a potential illicit discharge.*
    - (3) Initiate an investigation within 21 days of any report or discovery of a suspected illicit connection to determine the source of the connection, the nature and volume of discharge through the connection, and the party responsible for the connection.*
    - (4) Upon confirmation of an illicit connection, use enforcement authority in a documented effort to eliminate the illicit connection within 6 months. All known illicit connections to the MS4 shall be eliminated.*

The County implements a number of programs to address illicit connections and illicit discharges. These programs were created to address issues that occur on King County properties and throughout the ROW in unincorporated King County.

Generally, illicit connections are handled through SWSS, whereas, dumped waste and spilled materials are managed through the County agency responsible for the property upon which the incident occurred.

Any illicit connection identified by a County employee or through an external party (for example, citizen complaint) is reported to SWSS and an investigation is initiated. A Water Quality Engineer traces the source to identify the responsible party and uses progressive enforcement to achieve the elimination of the illicit connection. Records related to the investigation are managed in the SWSS Complaint Tracker database.

When the County receives a report of an illicit discharge, including spilled or dumped materials, outside of its jurisdiction, the appropriate municipality is notified of the situation.

Reports of illicit discharges within King County's jurisdiction are routed to the appropriate agency for response. Some agencies, such as Roads and Transit, have in-house capacity and training to conduct spill response activities for most commonly-occurring spills (for example, vehicular fluids or paint). Other agencies, such as FMD, do not possess in-house spill response capacity and rely on spill response contractors or request support from other County agencies. The County maintains multiple on-call spill response contracts to facilitate timely responses. The County has also built a collaborative working relationship with Ecology's Northwest Regional Office Spills Program and the County occasionally calls upon this group for spill response assistance.

For protection of human health, property and the environment, spill incidents exceeding the County's capacity for in-house response are always referred to a spill response contractor.

- e. Permittees shall train staff who are responsible for identification, investigation, termination, cleanup, and reporting of illicit discharges, including spills and illicit connections, to conduct these activities. Follow-up training shall be provided as needed to address changes in procedures, techniques, requirements, or staff. Permittees shall document and maintain records of the training provided and the staff trained.*

King County trains field personnel on the identification, investigation, termination, cleanup and reporting of illicit discharges and illicit connections, as appropriate for their job duties. As the agencies most likely to have their personnel involved in spill response, Roads and Transit have developed customized hazardous waste and spill response training for personnel responding to illegally dumped or spilled materials. This training has been adapted for use by other County agencies and other local jurisdictions. The training also includes guidelines for when an outside spill response contractor should be called in.

Additionally, tenants and operators at the King County International Airport (KCIA) receive annual spill response training, including procedures for notification, response and reporting, as well as preventative measures.

The County continues to review its programs and identify additional personnel that need this training. It also continues to assess the need for follow-up training as regulations, procedures, or personnel change. Training records are currently managed by each agency. However, an effort is underway to explore options for standardizing and/or centralizing tracking of permit-related training.

- f. Each Permittee shall either participate in a regional emergency response program, or develop and implement procedures to investigate and respond to spills and improper disposal into the MS4 owned or operated by the Permittee.*

The County maintains several spill response programs, as described above, under S5.C.8.d.

- g. Recordkeeping: Each Permittee shall track and maintain records of the activities conducted to meet the requirements of this section.*

King County has six programs that track and maintain records of the IDDE program, including documentation of inspections, complaint/spill response, and other enforcement records. These programs are outlined below:

- 1) SWSS maintains tracking programs, including a complaint tracker and water quality compliance tracker which track response, findings, and enforcement actions.
- 2) Roads tracks and maintains electronic and paper copies of IDDE records through Roads' Service Request system in Cityworks and various internal tracking forms maintained by the Emergency Response Unit. These include forms and records specific to the spill response program, catch basin inspection records, and drainage evaluation records.
- 3) The Illegal Dumping Hotline's application operated by SWD records and tracks reported citizen complaints.
- 4) Transit's Environmental Compliance Office maintains electronic spreadsheets detailing fleet-related spills, conveyance system IDDE inspections, and employee training.
- 5) PHSKC maintains a proprietary database designed for public health agencies that maintains records of inspections, complaints, responses and enforcement actions.
- 6) Airport tracks and maintains spill and IC/ID records for incidents occurring at the KCIA.

Staff time and resources spent implementing these programs are tracked electronically through the County's Oracle Finance System.

As appropriate, spills and other select incidents are reported to Ecology's Environmental Report Tracking System database.

## 2.1.9 Operations and Maintenance Program – S5.C.9

*Each Permittee shall implement a program to regulate maintenance activities and to conduct maintenance activities by the Permittee to prevent or reduce stormwater impacts.*

*Minimum performance measures:*

- a. Maintenance Standards. Each Permittee shall implement maintenance standards that are as protective, or more protective, of facility function than those specified in Chapter 4 of Volume V of the Stormwater Management Manual for Western Washington. For facilities which do not have maintenance standards, the Permittee shall develop a maintenance standard. No later than June 30, 2015 each Permittee shall update their maintenance standards as necessary to meet the requirements in this section.*
  - i. The purpose of the maintenance standard is to determine if maintenance is required. The maintenance standard is not a measure of the facility's required condition at all times between inspections. Exceeding the maintenance standard between inspections and/or maintenance is not a permit violation.*
  - ii. Unless there are circumstances beyond the Permittee's control, when an inspection identifies an exceedance of the maintenance standard, maintenance shall be performed:
 
    - (1) Within 1 year for typical maintenance of facilities, except catch basins.*
    - (2) Within 6 months for catch basins.*
    - (3) Within 2 years for maintenance that requires capital construction of less than \$25,000.**

*Circumstances beyond the Permittee's control include denial or delay of access by property owners, denial or delay of necessary permit approvals, and unexpected reallocations of maintenance staff to perform emergency work. For each exceedance of the required timeframe, the Permittee shall document the circumstances and how they were beyond the Permittee's control.*

The 2009 SWDM sets forth the maintenance standards for stormwater facilities in King County per KCC 9.04. King County published its first SWDM in 1990 and revisions and updates have occurred since then as new facility features are developed or standards change. To comply with S5.C.9.a, King County is currently in the process of updating the SWDM and related codes to include maintenance standards for LID BMPs. A draft version has been submitted to Ecology and the County anticipates submitting the revised SWDM and enabling codes to the Metropolitan King County Council in the 2<sup>nd</sup> quarter of 2015.

Maintenance of stormwater treatment and flow control BMPs/facilities (facilities) is typically initiated by one of the following inspections:

- Inspections of facilities regulated by King County are conducted according to the description under S5.C.9.b, below.

- Inspections of facilities owned or operated by King County are conducted according to the description under S5.C.9.c, below.
- Privately owned facilities are inspected every other year by King County. In alternating years, King County requires facility owners to conduct self-certified inspections.

When any of the inspections referenced above identify an exceedance of a function-critical maintenance standard requiring typical maintenance, that maintenance is conducted within the one year timeline allowed by the Permit. If the maintenance is more substantial and requires capital funds, up to \$25,000, the facility is added to the Facility Remediation Program and the maintenance is completed within the two-year timeline allowed by the Permit.

Catch basins owned or operated by King County are inspected according to the description under S5.C.9.d, below. When a catch basin inspection identifies an exceedance of a function-critical maintenance standard, (i.e. one that has the potential to negatively impact water quality), that maintenance is conducted within the six-month timeline allowed by the Permit.

As development and redevelopment projects add increasing numbers of LID BMPs to the County's stormwater infrastructure inventory, King County will be responsible for inspecting and/or maintaining more and more non-traditional stormwater controls. LID is relatively new and knowledge of effective maintenance practices is limited, which means that the County will have to adaptively manage its approach to inspection and maintenance of LID BMPs. This will likely require development of new maintenance techniques, potentially with new types of equipment, and training of County personnel involved in this body of work.

- b. Maintenance of stormwater facilities regulated by the Permittee:*
- i. Each Permittee shall evaluate and, if necessary, update existing ordinances or other enforceable documents requiring maintenance of all permanent stormwater treatment and flow control BMPs/facilities regulated by the Permittee (including catch basins that are part of the facilities regulated by the Permittee), in accordance with maintenance standards established under S5.C.9.a., above.*
  - ii. Each Permittee shall implement an on-going inspection program to annually inspect all stormwater treatment and flow control BMPs/facilities regulated by the Permittee to enforce compliance with adopted maintenance standards as needed based on inspection. The inspection program is limited to facilities to which the Permittee can legally gain access, provided the Permittee shall seek access to all stormwater treatment and flow control BMPs/facilities regulated by the permittee.*

*Permittees may reduce the inspection frequency based on maintenance records of double the length of time of the proposed inspection frequency. In the absence of maintenance records, the Permittee may substitute written statements to document a specific less frequent inspection schedule. Written statements shall be based on actual inspection and maintenance experience and shall be certified in accordance with G19 Certification and Signature.*
  - iii. Each Permittee shall manage maintenance activities to inspect all permanent stormwater treatment and flow control BMPs/facilities, and catch basins, in new residential developments every six months, until 90% of the lots are constructed (or when construction has stopped and the site is fully stabilized), to identify maintenance needs and enforce compliance with maintenance standards as needed.*
  - iv. Compliance with the inspection requirements of S5.C.9.b.ii and iii, above, shall be determined by the presence of an established inspection program designed to inspect all sites, and achieving inspection of 80% of all sites.*
  - v. The Permittee shall require cleaning of catch basins regulated by the Permittee if they are found to be out of compliance with established maintenance standards in the course of inspections conducted at facilities under the requirements of S5.C.7. Source Control Program for Existing Development, and S5.C.8. Illicit Connections and Illicit Discharges Detection and Elimination, or if the catch basins are part of the stormwater facilities inspected under the requirements of S5.C.9. Operation and Maintenance Program.*

The following KCCs authorize King County personnel to inspect and require maintenance of stormwater facilities.

- KCC 9.04.050 states that “Maintenance of all drainage facilities in compliance with King County maintenance standards is the responsibility of the applicant or property owner as described in the Surface Water Design Manual, except those facilities for which King County assumes maintenance and operation as described in K.C.C 9.04.115 and 9.04.120 and the Surface Water Design Manual”.
- KCC 9.12.050 gives designated employees authorization to “make such inspections and take such actions as may be required to enforce the provisions” of KCC 9.12.

Additionally, developers are required to record easements and covenants providing the County with right-of-entry and inspection of private drainage and stormwater control systems.

Private facilities regulated by King County are inspected per Permit requirements. Inspections are generally conducted between July and October.

In any given year, half of the private commercial facility inventory is visited by an inspector to confirm full compliance based on the maintenance standards in the SWDM. If any deficiencies are discovered, a Maintenance Correction Letter is sent, giving the property owner sufficient time to correct the problem before the end of the year. The property owner notifies SWSS when the work has been completed. Extensions may be granted if circumstances warrant and permit timelines can accommodate the extension. Progressive enforcement may be used when maintenance is not completed within the timelines specified by the County.

The other half of the private commercial facilities regulated by King County complete a self-certified inspection in which they confirm full functionality of all facilities on their property.

For those properties with a history of consistent compliance, the inspection frequency may be reduced contingent upon maintenance records.

All compliance activities are tracked using a proprietary Maintenance Information System (MIS). At the end of the year, SWSS provides a SWM Fee discount report to the WLRD SWM Fee billing supervisor who then gives the report to the King County Department of Assessments. Property owners in compliance receive a SWM fee discount.

- c. *Maintenance of stormwater facilities owned or operated by the Permittee*
- i. *Each Permittee shall implement a program to annually inspect all permanent stormwater treatment and flow control BMPs/facilities owned or operated by the Permittee. Permittees shall implement appropriate maintenance action(s) in accordance with adopted maintenance standards.*
- Permittees may reduce the inspection frequency based on maintenance records of double the length of time of the proposed inspection frequency. In the absence of maintenance records, the Permittee may substitute written statements to document a specific less frequent inspection schedule. Written statements shall be based on actual inspection and maintenance experience and shall be certified in accordance with G19 Certification and Signature.*
- ii. *Each Permittee shall implement a program to conduct spot checks of potentially damaged permanent stormwater treatment and flow control BMPs/facilities after major storm events (24 hour storm event with a 10 year or greater recurrence interval). If spot checks indicate widespread damage/maintenance needs, inspect all stormwater treatment and flow control BMPs/facilities that may be affected. Conduct repairs or take appropriate maintenance action in accordance with maintenance standards established under S5.C.9.a., above, based on the results of the inspections.*
- iii. *Compliance with the inspection requirements of S5.C.9.c.i., and ii. above, shall be determined by the presence of an established inspection program designed to inspect all sites and achieving at least 95% of required inspections.*

King County owned or operated facilities fall into two general categories: residential facilities serving subdivisions and facilities associated with County properties.

SWSS is responsible for inspecting and maintaining approximately 1,000 residential facilities throughout unincorporated King County and for cities with which the County contracts. As with private facilities, residential facilities with consistent compliance may be eligible for a phased inspection schedule.

SWSS uses Roads crews and vendor contractors to perform facility maintenance. Field inspection data for these facilities are entered into MIS by the inspector, resulting in a printed work authorization to be forwarded to crews.

Inspectors also identify noxious weed removal needs and capital repairs or corrections, if needed. Additionally, citizen complaints may warrant a site inspection to identify corrections. The maximum frequency between inspections is three years, but problem sites may require annual inspections and maintenance.

Inspection and maintenance of facilities associated with King County properties are the responsibility of the custodial agency. Custodial facility inspections are conducted by SWSS or the custodial agency and range in frequency from several times per year to once annually.

Spot inspections conducted after large rain events focus on the areas of greatest intensity based on rain gage data.

Inspection programs are designed to inspect 100 percent of the facilities owned or operated by King County and at least 95 percent of required inspections are completed annually.

*d. Maintenance of Catch Basins Owned or Operated by the Permittee*

- i. Each Permittee shall annually inspect catch basins and inlets owned or operated by the Permittee, or implement alternatives below.*

*Alternatives to the standard approach of inspecting catch basins annually: Permittees may apply the following alternatives to all or portions of their system.*

- (1) The annual catch basin inspection schedule may be changed as appropriate to meet the maintenance standards based on maintenance records of double the length of time of the proposed inspection frequency. In the absence of maintenance records for catch basins, the Permittee may substitute written statements to document a specific, less frequent inspection schedule. Written statements shall be based on actual inspection and maintenance experience and shall be certified in accordance with G19 Certification and Signature.*
  - (2) Annual inspections may be conducted on a “circuit basis” whereby 25% of catch basins and inlets within each circuit are inspected to identify maintenance needs. Include an inspection of the catch basin immediately upstream of any system outfall or discharge point, if applicable. Clean all catch basins within a given circuit for which the inspection indicates cleaning is needed to comply with maintenance standards established under S5.C.9.a., above.*
  - (3) The Permittee may clean all pipes, ditches, catch basins, and inlets within a circuit once during the permit term. Circuits selected for this alternative must drain to a single point.*
- ii. The disposal of decant water shall be in accordance with the requirements in Appendix 6 – Street Waste Disposal.*
- iii. Compliance with the inspection requirements of S5.C.9.d.i. above, shall be determined by the presence of an established inspection program designed to inspect all catch basins and achieving at least 95% of required inspections.*

Each custodial agency within King County is responsible for the inspection and maintenance of their respective properties and associated stormwater assets.

Of the custodial agencies, Roads carries the largest catch basin inventory. Roads implements a circuit-based inspection and maintenance program for catch basins and inlets in the road ROW. The circuit approach focuses on the inspection of a subset of catch basins in each drainage circuit to determine where to focus maintenance activities. The program includes annual staff training, completion of inspection checklists, data input into a geospatial database, data quality assurance/quality control,

work order generation, requisite maintenance, and documentation of maintenance activities.

Most other custodial agencies have a small number of catch basins (typically less than 500) in their facility inventory. These agencies inspect 100 percent of their catch basin inventory at least annually, with a very limited number on a modified schedule, and conduct maintenance on those that fail to meet the maintenance standards found in the SWDM. These agencies include SWD, WTD, Transit, Parks, and FMD.

Roads operates a regional stormwater decant station in Renton and temporary decant stations at three other maintenance facilities run by Roads. These decant stations are a key element in the disposal of stormwater removed from the County's MS4 during catch basin cleaning activities. All stormwater accepted at Roads' decant stations is disposed of through the sanitary sewer.

The KCIA has implemented an alternative approach due to several airport operation challenges, which is in accordance with S5.C.9.d.i. (3). KCIA has also enhanced daily mechanical sweeping of paved areas. KCIA has established catch basin cleaning activity areas into east, west and central areas of the airport. KCIA cleans all pipes, ditches, catch basins, and inlets in each established circuit once during the permit term. The alternative cleaning schedule repeats every three years. Each established circuit drains to a single point. Results of annual stormwater facility inspections, annual IC/IDDE inspections and daily pavement sweeping show that this frequency is optimal. Catch basins are also cleaned on as needed basis in accordance with the Airport's Spill Response Policy and the occurrence of construction activities. Cleaning of catch basins and sweeping are also required for tenants as well. KCIA performs these activities in compliance with its Industrial Stormwater General Permit (ISGP) requirements and accordance with its ISGP Stormwater Pollution Prevention Plan.

KCIA also conducts these activities in compliance with its ISGP requirements and in accordance with its Stormwater Pollution Prevention Plan (SWPPP). Requirements include monthly facility inspections, quarterly stormwater discharge monitoring and reporting, corrective actions, training, and annual reporting.

All maintenance needs identified through inspections are addressed within the timelines established in S5.C.9.a.ii.

- e. Each Permittee shall implement practices, policies, and procedures to reduce stormwater impacts associated with runoff from all lands owned or maintained by the Permittee, and road maintenance activities under the functional control of the Permittee. Lands owned or maintained by the Permittee include, but are not limited to: parking lots, streets, roads, highways, buildings, parks, open space, road ROW, maintenance yards, and stormwater treatment and flow control BMPs/facilities.*

*The following activities shall be addressed:*

- i. Pipe cleaning*
- ii. Cleaning of culverts that convey stormwater in ditch systems*
- iii. Ditch maintenance*
- iv. Street cleaning*
- v. Road repair and resurfacing, including pavement grinding*
- vi. Snow and ice control*
- vii. Utility installation*
- viii. Maintaining roadside areas, including vegetation management*
- ix. Dust control*
- x. Pavement striping maintenance*
- xi. Application of fertilizers, pesticides, and herbicides according to the instructions for their use, including reducing nutrients and pesticides using alternatives that minimize environmental impacts*
- xii. Sediment and erosion control*
- xiii. Landscape maintenance and vegetation disposal*
- xiv. Trash and pet waste management*
- xv. Building exterior cleaning and maintenance*

The County has several programs that establish practices to reduce stormwater impacts associated with runoff from parking lots, streets, roads, and highways owned, maintained or operated by the County. Custodial agencies are responsible for developing an inventory of their properties, and developing and implementing an inspection and maintenance program. The inspection programs for most custodial agencies are based on a tiered program using metrics such as the presence of structures, potential pollution generating activities, public access, property size, and proximity of water bodies to prioritize the risk of pollution impacts for each site. These inspections range from single to multiyear frequencies depending on the level of risk.

In 2009, SWSS produced a draft document that consolidated the operations and maintenance BMPs from numerous King County program documents. These BMPs are designed to reduce stormwater impacts associated with operations and maintenance activities referred to in S5.C.9.e. Called the SIMPLA (Site Management Plan), this document includes sections of the following:

- C. the Regional Road Maintenance Endangered Species Act (ESA) Program Guidelines,
- D. the draft King County Department of Transportation Performance Standards,
- E. the SWDM,
- F. the SPPM, and
- G. the King County Integrated Pest Management Program guidelines.

The SIMPLA has been issued to the County's custodial agencies to be used as the minimum standard for operations and maintenance of properties owned or maintained by King County. In 2012, an updated, revised, and reformatted version of the SIMPLA was completed and distributed not only within King County but amongst other Phase I and Phase II municipalities in the region for their use/reference. In addition, a dedicated SIMPLA website was developed to allow for easy navigation and access to the document and its contents

(<http://www.kingcounty.gov/environment/waterandland/stormwater/documents/site-management-plan.aspx>).

Several agencies have internal manuals and programs that are as, or more, protective of stormwater quality than the baseline requirements found in the SIMPLA and may be used by those agencies as equivalent programs. Additionally, King County properties under NPDES industrial stormwater permits have SWPPPs. These SWPPPs will be used instead of the SIMPLA.

- f. Implement an ongoing training program for employees of the Permittee who have primary construction, operations or maintenance job functions that may impact stormwater quality. The training program shall address the importance of protecting water quality, operation and maintenance standards, inspection procedures, selecting appropriate BMPs, ways to perform their job activities to prevent or minimize impacts to water quality, and procedures for reporting water quality concerns. Follow-up training shall be provided as needed to address changes in procedures, techniques, requirements, or staffing. Permittees shall document and maintain records of the training provided and the staff trained.*

King County offers a number of training programs within various agencies for personnel in positions that have construction or operations and maintenance job functions that could impact stormwater quality.

King County Roads has conducted annual in-house training of all field staff and appropriate support staff since 2002. The training is tailored specifically for Roads operations and maintenance staff and addresses stormwater pollution prevention, spill response, and aquifer protection, among other subjects. In addition, Roads field crews participate in the Regional Road Maintenance ESA Program training series (Track 1, 2 &

3). This training focuses on BMP practices and uses, maintenance guidelines, design criteria, and habitat requirements.

FMD has established a training program that focuses on general stormwater awareness, IC/IDDE and basic spill response for all the trades and janitorial staff. Trades that perform operations and maintenance work on building exteriors and grounds also receive training on the use of the SIMPLA.

Select positions across several agencies require CESCL training. This training is available in-house (Ecology-approved) or through qualified vendors.

SWSS conducts an ongoing review of County programs to identify activities and positions whose operations and maintenance activities could impact stormwater quality. Training records are currently managed by each agency. However, an effort is underway to explore options for standardizing and/or centralizing tracking of permit-related training.

*g. Implement a SWPPP for all heavy equipment maintenance or storage yards, and material storage facilities owned or operated by the Permittee in areas subject to this permit that are not required to have coverage under the General NPDES Permit for Stormwater Discharges Associated with Industrial Activities or another NPDES permit that authorizes stormwater discharges associated with the activity. A schedule for implementation of structural BMPs shall be included in the SWPPP. Generic SWPPPs that can be applied at multiple sites may be used to comply with this requirement. The SWPPP shall include periodic visual observation of discharges from the facility to evaluate the effectiveness of BMPs.*

Under the previous permits, King County reviewed an inventory of all known County-owned properties subject to this permit condition. Properties that had existing SWPPPs continued to implement them. New SWPPPs were developed and implemented for properties that did not already have SWPPPs. All SWPPP-covered properties continue to implement appropriate BMPs under the Permit.

As King County acquires or becomes aware of additional properties subject to this Permit condition, new SWPPPs will be developed and implemented.

*h. Maintain records of inspections and maintenance or repair activities conducted by the Permittee.*

Stormwater-related inspection and maintenance programs exist in several King County agencies, each with their own record-keeping systems. All agencies conducting inspections or maintenance activities germane to the Permit track those actions and maintain those records for a period of no less than five years.

## 2.1.10 Education and Outreach Program – S5.C.10

*The SWMP shall include an education and outreach program designed to reduce or eliminate behaviors and practices that cause or contribute to adverse stormwater impacts and encourage the public to participate in stewardship activities. The education program may be developed and implemented locally or regionally.*

*Minimum performance measures:*

- a. Each Permittee shall implement or participate in an education and outreach program that uses a variety of methods to target the audiences and topics listed below. The outreach program shall be designed to educate each target audience about the stormwater problem and provide specific actions they can follow to minimize the problem.*
  - i. To build general awareness, Permittees shall target the following audiences and subject areas:*
    - (1) General Public (including school age children), and businesses (including home-based and mobile business):*
      - General impacts of stormwater on surface waters.*
      - Impacts from impervious surfaces.*
      - Impacts of illicit discharges and how to report them.*
      - LID principles and LID BMPs.*
      - Opportunities to become involved in stewardship activities.*
    - (2) Engineers, contractors, developers, and land use planners:*
      - Technical standards for stormwater site and erosion control plans.*
      - LID principles and LID BMPs.*
      - Stormwater treatment and flow control BMPs/facilities.*
  - ii. To effect behavior change, Permittees shall target the following audiences and BMPs:*
    - (1) General public (which may include school age children) and businesses (including home-based and mobile businesses):*
      - Use and storage of automotive chemicals, hazardous cleaning supplies, carwash soaps, and other hazardous materials.*
      - Equipment maintenance.*
      - Prevention of illicit discharges.*

- (2) *Residents, landscapers and property managers/owners:*
- *Yard care techniques protective of water quality.*
  - *Use and storage of pesticides and fertilizers and other household chemicals.*
  - *Carpet cleaning and auto repair and maintenance.*
  - *Vehicle, equipment, and home/building maintenance.*
  - *Pet waste management and disposal.*
  - *LID principles and LID BMPs.*
  - *Stormwater facility maintenance.*
  - *Dumpster and trash compactor maintenance.*
- b. *Each permittee shall create stewardship opportunities and/or partner with existing organizations to encourage residents to participate in activities such as stream teams, storm drain marking, volunteer monitoring, riparian plantings and education activities.*
- c. *Each Permittee shall measure the understanding and adoption of the targeted behaviors for at least one targeted audience in at least one subject area. No later than February 2, 2016, Permittees shall use the resulting measurements to direct education and outreach resources most effectively as well as to evaluate changes in adoption of the targeted behaviors. Permittees may meet this requirement individually or as a member of a regional group.*

The County offers diverse regional education and outreach programs that have been effective in changing environmental norms over the past ten years. The County has led the region in the use of social marketing strategies for education and outreach.

Many of King County's education and outreach programs are targeted to one or more of the audiences specified in the permit. Many of the specified topics are addressed through programs in several agencies, e.g. through partnerships with Local Hazardous Waste Management, regional salmon recovery (WRIA based) groups and the King Conservation District (KCD). Some of these programs are primarily focused on stormwater related topics, but include other critical factors, such as, stewardship, soil conservation, wastewater, or habitat restoration or protection. Other programs alter stormwater impacts through behavior changes (yard care, pet waste, car washing, LID practices, vehicle leaks, etc.). Because of the diversity of King County's programs, 2015 programs are listed in a matrix in Appendix F. Future programs will respond to changes in the service area, financial resources, and evaluation of the programs' effectiveness.

In those programs most directly related to stormwater, the strategy is not to design projects as conventional education to convey information and awareness, but as behavior change programs to motivate target audiences to implement specific BMPs. The ten areas of emphasis and delivery mechanisms as well as the related tools are found in Appendix F.

As a direct response to the 2007 permit, King County facilitated the formation of a regional outreach consortium: STORM, which focuses on meeting permit requirements. With the public education and outreach requirements virtually identical in both the Phase I and Phase II permits, municipalities quickly saw the advantage of combining their resources to create a strategy and campaign for outreach that would transcend jurisdictional boundaries. King County serves on STORM's Steering, Campaign, and Measurement committees. STORM coordinates its efforts with the Salmon Conservation Plan implementation occurring at the WRIA level and with the PSP.

King County, on behalf of STORM, received grant funding from Ecology for 2012-2013 to create and implement a regional outreach and messaging campaign and further STORM's outreach. The Don't Drip & Drive campaign continued into 2014 to draw attention to the regional water quality problem from vehicle leaks and to publicize practices and services to help citizens check for and repair polluting vehicle leaks. In late 2013, Pierce County received a \$300,000 grant from Ecology as part of STORM to implement the second phase of Don't Drip and Drive. The steering and advisory committees planned and delivered new and expanded elements in 2014.

A Centennial grant for 2015 to continue the program has been submitted and other funding will be investigated. Project evaluation will be completed and a project report will be released in 2015. King County personnel continue to support Phase II of this grant, now being led by Pierce County. The County is participating on the Steering and Advisory committees for the grant. These committees are focusing on five key areas:

1. Marketing Strategy
2. Outreach Tools
3. Media Campaign
4. Implement Targeted Outreach Programs
5. Project Evaluation

In addition, the Business Inspection Program implemented by SWSS provides technical assistance and information about relevant BMPs required in the SPPM to owners or managers.

The Airport provides annual training to the Airport's tenants on spill response and the requirements of their stormwater permits. Additionally, tenants are kept abreast of environmental updates through the Airport's *Inhabit* newsletter.

The matrix in Appendix F details all educational programs targeting the general public and select business audiences and their topic relevance.

## 2.2 Compliance with Total Maximum Daily Load Requirements – S7

*The following requirements apply if an applicable TMDL is approved for stormwater discharges from MS4s owned or operated by the Permittee. Applicable TMDLs are TMDLs which have been approved by EPA on or before the issuance date of this Permit, or prior to the date that Ecology issues coverage under this permit, whichever is later.*

- A. *For applicable TMDLs listed in Appendix 2, affected Permittees shall comply with the specific requirements identified in Appendix 2. Each Permittee shall keep records of all actions required by this Permit that are relevant to applicable TMDLs within their jurisdiction. The status of the TMDL implementation shall be included as part of the annual report submitted to Ecology. Each annual report shall include a summary of relevant SWMP and Appendix 2 activities conducted in the TMDL area to address the applicable TMDL parameter(s).*

*[Excerpt from Appendix 2 of the Permit]*

### *Bear-Evans Watershed*

#### *Actions Required*

- *Install and maintain animal waste education and/or collection stations at municipal parks and other Permittee owned and operated lands reasonably expected to have substantial domestic animal (dog and horse) use and the potential for pollution of stormwater.*
- *Designate areas discharging via the MS4 to the TMDL area as high priority areas for illicit discharge detection and elimination. Complete IDDE field screening for bacteria sources in 50 percent of MS4 subbasins, including rural MS4 subbasins, by February 2, 2017 and implement the schedules and activities identified in S5.C.8 of the Phase I permit for response to any illicit discharges found.*

King County is conducting the following efforts to comply with current TMDL requirements.

#### Animal Waste Education and/or Collection Stations at Municipal Parks:

Parks personnel post and maintain signage at most King County parks or regional trails informing park patrons that pet waste must be collected and removed. Parks with high dog use are equipped with plastic bag dispensers for this purpose and small, lined, receptacles are available for use by park patrons. Parks employees empty these containers (remove the plastic bag, seal, and then place into a dumpster) regularly.

The Back Country Horseman's Association has set up a program at Taylor Mountain Forest and other high equestrian use facilities to "Leave - No Trace" at the parking area. The horse owners are to pick up their waste in the parking lot and haul it back to their ranch. Kathryn Taylor Equestrian Park was specifically constructed to not have a manure receptacle on site. The park users are to clean up after their horses. Signs directing horse riders to do this are posted at Kathryn

Taylor Equestrian Park. King County Parks is looking into similar signage to post at other parking areas frequented by horse owners.

Parks does not pick up horse manure on trails within its parks. Typically equestrian use is limited to Natural Areas (these are typically open spaces, forest, pasture area, river corridors) and some Regional Trails mainly in rural areas. These sites usually have a small impervious footprint compared to the amount of natural land coverage. Horse trails are usually soft or gravel surfaces. Horse owners typically do not use asphalt trails.

King County does not plan to address animal waste from the multitude of deer, elk, bears, and other animals living within Parks' 26,000 acres.

#### IDDE Field Screening for Bacteria Sources:

Field maps for each of the Bear and Evans creek basins are being created, incorporating known stormwater outfalls, Department of Ecology-identified fecal coliform water quality exceedances in stream segments, and fecal coliform data from existing water quality test stations in King County and City of Redmond. Field reconnaissance is planned for early 2015 to select appropriate screening and sampling points in the MS4. Additionally, work is being done to make sure SWSS complies with the permit requirement to screen "50% of the MS4 subbasins" for bacteria sources.

SWSS's plan for the Bear-Evans Creek Basin is to focus resources as logically and effectively as possible, to find and eliminate sources of high bacterial levels entering the creeks via the County's MS4. Lessons learned from the ongoing Puyallup-White FC TMDL will be applied in planning and implementing bacteria source screening. Techniques not applied in that FC TMDL will also be considered, as Bear-Evans comprises a larger geographic area.

[Excerpt from Appendix 2 of the Permit]

#### *Cottage Lake*

#### *Action required*

- *King County shall apply phosphorous control treatment to new and redevelopment projects, as applicable, throughout the Cottage Lake watershed, including all tributaries to Cottage Lake. King County's Department of Development and Environmental Services (DDES) shall not rely on the quarter mile/15 percent distance downstream clause in King County's SWDM.*

Cottage Lake and areas draining to it are part of a Sensitive Lake Treatment Area. These areas are designated by King County in the watersheds of lakes that have a

combination of water quality characteristics and watershed development potential that makes them particularly prone to eutrophication induced by development. New and redevelopment projects in these Sensitive Areas trigger a Core 8 (water quality) requirement and must provide a water quality facility for target surfaces defined on page 1-71 of the 2009 SWDM from the Sensitive Lake Treatment Menu with a goal of 50 percent annual average total phosphorus removal, assuming typical concentrations in urban runoff. Some projects in the basin, even if they need a permit, could be exempt from Core 8 if certain PGIS/PGPS thresholds are not met (see Exemption from Core 8 on page 1-65).

[Excerpt from Appendix 2 of the Permit]

*Issaquah Creek Basin Water Cleanup Plan for Fecal Coliform Bacteria*

*Actions required*

- *Designate areas discharging via the MS4 to the TMDL area as high priority areas for illicit discharge detection and elimination. Complete IDDE field screening for bacteria sources in 50 percent of the MS4 subbasins, including rural MS4 subbasins, by August 1, 2018 and implement the schedules and activities identified in S5.C.8 of the Phase I permit for response to any illicit discharges found.*
- *Install and maintain animal waste education and/or collection stations at municipal parks and other Permittee owned and operated lands reasonably expected to have substantial domestic animal (dog and horse) use and the potential for pollution of stormwater.*

The responses provided for the Bear-Evans Watershed TMDL, above, also apply to the actions required for the Issaquah Creek TMDL. Planning and implementation work on the Issaquah Creek Basin has not begun yet, but is anticipated to begin in 2015, along with the ongoing implementation of Bear-Evans FC TMDL and Puyallup-White FC TMDL work.

[Excerpt from Appendix 2 of the Permit]

*Puyallup Watershed Water Quality Improvement Plan*

*Actions required*

- *Designate areas discharging via the MS4 to Boise Creek as high priority areas for illicit discharge detection and elimination. Complete IDDE field screening for bacteria sources in 100 percent of the MS4 subbasins, including rural subbasins, by February 2, 2016 and implement the schedules and activities identified in S5.C.8 of the Phase I permit for response to any illicit discharges found. Field screening must include activities for both the dry season (May through September) and the wet season (October through April).*
- *Inventory commercial animal handling areas (associated with Standard Industrial Code 074 and 075) in areas discharging via the MS4 to Boise Creek and conduct inspections of these areas as part of the Source Control program required in S5.C.7 of the Phase I permit. All qualifying facilities must be inspected by August 1, 2016. The Permittee shall implement an ongoing inspection program to re-inspect facilities or areas with bacteria source control problems every three years.*
- *Designate areas discharging via the MS4 to Jovita Creek as high priority areas for illicit discharge detection and elimination field screening, and implement the schedules and activities identified in S5.C.8 of the Phase I permit.*

## Designate High Priority Areas for IDDE, and Conduct Work

In 2015, bacteria source screening tasks will continue as begun in 2013 in the Boise Creek Basin, and in 2014 in the Jovita Creek Basin. Field reconnaissance included continuing to select sampling stations, including outfalls from the MS4 into creeks, as well as some inflows to the MS4 in Boise Creek. Field screening including in-situ sampling with a multiprobe sonde as well as sampling for bacterial lab analyses.

Additionally, King County SWSS plans to continue its partnership with the KCD to conduct education and outreach activities in the Boise Creek basin. This partnership was entered into by SWSS with the intent of gaining public awareness and acceptance of the County's FC TMDL-mandated tasks in Boise Creek. SWSS also seeks continued citizen participation to collect water quality samples which contribute to finding and eliminating bacterial discharges, where possible. In addition, in partnership with King County and the City of Enumclaw, they sample Boise Creek for E. coli, which is a subset of fecal coliform bacteria. The results from these efforts are reported to King County and included in IDDE as well as other microbial source tracking efforts that are ongoing in the basin.

## Inventory Commercial Animal Handling Facilities

SWSS obtained a list of all potentially pollution generating commercial properties from the King County Department of Assessments. The list was reviewed to determine if there were any commercial animal handling facilities associated with Standard Industrial Codes 074 and 075, and none were found.

## 2.3 Monitoring and Assessment – S8

- A. *All Permittees including Secondary Permittees shall provide, in each annual report, a description of any stormwater monitoring or stormwater-related studies conducted by the Permittee during the reporting period. If other stormwater monitoring or stormwater-related studies were conducted on behalf of the Permittee during the reporting period, or if stormwater-related investigations conducted by other entities were reported to the Permittee during the reporting period, a brief description of the type of information gathered or received shall be included in the annual report.*

*Permittees are not required to provide descriptions of any monitoring, studies, or analyses conducted as part of the Regional Stormwater Monitoring Program (RSMP) in annual reports. If a Permittee conducts independent monitoring in accordance with requirements in S8.B or S8.C below, annual reporting of such monitoring must follow the requirements specified in those sections.*

- B. *Status and Trends Monitoring*
1. *No later than October 15, 2013, King, Pierce, and Snohomish Counties, the Cities of Seattle and Tacoma, and the Ports of Seattle and Tacoma shall notify Ecology in writing which of the following two options for status and trends monitoring the Permittee chooses to carry out during this permit cycle. Either option will fully satisfy the Permittee's obligations under this section (S8.B.1). Each Permittee shall select a single option for the duration of this permit term.*
- C. *Stormwater management program effectiveness studies. No later than December 1, 2013, Clark, King, Pierce, and Snohomish Counties, the Cities of Seattle and Tacoma, and the Ports of Seattle and Tacoma shall notify Ecology in writing which of the following three options for effectiveness studies the Permittee chooses to carry out during this permit cycle. Any one of the three options will fully satisfy the Permittee's obligations under this section (S8.C). Each Permittee shall select a single option for the duration of this permit term.*
1. *Effectiveness Studies Option #1: Each Permittee that chooses this option shall pay into a collective fund to implement RSMP effectiveness studies. The payments into the collective fund are due to Ecology annually beginning August 15, 2014.*
- ...
- D. *Source identification and diagnostic monitoring. Clark, King, Pierce, and Snohomish Counties, the Cities of Seattle and Tacoma, and the Ports of Seattle and Tacoma shall pay into a collective fund to implement the RSMP Source Identification Information Repository (SIDIR). The payments into the collective fund are due to Ecology annually beginning August 15, 2014.*

King County has opted to fully pay into the RSMP. This pay-in is for status and trends monitoring, effectiveness monitoring, and source identification and diagnostic monitoring. King County met the requirements to submit its first payment to Ecology by October 15, 2013, and anticipates making future payments by August 15<sup>th</sup> of each year throughout the Permit term.

## 2.4 Reporting Requirements – S9

- A. *No later than March 31 of each year beginning in 2015, each Permittee shall submit an annual report. The reporting period for the first annual report will be from January 1, 2014 through December 31, 2014. The reporting period for all subsequent annual reports shall be the previous calendar year unless otherwise specified.*

*Permittees must submit annual reports electronically using Ecology's Water Quality Permitting Portal (WQWebPortal) available on Ecology's website at <http://www.ecy.wa.gov/programs/wq/permits/paris/portal.html> unless otherwise directed by Ecology.*

*Permittees unable to submit electronically through Ecology's WQWebPortal must contact Ecology to request a waiver and obtain instructions on how to submit an annual report in an alternative format.*

- B. *Each Permittee is required to keep all records related to this permit and the SWMP for at least five years.*
- C. *Each Permittee shall make all records related to this permit and the Permittee's SWMP available to the public at reasonable times during business hours. The Permittee will provide a copy of the most recent annual report to any individual or entity, upon request.*
1. *A reasonable charge may be assessed by the Permittee for making photocopies of records.*
  2. *The Permittee may require reasonable advance notice of intent to review records related to this permit.*
- D. *The annual report for Permittees listed in S1.B. shall include the following:*
1. *A copy of the Permittee's current SWMP Plan as required by S5.A.1.*
  2. *Submittal of the annual report form as provided by Ecology pursuant to S9.A, describing the status of implementation of the requirements of this permit during the reporting period.*
  3. *Attachments to the annual report form including summaries, descriptions, reports, and other information as required, or as applicable, to meet the requirements of this permit during the reporting period. Refer to Appendix 12 for annual report questions.*
  4. *If applicable, notice that the MS4 is relying on another governmental entity to satisfy any of the obligations under the permit.*
  5. *Certification and signature pursuant to G19.D, and notification of any changes to authorization pursuant to G19.C.*
  6. *A notification of any annexations, incorporations, or jurisdictional boundary changes resulting in an increase or decrease in the Permittee's geographic area of permit coverage during the reporting period.*

King County has tracked compliance activities throughout 2014 to facilitate completion of a 2014 Annual Report due in March 31, 2015. Compliance activities in subsequent years will similarly be tracked for annual reporting purposes. King County's annual reports will include all responses, metrics, and supporting documentation required by the Permit.

King County plans to submit the Annual Report electronically through Ecology's WQWebDMR system throughout the permit term.

Records related to each Annual Report will be kept for a minimum for five years.

Members of the public may access King County's Annual Report, SWMP and other supporting documentation on King County's website:

<http://www.kingcounty.gov/environment/wlr/sections-programs/stormwater-services-section/stormwater-program.aspx>. Records not available online may be requested by contacting [Stormwater@kingcounty.gov](mailto:Stormwater@kingcounty.gov).

## 3.0 CONCLUSION

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As described in this document, the 2015 SWMP Plan describes the actions and activities that King County plans to implement over the coming year to manage stormwater to protect the land and waterscapes it affects. Central to that effort is internal coordination among all King County agencies subject to Permit requirements (see Section 2.1.3). This coordination mechanism successfully engages staff from several agencies and minimizes barriers to achieving Permit compliance.

King County is committed to implementing the programs described herein and recognizes that doing so contributes to two very important objectives:

- Helping to protect King County's water and lands so that its citizens can enjoy them safely today, and for generations to come; and,
- Supporting compliance with the County's NPDES Phase I Municipal Stormwater Permit.

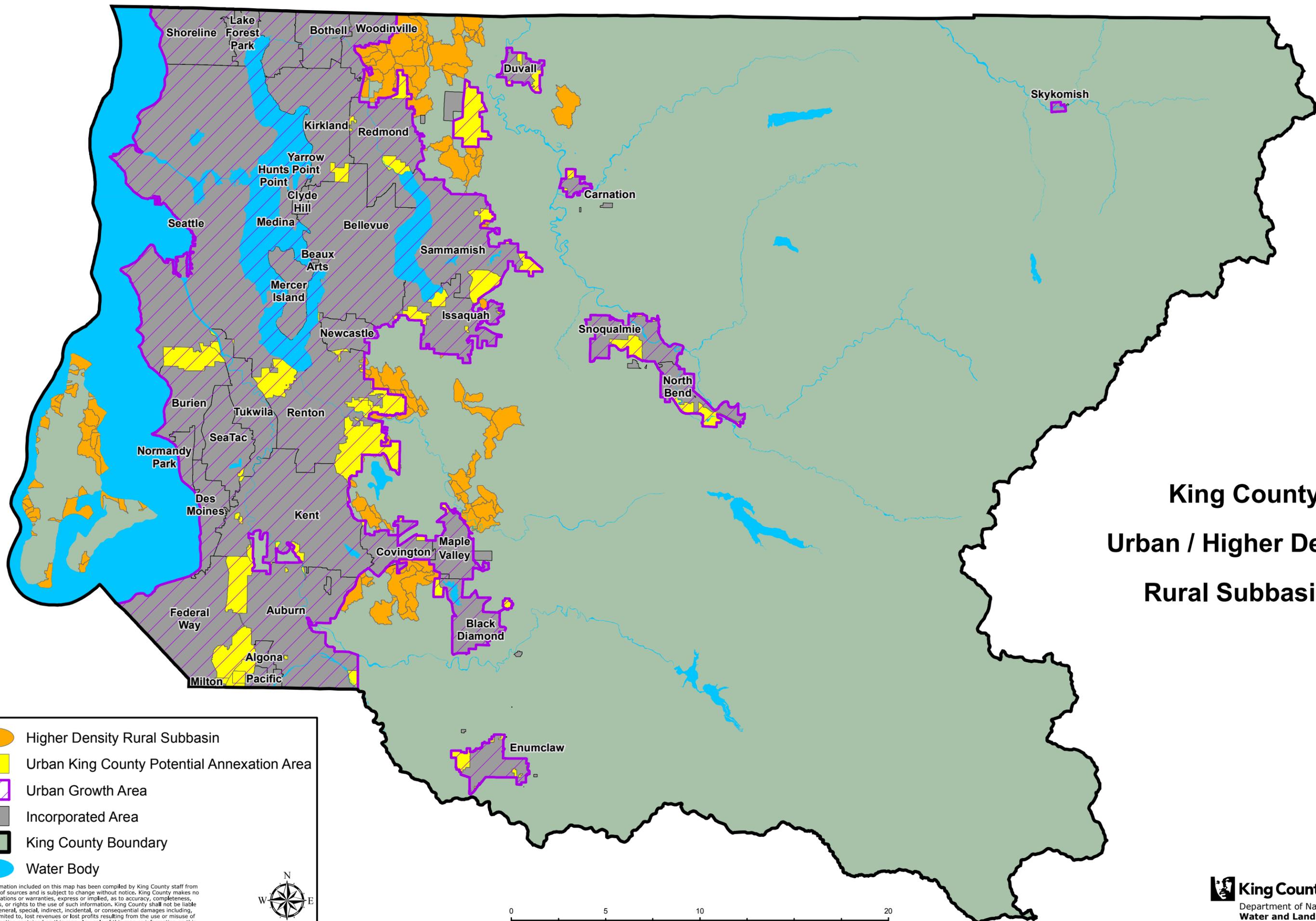
The SWMP Plan will be updated annually throughout the Permit term to reflect changes in the County's approach to stormwater management and Permit compliance. King County will continue to invite the public to participate in the decision making processes regarding the County's SWMP. For more information on participation opportunities, see Section 2.1.4 of this plan.

Questions about the County's SWMP should be directed to the:  
Stormwater Management Team  
King County Department of Natural Resources and Parks  
201 South Jackson Street, Suite 600 Seattle, WA 98104  
[Stormwater@kingcounty.gov](mailto:Stormwater@kingcounty.gov)

**APPENDIX A: MAP OF KING COUNTY  
URBAN/HIGHER DENSITY RURAL SUBBASINS**

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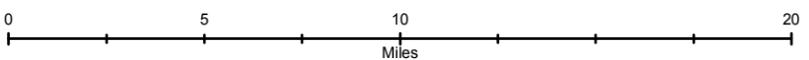


**King County**  
**Urban / Higher Density**  
**Rural Subbasins**

-  Higher Density Rural Subbasin
-  Urban King County Potential Annexation Area
-  Urban Growth Area
-  Incorporated Area
-  King County Boundary
-  Water Body

The information included on this map has been compiled by King County staff from a variety of sources and is subject to change without notice. King County makes no representations or warranties, express or implied, as to accuracy, completeness, timeliness, or rights to the use of such information. King County shall not be liable for any general, special, indirect, incidental, or consequential damages including, but not limited to, lost revenues or lost profits resulting from the use or misuse of the information contained on this map. Any sale of this map or information on this map is prohibited except by written permission of King County.



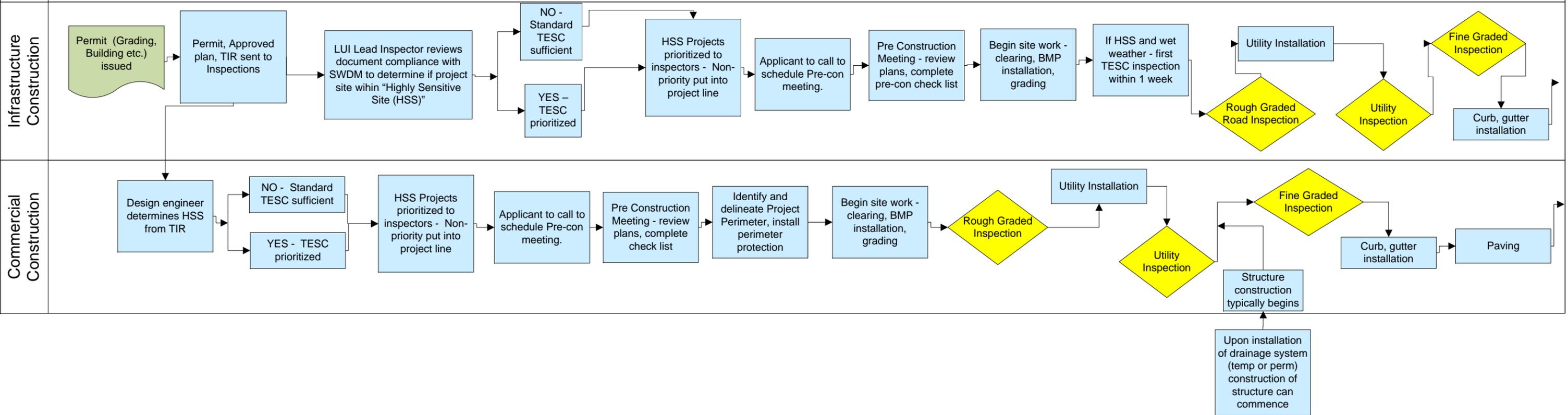
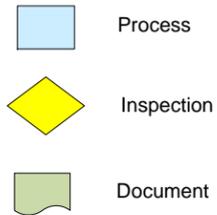


**APPENDIX B: KING COUNTY DPER PROCESS  
FLOW CHARTS**

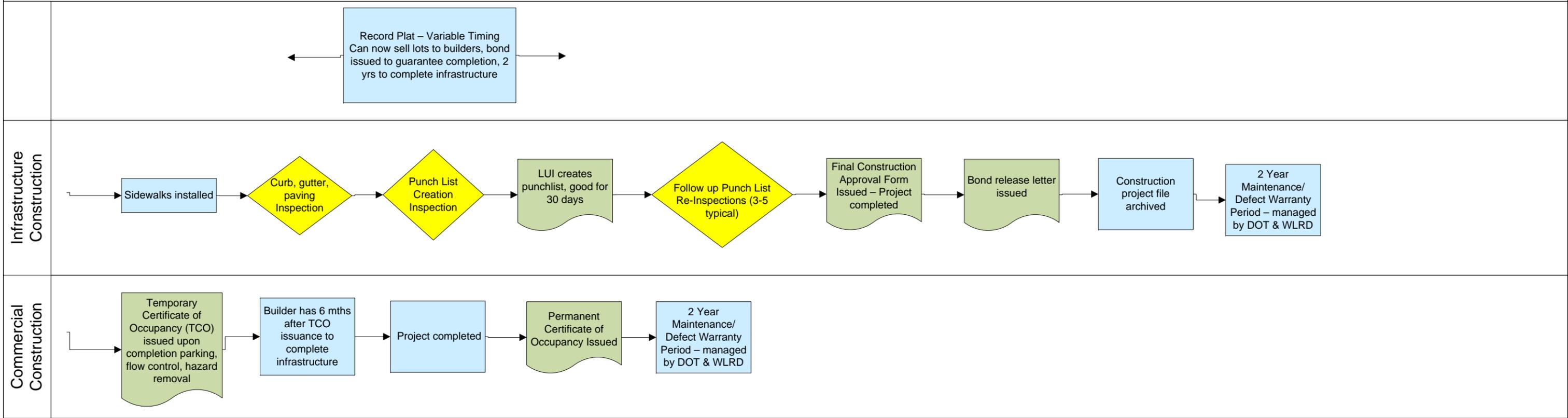
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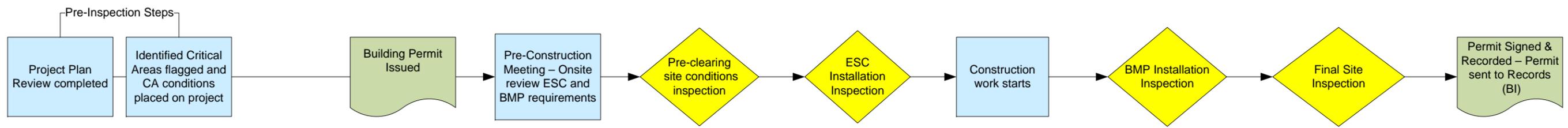
# Site Inspections -

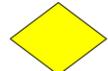


Site Inspections - DRAFT



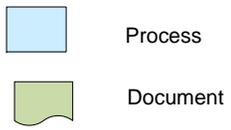
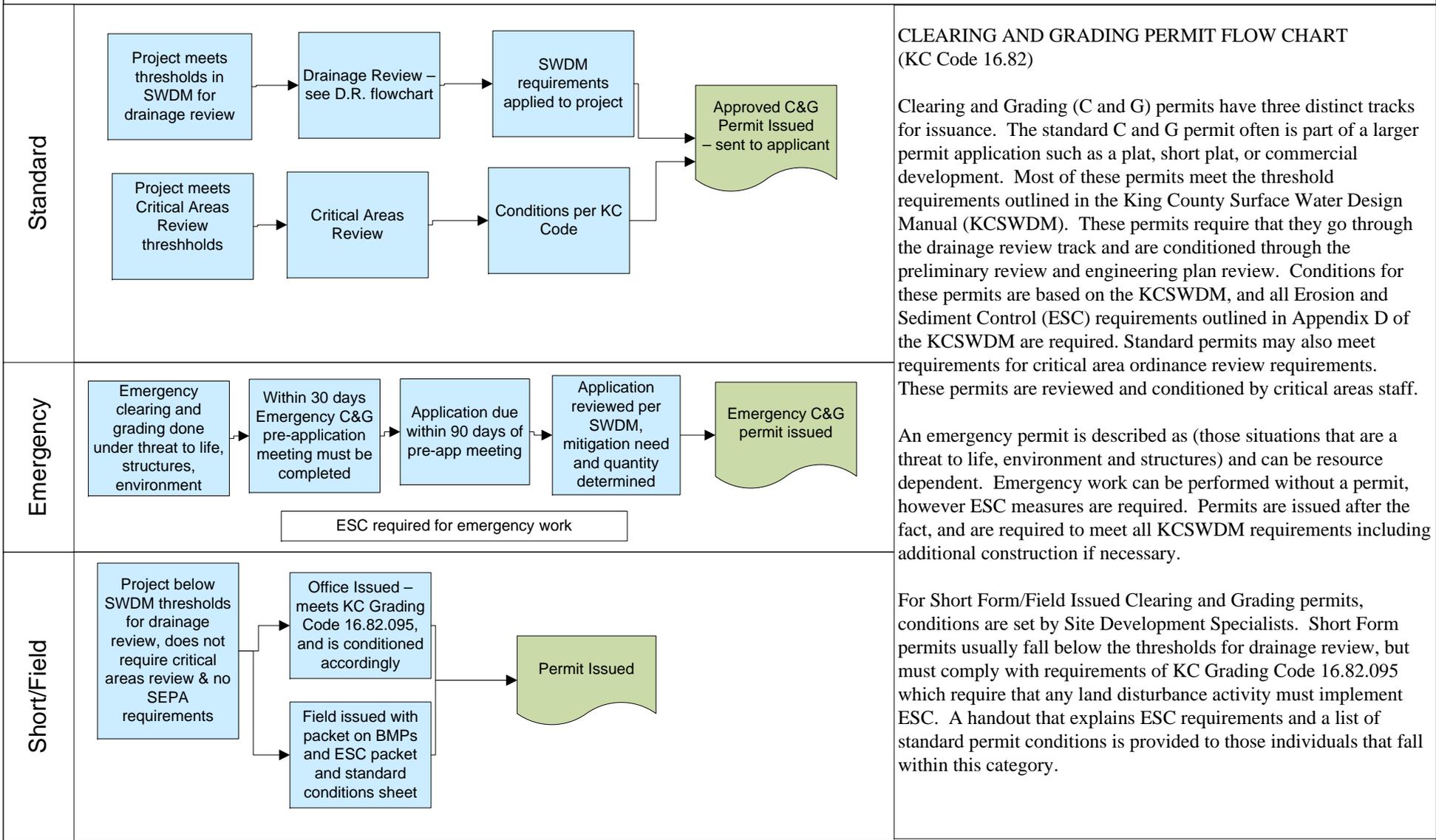
# Residential Site Inspection Process\* Flowchart



-  Process
-  Inspection
-  Document

\*Process outlined above reflects only those steps of residential development process related to site conditions inspection process.

# Clearing and Grading Permit Process (KC Code 16.82)



**APPENDIX C: SCOPE OF WORK AND SCHEDULE  
FOR THE BEAR CREEK WATERSHED-SCALE  
STORMWATER PLAN**

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## King County

### Water and Land Resources Division

Department of Natural Resources and Parks

King Street Center

201 South Jackson Street, Suite 600

Seattle, WA 98104-3855

**206-477-4800** Fax 206-296-0192

TTY Relay: 711

March 31, 2014

Rachel McCrea  
Water Quality Program  
Washington State Department of Ecology  
Northwest Regional Office  
3190 - 160<sup>th</sup> Avenue SE  
Bellevue, WA 98008-5452

RE: Submittal of Scope of Work and Schedule for Watershed-Scale Stormwater Planning (S5.C.5.c.ii)

Dear Ms. McCrea:

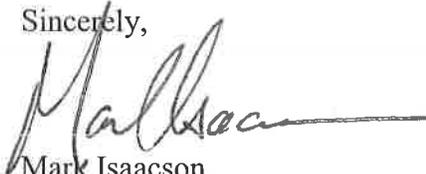
King County is submitting the enclosed Scope of Work and Schedule for Watershed-Scale Stormwater Planning to satisfy permit obligations under section (S5.C.5.c.ii) in the National Pollutant Discharge Elimination System (NPDES) Phase I Municipal Stormwater Permit, issued by Washington State Department of Ecology, effective August 1, 2013, through July 31, 2018. Tasks described in this Scope of Work and Schedule follow the structure in the permit to demonstrate our compliance.

As required, King County will take lead in the watershed-scale stormwater planning process for the Bear Creek watershed. Consistent with the recent release of findings from the Pollution Control Hearing Board, King County has initiated efforts to ensure participation of other permittees that have jurisdiction in portions of the Bear Creek watershed, including Snohomish County, City of Woodinville, City of Redmond, and Washington State Department of Transportation.

Rachel McCrea  
March 31, 2014  
Page 2

Thank you for your attention to this matter. If you have any questions or require further information, please feel free to contact Doug Navetski, Environmental Programs Managing Supervisor in the Stormwater Services Section, at 206-477-4783, or by email at [doug.navetski@kingcounty.gov](mailto:doug.navetski@kingcounty.gov).

Sincerely,

A handwritten signature in black ink, appearing to read "Mark Isaacson", with a long horizontal flourish extending to the right.

Mark Isaacson  
Division Director

Enclosure

cc: Curt Crawford, Manager, Stormwater Services Section (SWS), Water and Land Resources Division (WLRD), Department of Natural Resources and Parks (DNRP)  
Doug Navetski, Environmental Programs Managing Supervisor, SWS, WLRD, DNRP  
Dave White, Environmental Programs Section Manager, Science and Technical Support Section (STS), WLRD, DNR  
Jim Simmonds, Environmental Programs Managing Supervisor, STS, WLRD, DNRP  
Jeff Burkey, Hydrologist, STS, WLRD, DNRP

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# **Scope of Work and Schedule for the Bear Creek Watershed – Scale Stormwater Plan**

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March 2014



**King County**

Department of Natural Resources and Parks  
Water and Land Resources Division

**Science Section**

King Street Center, KSC-NR-0600  
201 South Jackson Street, Suite 600  
Seattle, WA 98104

**Alternate Formats Available**

**206-477-4807 TTY Relay: 711**

# **Scope of Work and Schedule for the Bear Creek Watershed – Scale Stormwater Plan**

**Submitted by:**

Jim Simmonds and Jeff Burkey  
King County Water and Land Resources Division  
Department of Natural Resources and Parks



**King County**

Department of  
Natural Resources and Parks

**Water and Land Resources Division**

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## EXECUTIVE SUMMARY

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King County is required to conduct a watershed-scale stormwater planning effort to satisfy permit obligations under section (S5.C.5.c) in the National Pollutant Discharge Elimination System Phase I Municipal Stormwater Permit (permit) issued by the Washington State Department of Ecology (Ecology), effective August 1, 2013 through July 31, 2018. This report is intended to satisfy the permit requirement under section (S5.C.5.c.ii) by submitting a scope of work no later than April 1, 2014.

This watershed-scale planning effort is intended to identify stormwater management strategies that would result in hydrologic and water quality conditions that fully support *existing and designated uses* as defined in the Washington Administrative Code (WAC 173-201A-020).

Bear Creek contains many miles of high-quality aquatic resources, and is known to support a wide range of salmonids, including Chinook—an ESA listed “threatened” species. Recently, the Bear Creek watershed was identified by Ecology as a targeted watershed for stormwater retrofit planning because of its *high integrity* (as defined by Ecology). For this reason, King County has selected the Bear Creek watershed for the watershed-scale stormwater planning effort as specified in the permit (S5.C.5.c.i). More specifically, a sub-area of the Bear Creek basin was selected to meet permit requirements S5.C.5.c.i.(1) through S5.C.5.c.i.(4). This sub-area is defined as Bear Creek drainage areas above the confluence of Evans Creek tributary and excludes Cottage Lake and its drainage basin. This planning area approximately totals 26 square miles and includes area within four other jurisdictions: City of Redmond (2.4 square miles), City of Woodinville (1.1 square miles), Washington State Department of Transportation (0.003 square miles), and Snohomish County (3.7 square miles), in addition to unincorporated King County (18.9 square miles).

King County will lead the planning process (S5.C.5.c.ii) and coordinate with the other jurisdictions and stakeholders to allow for their input during the life of the project. The watershed-scale plan will include assessments of the landscape based on historic, existing, and projected future conditions. Stormwater management strategies will be evaluated, using these landscape baselines, for stream health based on stream hydrology, water quality, and aquatic biota (life forms). The evaluations will be derived from previous study results; interpretations of existing and collection of new data; and development of computer models that will project historic and future conditions and characterize the effectiveness of stormwater management strategies. An implementation plan will be designed using these results, which will include stormwater management strategies, estimated costs, and potential funding mechanisms.

The public and stakeholders will have an opportunity to review and comment on the draft watershed plan prior to final submission. The final watershed plan will be submitted to Ecology no later than October 1, 2016.

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## 1.0. INTRODUCTION

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King County is required to conduct a watershed-scale stormwater planning effort to satisfy permit obligations under section (S5.C.5.c) in the National Pollutant Discharge Elimination System (NPDES) Phase I Municipal Stormwater Permit (permit) issued by the Washington State Department of Ecology (Ecology), effective August 1, 2013 through July 31, 2018. This report is intended to satisfy the permit requirement under section (S5.C.5.c.ii) in the permit that “No later than April 1, 2014, the Permittee shall submit a scope of work and a schedule to Ecology for the complete watershed planning process.”

### 1.1 Bear Creek Watershed

King County has selected the Bear Creek watershed for the watershed-scale stormwater planning effort. For watershed-scale stormwater planning purposes, the Bear Creek watershed is defined as including Bear Creek and lands that drain to Bear Creek, with the following exclusions:

- The Evans Creek basin (a tributary to Bear Creek) is not included in King County’s selection
- The reach of Bear Creek downstream of the confluence to Evans Creek, along with small direct drainages and tributaries to this reach of Bear Creek, is not included in King County’s selection
- Cottage Lake and the area that drains to Cottage Lake are not included in King County’s selection.<sup>1</sup>

King County’s selection of the Bear Creek watershed, as defined above, has been approved by Ecology (verbal communication between Rachel McCrea, Ecology, and Jim Simmonds, King County). The Bear Creek basin as defined (Figure 1) also meets the criteria as defined in the permit for an alternative watershed. This basin encompasses about 26 square miles, which is substantially larger than the 10 square mile requirement for alternative watersheds stipulated in Section S5.C.5.c.i(1). About 2.4 square miles are in the City of Redmond, 1.1 square miles are in the City of Woodinville, 1.9 acres are owned by the

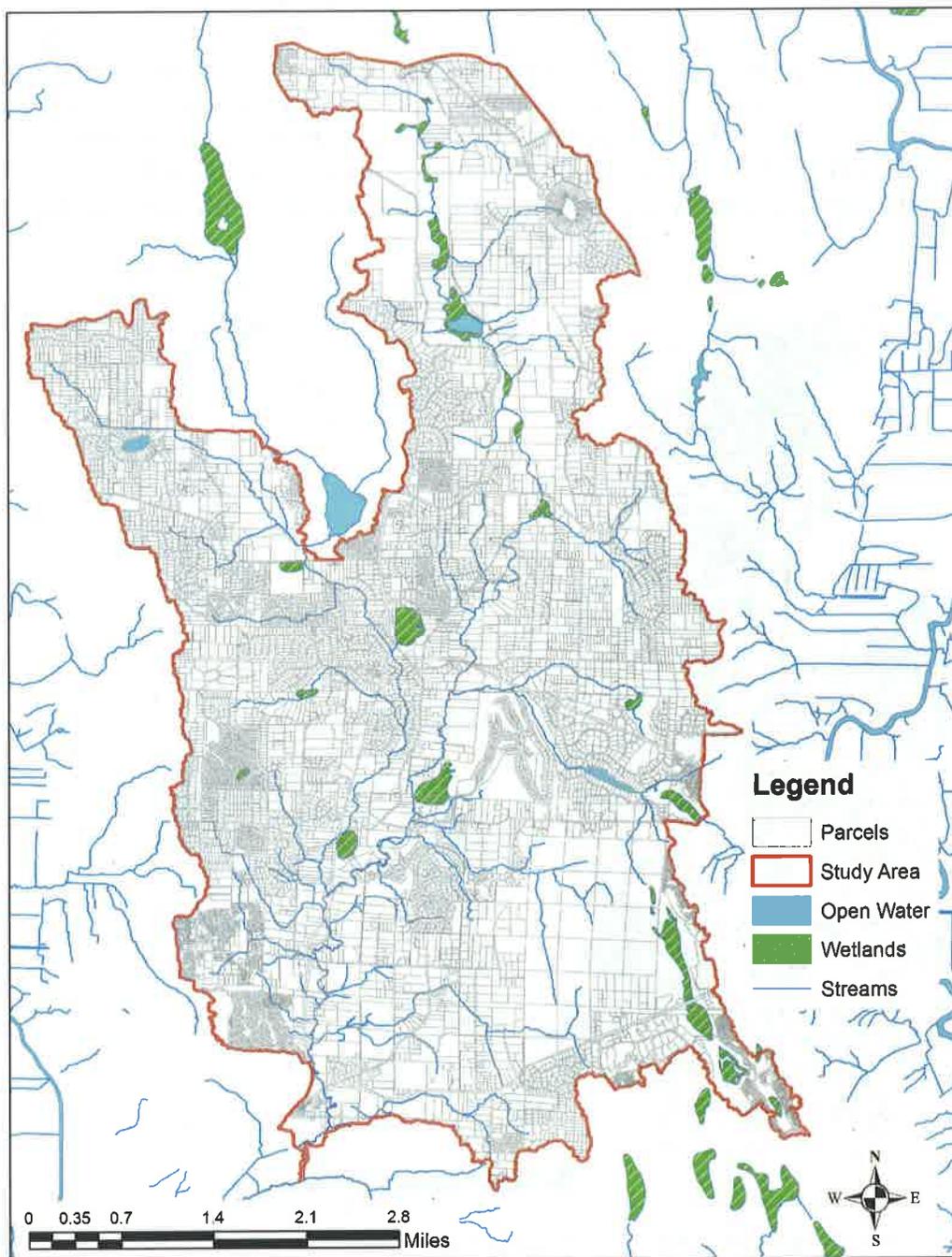
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<sup>1</sup> Drainages upstream of Cottage Lake are not included in the project area because Cottage Lake serves to substantially mitigate the effects of land use change upstream of the lake. The drainage area feeding to Cottage Lake is approximately 4300 acres, with over 100 acres comprised of lakes (Cottage, Crystal, and Little) and about 100 acres of wetlands. Typical active live storage for Cottage Lake fluctuates 1 to 3 feet annually, with a potential maximum of 10 ft in extreme conditions (source: Small lakes program, and Lakes of Washington Vol 2.). Thus, assuming an intermediate level of lake storage (i.e. 5 ft live storage), and 1-ft of live storage in the other lakes and wetlands, is equivalent to approximately 1.5 inches of storage for the entire drainage basin. For perspective, this amount of storage is equivalent to mitigated development at 1 to 2 DU/ac assuming zero infiltration, and 40% forest retention (1.2 inches), or complete conversion of the landscape to 10% EIA and 90% grass resulting in 1.6 inches of storage. Under extreme conditions where lake levels increase +10ft and assuming 2 ft of live storage in the other lakes wetlands, live storage is double King County’s Level 2 design standard. Given this magnitude of naturally occurring storage, the effects of stormwater mitigation implemented upstream of Cottage Lake and stream flow flashiness downstream of Cottage lake will be largely muted. Thus, selection of potential mitigation sites would be most effective downstream of Cottage Lake when focusing on Cottage Lake Creek.

Washington State Department of Transportation, 3.7 square miles are in unincorporated Snohomish County, and 18.9 square miles [73 percent; S5.C.5.c.i.(2)] are in unincorporated King County. The majority of the unincorporated King County area is designated rural except for about 1.9 square miles residing on the urban side of the Urban Growth Boundary (Figure 1). However, a large portion of the study area including unincorporated areas (39%) have existing parcel densities greater than rural zoning RA 2.5 (Figure 2).



Figure 1. Bear Creek Study Area – Scale Stormwater Planning Area



**Figure 2. Bear Creek study area – parcel delineations**

Substantial development has already occurred, and more is expected in the Bear Creek watershed selected for watershed-scale stormwater planning. The study area currently supports an estimated population of about 27,000<sup>2</sup>. Land use, based on satellite imagery from 2007, is comprised largely of a mixture of light urban, medium urban,

<sup>2</sup> Puget Sound Regional Council 2013 Forecast Products (<http://www.psrc.org/data/forecasts/2013-forecast-products/>)

deciduous/mixed forest, and grass (Figure 3). Modeled 2040 land use conditions, assessed using a land cover change model (LCCM) and an urban socio-economic and transportation model (UrbanSim) set to run a “business as usual” scenario based on existing zoning and regulations and projected population growth<sup>3</sup>, show a substantial shift to heavy urban and medium urban land use due primarily to population growth in the urban areas and increased impervious area associated with redevelopment in the rural areas (Figure 4). This shift in land use demonstrates the substantial growth pressures anticipated in this basin [S5.C.5.c.i.(4)].

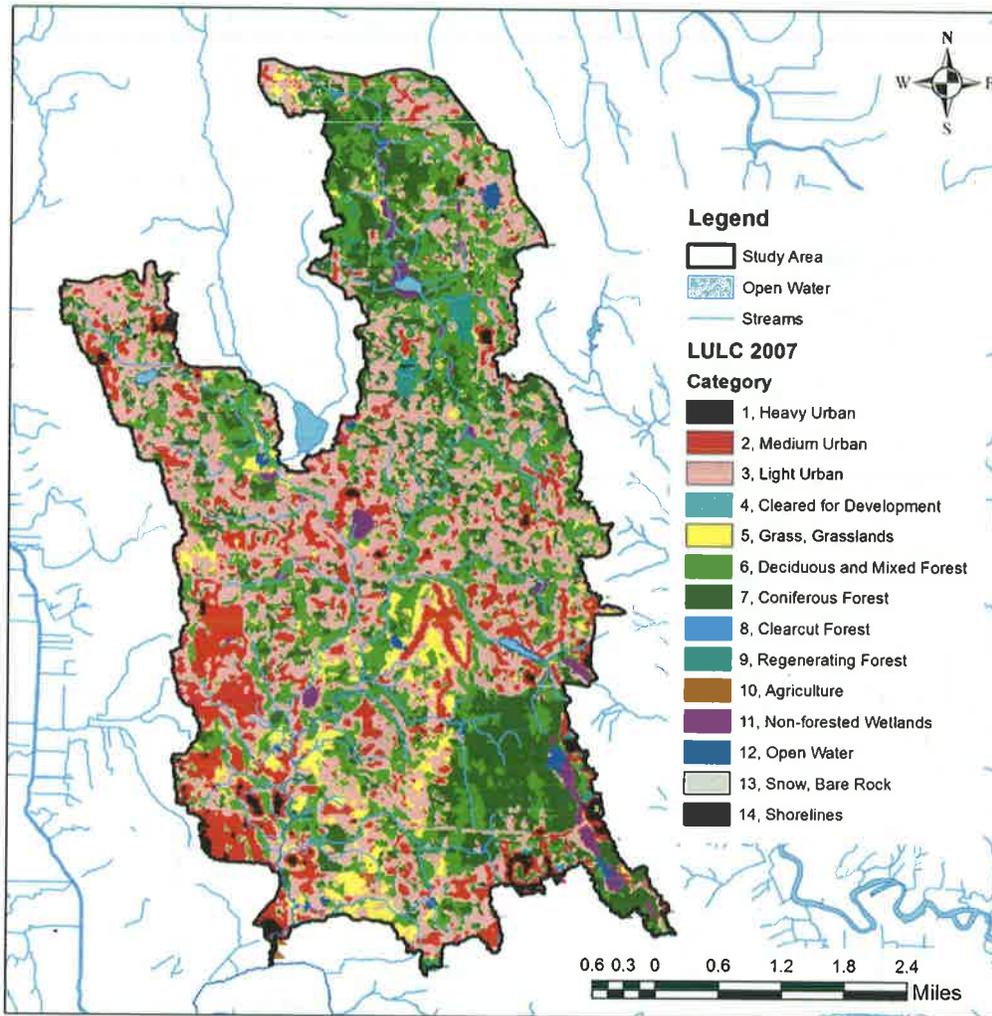
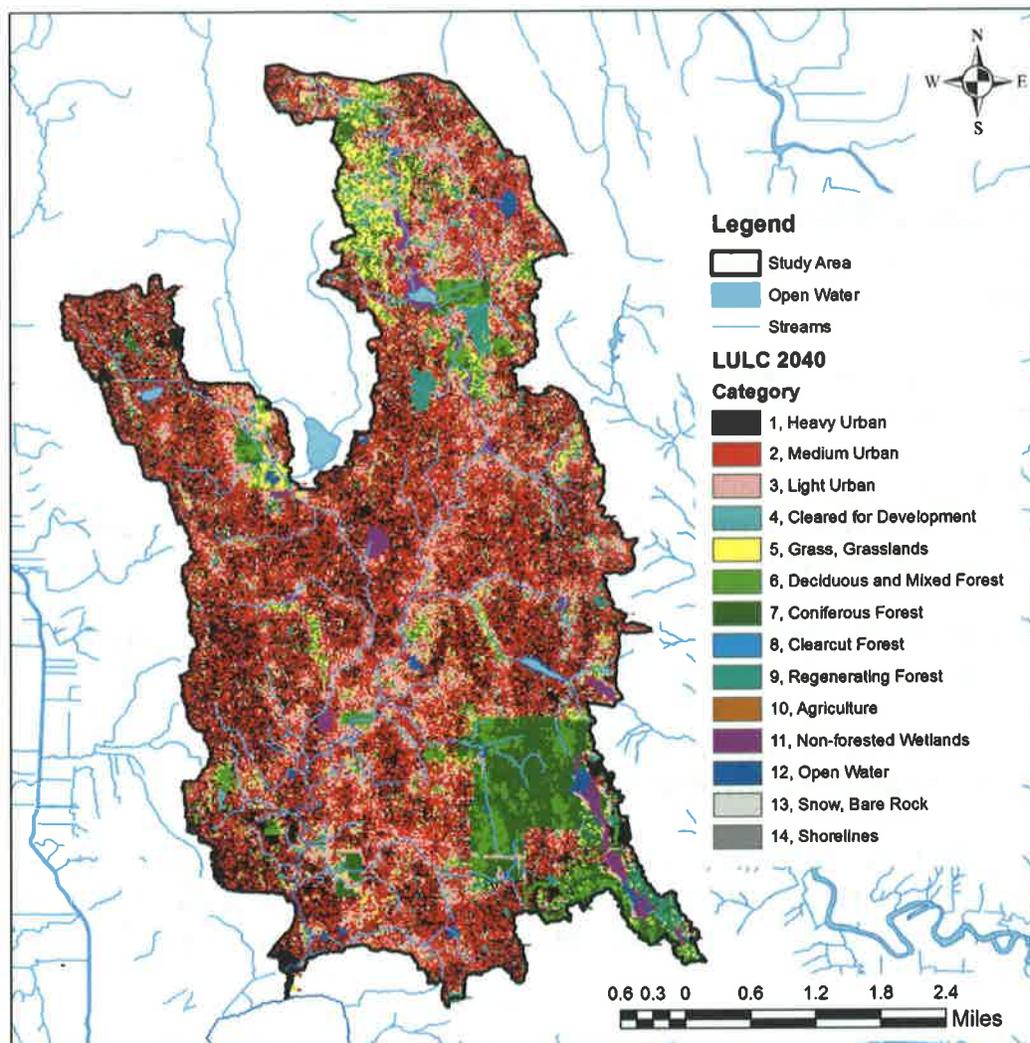


Figure 3. Bear Creek study area 2007 Land Use and Land Cover<sup>4</sup>

<sup>3</sup> Population is projected to increase to 31,500 in the study area by 2035 (PSRC 2013)

<sup>4</sup> University of Washington. 2007. Central Puget Sound 2007 Land Cover Classification. Puget Sound Regional Synthesis Model (PRISM). University of Washington.



**Figure 4. Simulated 2040 Bear Creek Study Area Land Use and Land Cover<sup>5</sup>**

Even with the current population, Bear Creek contains many miles of high-quality aquatic resources, and is known to support a wide range of salmonids, including Chinook<sup>6</sup>, sockeye, coho, kokanee, and coastal cutthroat<sup>7</sup> [S5.C.5.c.i.(3)]. Recently, the Bear Creek watershed was identified by Ecology as a targeted watershed for stormwater retrofit planning<sup>8</sup>, with a

<sup>5</sup> Alberti, Marina. 2009. NSF Biocomplexity II Grant. 2005-2009. Urban Landscape Patterns: Complex Dynamics and Emergent Properties. Dr. Marina Alberti, Principal Investigator

<sup>6</sup> ESA listed as threatened species.

<sup>7</sup> Kerwin, J., 2001. Salmon and Steelhead Habitat Limiting Factors Report for the Cedar - Sammamish Basin (Water Resource Inventory Area 8). Washington Conservation Commission. Olympia, WA

<sup>8</sup> Assessed by Ecology in support of National Estuary Program Watershed Protection & Restoration Grant Program 2013 ([http://www.ecy.wa.gov/puget\\_sound/docs/grants/2013StormwaterRetrofitTargetWatershedIDMethods.pdf](http://www.ecy.wa.gov/puget_sound/docs/grants/2013StormwaterRetrofitTargetWatershedIDMethods.pdf))

watershed integrity index of 9 on scale of 1 (low integrity) to 9 (high integrity). An integrity index of 9 characterizes the basin as a high value resource and high potential to be restored. Completing a watershed-scale stormwater plan for Bear Creek will help preserve and restore these aquatic resources.

## **1.2 Previous Studies**

Numerous studies have been conducted in the Bear Creek watershed. These studies will provide foundational material for this project. Some examples include:

Fevold, K. and J. Vanderhoof. 2002. Freshwater Mussels Found in Bear and Cottage Lake Creeks During Habitat Assessments in 2001.

Kerwin, J. 2001. Salmon and Steelhead Limiting Factors Report for the Cedar-Sammamish Basin (Water Resource Inventory Area 8). Washington Conservation Commission. Olympia, WA.

King County. 1995. Bear Creek Basin Plan. The basin plan, adopted by the King County Council, covered the entire basin.

King County. 2002. Water Quality Monitoring of Northern Lake Washington Streams. Water and Land Resources Division. Seattle, Washington.

King County. 2004. Benthic Macroinvertebrate Study of the Greater Lake Washington and Green-Duwamish River Watersheds Year 2002 Data Analysis. Submitted by EVS Environmental Consultants. Water and Land Resources Division, Seattle, Washington.

King County. 2005. Benthic Macroinvertebrate Study of the Greater Lake Washington and Green-Duwamish River Watersheds Year 2003 Data Analysis. Submitted by EVS Environmental Consultants. Water and Land Resources Division, Seattle, Washington.

King County. 2005. Results of a Pilot Freshwater Mussel Survey in King County. Prepared by Bob Brenner. Water and Land Resources Division. Seattle, Washington.

King County. 2006. Timing, abundance, and population characteristics of spawning Chinook salmon in the Cedar/Sammamish Watershed. Prepared by Hans B. Berge and Mistie L. Hammer, King County Department of Natural Resources and Parks, and Steve R. Foley, Washington Department of Fish and Wildlife—Region 4.

King County. 2007. Cold Creek Aquifer Study of Surface Water / Groundwater Interactions, Phase 2. Prepared by Sevin Bilir, Water and Land Resources Division. Seattle, Washington.

- King County. 2010. Working Draft Identification of Streams with Declines in Summer Low Flows. Prepared by Curtis DeGasperi and Jeff Burkey, Water and Land Resources Division. Seattle, Washington.
- King County. 2010. Working Draft Preliminary Estimates of Summer Environmental Restoration Flow Targets for Basins in King County with Declines in Summer Low Flows. Prepared by Curtis DeGasperi and Jeff Burkey, Water and Land Resources Division. Seattle, Washington.
- Kiyohara, Kelly. 2013. Evaluation of Juvenile Salmon Production in 2012 from the Cedar River and Bear Creek. Prepared by Kelly Kiyohara, Science Division, Fish Program, Washington Department of Fish and Wildlife. Olympia, Washington.
- Lee, Sinang, 2008. Bear-Evans Watershed Fecal Coliform Bacteria Total Maximum Daily Load—Water Quality Improvement Report. Prepared for Washington State Department of Ecology. Publication No. 08-10-026. Prepared by Sinang H. Lee, Water Quality Program, Northwest Regional Office, Washington State Department of Ecology. Bellevue, Washington.
- Massmann, J. 2000. Effects of Groundwater Extraction on Stream Flow in Bear-Evans Creek Watershed. Prepared for The Muckleshoot Indian Tribe, Fisheries Department. Auburn, Washington.
- Mohamedali, T., S. Lee. 2008. Bear-Evans Watershed Temperature and Dissolved Oxygen Total Maximum Daily Load—Water Quality Improvement Report. Prepared for Washington State Department of Ecology. Publication No. 08-10-058. Prepared by Teizeen Mohamedali, Environmental Assessment Program (Olympia) and Sinang H. Lee, Water Quality Program, Northwest Regional Office (Bellevue), Washington State Department of Ecology. Olympia, Washington.  
[www.ecy.wa.gov/biblio/0810058.html](http://www.ecy.wa.gov/biblio/0810058.html)
- Roberts, M. and R. Jack. 2006. Sampling and Analysis Plan and Quality Assurance Project Plan—Bear/Evans Watershed Temperature and Dissolved Oxygen Total Maximum Daily Load Study. Prepared for Washington State Department of Ecology. Publication No. 06-03-107. Prepared by Dr. Mindy Roberts, Environmental Assessment Program, Olympia, Washington, and Richard Jack, King County Department of Natural Resources and Parks. Seattle, Washington.  
[www.ecy.wa.gov/biblio/0603107.html](http://www.ecy.wa.gov/biblio/0603107.html)
- Thomas, A.C. 2008. Investigation of Western Pearshell Mussel (*Margaritifera falcata*) Mortality in Bear Creek, King County, Washington: A Disease Ecology Approach. University of Washington.

Vanderhoof, J., S. Stolnack, K. Rauscher, and K. Higgins. 2011. Lake Washington/ Cedar/ Sammamish Watershed (WRIA 8) Land Cover Change Analysis. Prepared for WRIA8 Technical Committee by King County Water and Land Resources Division, Department of Natural Resources and Parks. Seattle, Washington

WRIA 8 Steering Committee, 2005. Final—Lake Washington/Cedar/Sammamish Watershed (WRIA 8) Chinook Salmon Conservation Plan, Volumes I-III. Prepared by the WRIA 8 Technical Committee.

## 2.0. TASKS

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Project tasks follow the requirements specified in the NPDES permit.

### 2.1 Task 1: Assessment of Existing Conditions

Assessment of existing conditions [S5.C.5.c.ii.(1)] are detailed by task.

#### 2.1.1 Task 1a: Water Quality

Substantial water quality monitoring data are available for the Bear Creek watershed [S5.C.5.c.ii.(1).a]. These data include:

- Monthly water quality monitoring for conventional parameters<sup>9</sup>, nutrients, and bacteria at two Bear Creek locations within the study area from 1974 through present. Two more monitoring stations with similar periods of record exist; one approximately 6000-ft downstream of the study area, and the other approximately 4000-ft upstream of the study area on Evans Creek. (Figure 5).
- A study to assess stream temperature and dissolved oxygen was completed in 2006<sup>10</sup> in support of the development of a Total Maximum Daily Load (TMDL) for temperature and dissolved oxygen. These data are adequate for evaluating temperature considerations in the Bear Creek watershed.

No dissolved copper or dissolved zinc data are available in the project area. Downstream of the project area, dissolved copper and dissolved zinc data are available in Bear Creek below the confluence with Evans Creek.

As part of this project, a water quality monitoring program will be conducted for the Bear Creek watershed. The water quality monitoring program will include monitoring upstream and downstream of stream sections influenced by MS4 discharges. It is currently anticipated that about 12 locations will be sampled during 6 stormflow and 6 baseflow conditions, although the exact number of locations and samples may be altered. Instantaneous grab samples will be analyzed at a minimum for fecal coliform bacteria, dissolved copper, dissolved zinc, and hardness..

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<sup>9</sup> Conventional parameters include: water temperature, pH, conductivity, dissolved oxygen, total suspended solids, and turbidity.

<sup>10</sup> Roberts, M. and Jack, R. 2006. Sampling and Analysis Plan and Quality Assurance Project Plan—Bear/Evans Watershed Temperature and Dissolved Oxygen Total Maximum Daily Load Study. Prepared by Dr. Mindy Roberts, Environmental Assessment Program, Washington Department of Ecology, Olympia, Washington, and Richard Jack, Water and Land Resources Division, King County Department of Natural Resources and Parks, Seattle, Washington.

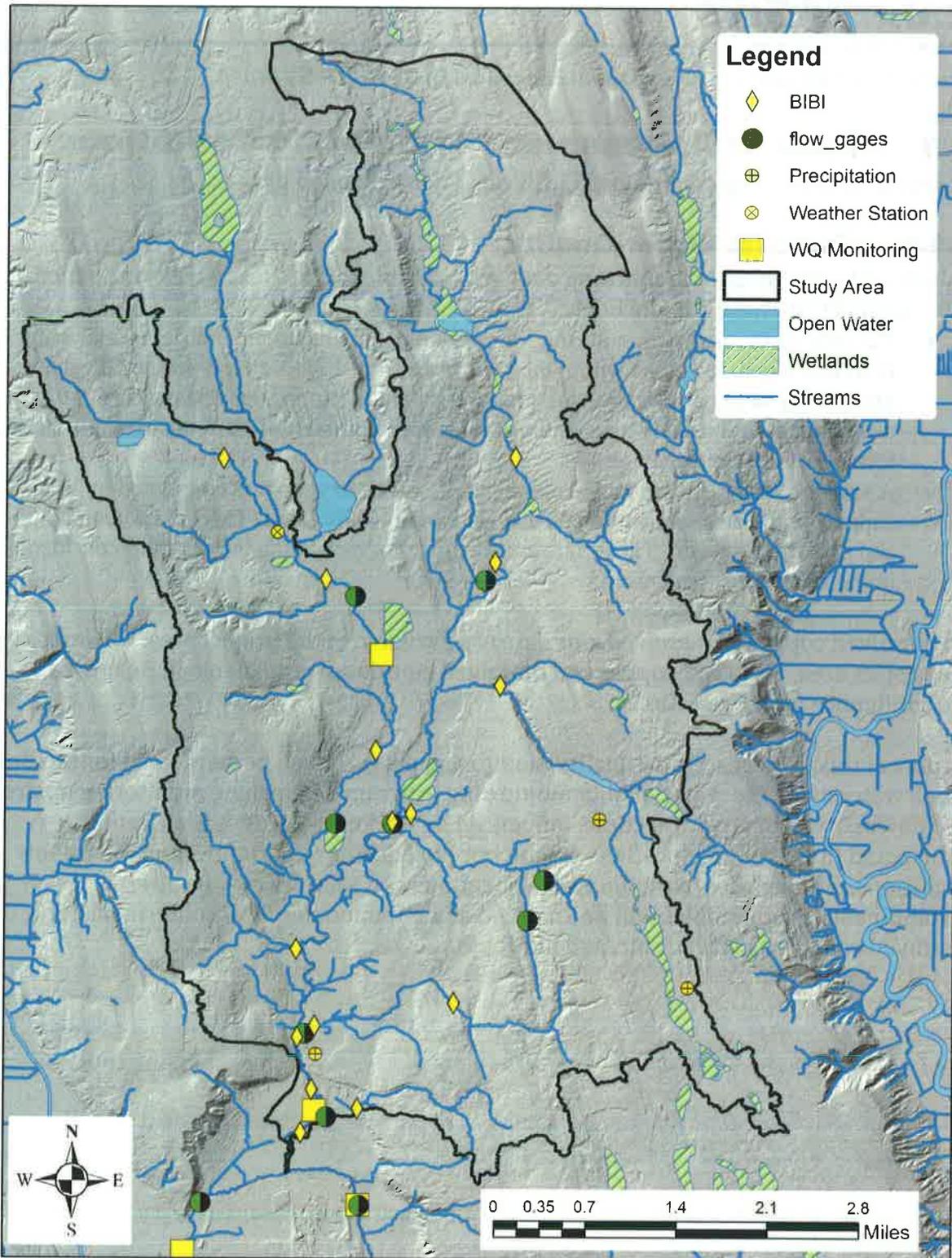


Figure 5. Bear Creek Study Area Ongoing Monitoring Locations, two flow gauges on Struve Creek are new and not available to displayed on the map.

### **2.1.2 Task 1b: Flow**

King County currently maintains ten continuous flow gauges in the Bear Creek study area, along with another gauge on Evans Creek, and a gauge on Bear Creek below the confluence with Evans Creek (Figure 5). No additional flow monitoring stations will be added as part of this project. [S5.C.5.c.ii.(1).b]

### **2.1.3 Task 1c: Benthic Macroinvertebrates**

Stream benthic macroinvertebrate monitoring data is available for 15 locations within the Bear Creek watershed upstream of the confluence with Evans Creek (Figure 5). During the project, stream benthos macroinvertebrates will be monitored at these locations (assuming access is available), and in necessary locations to fill data gaps. [S5.C.5.c.ii.(1).c]

### **2.1.4 Task 1d: Status of Aquatic Community**

Fish community monitoring has been conducted in the Bear Creek watershed since 2009 as part of a grant project funded by the United States Environmental Protection Agency (USEPA). This monitoring effort uses electrofishing techniques to assess the fish community in streams. In addition, several studies have been conducted over the last several years that include salmonid monitoring (e.g., Kiyohara 2013, WRIA 8 Chinook Salmon Conservation Plan). These data sources will be used to document the aquatic community of the watershed. [S5.C.5.c.ii.(1).d]

## **2.2 Task 2: Mapping**

A series of maps will be prepared documenting watershed conditions [S5.C.5.c.ii.(2)]. These maps will focus on the types of information necessary for construction of a continuous rainfall/runoff hydrologic and water quality model of the watershed. Maps to be developed will include, at a minimum,

- Soil types
- Vegetative land cover
- Impervious land cover
- MS4s and non-regulated public stormwater systems
- Areas appropriate for special attention in regard to hydrologic and water quality impacts.

## **2.3 Task 3: Watershed Model Calibration**

The relationship between land use and land cover, soil types, slope, stormwater management, weather, and stream flow and water quality in the watershed area will be modeled using Hydrologic Simulation Program – Fortran (HSPF). The model will be calibrated for flow, temperature, dissolved copper, dissolved zinc, and fecal coliform bacteria [S5.C.5.c.ii.(3)]. Calibration will occur at locations where data are available. Multiple flow metrics derived from the model output will be used to estimate the hydrologic limitations to benthic index of biologic integrity (BIBI). Metrics used will be

based on recent studies conducted in the region King County (2012)<sup>11</sup> and Horner (2013)<sup>12</sup>.

## **2.4 Task 4: Historic and Future Condition Modeling**

Using the calibrated hydrologic and water quality watershed model, and relationships between flow metrics and BIBI, watershed condition will be assessed under a minimum of two scenarios [S5.C.5.c.ii.(4)]:

- idealized fully-forested conditions intended to be representative of undisturbed historic conditions
- full build-out under existing or proposed comprehensive land use management plan(s) for the watershed

Stream flow, dissolved copper, dissolved zinc, temperature, fecal coliform, and BIBI will be estimated, and where possible, results will be compared to Washington State water quality standards.

## **2.5 Task 5: Evaluation of Stormwater Management Strategies**

Improved stormwater management strategies will be assessed if water quality standards are modeled to not be met under future conditions in Task 4. The stormwater management strategies will be assessed relative to their modeled ability to allow for future water quality standards to be met, using the same hydrologic metrics, water quality parameters, and BIBI scores as used in Task 4 [S5.C.5.c.ii.(5)]. Additional measures of stream health are identified in Task 8. [S5.C.5.c.iii]

Stormwater management strategies will be assessed using a combination of modeling techniques. Strategies will be assessed relative to how well they are projected to restore stream flow and water quality to being supportive of beneficial uses. The calibrated watershed HSPF model and the USEPA's System for Urban Stormwater Treatment and Analysis Integration (SUSTAIN) will both be used to assess stormwater management strategies. Stormwater strategies to be assessed will include:

- Changes to development-related codes, rules, standards, and plans [S5.C.5.c.ii.(5).a]
- Potential future structural stormwater control projects consistent with NPDES permit obligations described in section (S5.C.6.a).

Strategies will be developed that address which types of land cover should receive stormwater mitigation, and the types and amounts of stormwater mitigation different land covers should receive [S5.C.5.c.ii.(5).b]. Stormwater management strategies evaluated may also include:

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<sup>11</sup> King County. 2012. Stormwater Retrofit Analysis for Juanita Creek Basin in the Lake Washington Watershed. Ecology Grant: G0800618. Prepared by Jeff Burkey, Mark Wilgus P.E., and Hans Berge. King County Department of Natural Resources and Parks. Water and Land Resources Division. Seattle, Washington.

<sup>12</sup> Horner, R.R. 2013. Development of a Stormwater Retrofit Plan for Water Resources Inventory Area 9: Flow and Water Quality Indicators and Targets. King County Water and Land Resources Division, Seattle, Washington.

- Basin-specific stormwater control requirements for new development and redevelopment as allowed by permit Section 7 of Appendix 1.
- Strategies to encourage redevelopment and infill, and an assessment of options for efficient, effective runoff controls for redevelopment projects, such as regional facilities, in lieu of individual site requirements.

## **2.6 Task 6: Implementation Plan and Schedule**

Based on the stormwater strategies evaluated in Task 5, an implementation plan and schedule will be developed. The implementation plan and schedule will identify potential future actions to implement the identified stormwater management strategies, responsible parties, estimated costs, and potential funding mechanisms. The potential for future redevelopment activities to construct and/or fund stormwater mitigation will be assessed. It is likely that a near-term stormwater project list will be developed for the watershed. If possible, predesign for several high-priority projects may be completed as part of this planning project. [S5.C.5.c.ii.(6)]

## **2.7 Task 7: Public Process**

The project will incorporate input from stakeholders during the life of the project. Stakeholders will be informed of project status and input opportunities via a combination of web site updates, email updates, and project workshops. Stakeholders and the public will be requested to provide input and comments on the draft watershed-scale stormwater plan. [S5.C.5.c.ii.(7)]

## **2.8 Task 8: Other Watershed Improvement Strategies**

Four other factors that influence watershed conditions, including riparian vegetation, culverts, wetlands, and channel conditions, will be investigated starting with review of previous studies. Each factor will be assessed to determine its present condition, and to identify potential strategies for improving conditions. [S5.C.5.c.iii]

## **2.9 Task 9: Reporting**

The final watershed-scale stormwater plan will be submitted to Ecology no later than October 1, 2016. The plan will summarize results of the modeling and planning process, describe results of the evaluation of strategies under Task 5, and include the implementation plan and schedule developed under Task 6. The task schedule is shown in Figure 4. [S5.C.5.c.iv]

Annual status reports on the progress made on each task of this project will be submitted as part of King County's annual report.

## **2.10 Task 10: Project Management**

The King County project team will meet on a routine basis to ensure proper project communication. Project coordination with staff from other programs in King County, the

cities of Redmond and Woodinville, and with the Washington State Department of Transportation, will also occur [S5.C.5.c.ii]. The project manager will track project scope, schedule, budget and quality to ensure that all permit obligations are met.

### 3.0. SCHEDULE

The final watershed-scale stormwater plan will be submitted to Ecology no later than October 1, 2016. The plan will summarize results of the modeling and planning process, describe results of the evaluation of strategies under Task 5, and include the implementation plan and schedule developed under Task 6. The approximate task schedule is shown in Figure 6 below.

Task	2014	2015	2016
1. Assessment of Existing Conditions	X	X	
2. Mapping	X	X	
3. Watershed Model Calibration	X	X	X
4. Historic and Future Condition Modeling		X	X
5. Evaluation of Stormwater Management Strategies		X	X
6. Implementation Plan and Schedule		X	X
7. Public Process	X	X	X
8. Other Watershed Improvement Strategies	X	X	X
9. Reporting			X
10. Project Management	X	X	X

**Figure 6. Bear Creek Watershed-Scale Stormwater Plan Schedule**

**APPENDIX D: STRUCTURAL STORMWATER  
CONTROLS LIST**

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## **STRUCTURAL STORMWATER CONTROL PROGRAM**

Projects planned and implemented as part of King County's Structural Stormwater Control Program seek to reduce stormwater quantity and quality impacts to waters of the state caused by existing developed land, and to prevent such impacts anticipated to be caused by future land development that are not adequately addressed through regulations or other required programmatic actions of the County's Stormwater Management Program (SWMP). Such impacts include, but are not limited to: increased runoff peaks, durations, and volumes; loss of groundwater recharge; increased pollutants in discharges; increased erosion and sedimentation; physical, chemical, and biological damage to aquatic habitat and biota; increased flooding and property damage; and, increased risks to human health and safety. The overall goal is intended to be achieved incrementally over time through implementation of the program's capital projects each year.

The planning process used to develop the Structural Stormwater Control Program, including:

- The geographic scale of the planning process.
- Issues and regulations addressed.
- Steps in the planning process.
- Types of characterization information considered.
- Amount budgeted for implementation.
- The public involvement process.
- A description of the prioritization process, procedures and criteria used to select the Structural Stormwater Control projects.

King County's planning process for its Structural Stormwater Controls Program is described below for the five types of projects that must be considered as part of the Structural Stormwater Controls Program per Permit Condition S.5.C.6.a.i.(1) through (5).

### Stormwater Retrofit Projects

For stormwater retrofit projects (project types (1), (2), and (3) specified in Permit condition S.5.C.6.a.i), the planning process is currently in a state of flux as the County tries different planning approaches to identify, assess, and prioritize such projects for future funding. The stormwater retrofit projects considered include new flow control facilities/BMPs, new treatment facilities/BMPs, and retrofit of existing treatment and/or flow control facilities. The three approaches currently underway include the following:

### *Small Stream Basin Retrofit Planning Program*

One of King County's approaches to stormwater retrofit planning is to focus on small, substantially developed stream basins. In such basins, the harmful effects of stormwater runoff from developed land are more pronounced and directly measureable due to less dilution by water from other sources (i.e., runoff from undeveloped land or groundwater inflow). In addition, full basin retrofitting will take less time and expense, so the expected benefits of retrofitting can be achieved and measured sooner in order to inform future retrofitting in larger basins. Another aspect of this approach is to focus on basins wherein degradation of stream health and water quality has been measured by monitoring data. This provides baseline data for assessing the effectiveness of retrofit actions.

In 2012, the County completed a high level capital needs assessment of 64 small stream basins scattered across unincorporated King County that have documented degradation of stream health and water quality based on two sets of available monitoring data. One was benthic index of biologic integrity (BIBI) data available at <http://www.pugetsoundstreambenthos.org/> and the other was water quality assessment data available at <http://apps.ecy.wa.gov/wqawa2008/viewer.htm>. The 64-basin assessment (updated in 2013 to 67 basins) is a compilation of key information for each basin (e.g., basin size, land covers, soil types, BIBI scores, impaired water body listings, etc.) which is used to prioritize the basins for stormwater retrofitting efforts. Included in the prioritization information is Ecology's integrity score, which comes from Ecology's Stormwater Target Watersheds map provided in their 2013 Solicitation for Proposals to Conduct Stormwater Retrofit Planning and Pre-design. The 67 basins are currently prioritized to favor the following:

- Relatively small basin size with a significant amount of developed land
- Presence of BIBI monitoring stations with baseline data from which to measure retrofit effectiveness
- Baseline BIBI data in the fair or worse range for the basin
- Developed vs. predeveloped runoff peaks indicating a likely unstable or scoured stream channel
- Location within an Ecology stormwater target watershed with a high integrity score

The funding for this program was established for the first time in 2013/14 and has been used to leverage grant funding for two small basins so far: Evans Creek Tributary 108; and, May Creek Tributary 291A. A third basin, Monticello Creek, will also receive funding from this program for the County's share of the match required for an Ecology retrofit planning grant just applied for by the City of Redmond. Program funding and grant funding add up to about \$300,000 for each of these basins. This cost includes basin characterization, runoff modeling, and design of a basin-wide system of conceptual retrofits that work together to meet a regulatory performance standard at the mouth of the basin (e.g., one or more of Ecology's regulatory performance standards for LID, flow control, and treatment). The cost also includes public outreach on the planning effort and

several pre-designs of retrofit projects selected from the basin-wide system of conceptual retrofits based on cost vs. benefit. The pre-designs will be used to compete for construction grant funding expected to be offered by Ecology later this year.

Additional funding appropriation for this program will be requested in the 2015/16 biennium budget request. This funding will be used to (1) do conceptual retrofit planning in two new high priority small stream basins, (2) do additional pre-designs for the small stream basins where conceptual planning has already been done, and (3) leverage grant funding for construction of retrofit projects.

A variation of this planning approach will be explored wherein opportunity sites are identified within a basin for retrofit projects that can be designed to meet a regulatory performance standard for the developed area draining to the site. Such an approach can potentially generate pre-designs more quickly because the step of basin-wide systematic design is skipped.

### *Larger Basin Plans*

The County has and will continue to participate in larger basin planning efforts to identify stormwater control projects and other actions to mitigate the stormwater impacts of past, present, and future development. During this permit term, the County is leading three multi-jurisdictional planning efforts that have or will identify stormwater retrofit needs. These include the WRIA 9 Stormwater Retrofit Plan, the Miller/Walker Creeks Stormwater Retrofit Plan, and the Bear Creek Stormwater Basin Plan. Public outreach was or will be a component of all these planning efforts.

The WRIA 9 stormwater retrofit planning effort, now nearing completion, is an EPA-grant-funded effort with an estimated cost of \$1.3 million. It has identified unit retrofit needs (i.e., number of rain gardens, number of rain barrels, and number of detention facilities) across the developed landscape that would collectively achieve flow regime restoration goals in the many streams that are tributary to the Green/Duwamish River. Although the effort did not identify, site, or pre-design specific retrofit projects, it did estimate the overall cost of stormwater flow control retrofitting in each of the stream basins that comprise the study area and suggested that a large share of the retrofitting could be achieved through regulatory redevelopment requirements as each basin slowly redevelops over the next 30 to 100 years. Such information will be useful in prioritizing and structuring future, more detailed retrofit planning efforts in the watershed.

The Miller/Walker Creeks stormwater retrofit planning effort is funded through an Ecology/National Estuary Program grant. The estimated project cost is approximately \$250,000. It will identify, assess, and prioritize 80 sites across the basin for stormwater retrofit projects. The criteria for prioritization are currently being developed by the multi-jurisdictional project management team. The planning effort will select at least three sites and develop pre-designs for retrofit projects at those sites. The pre-designs

will be used to compete for construction grant funding expected to be offered by Ecology later this year and in coming years.

The Bear Creek stormwater basin planning effort is estimated to cost over \$2 million and is a multi-jurisdictional effort being performed by King County to comply with the Permit's watershed-scale stormwater planning requirement. Because the Bear Creek basin is largely developed, a major focus of the effort will be to identify a conceptual list of retrofit projects for future implementation. Further planning will be needed after the basin plan to develop pre-designs for these projects to seek local funding and state/federal grant funding for implementation. The order of project implementation will be likely be prioritized based on cost vs. benefit.

### Property Acquisition Projects for Flow Control/Water Quality Benefits

King County prioritizes acquisitions based on a variety of information, including but not limited to salmon recovery plans, the Flood Hazard Management Plan, basin plans, habitat studies, recreation plans, stormwater management plans, and staff expertise.

Generally, lands identified for acquisition have conservation value in one or more of the following categories: agricultural production, forestry, ecological protection and restoration, flood risk reduction, passive recreation, strategic growth management community separators, and stormwater benefits (both by preserving naturally high functioning sites and by acquiring sites for facilities). It is often the case that a single property will meet more than one conservation objective. For example, a forested property in the headwaters of a rural stream system may have fish and wildlife benefits, forest health benefits, and stormwater benefits related to preserving water quality and retaining surface water.

Increasingly, staff who plan acquisition strategies are examining the landscape for acquisitions that would achieve multiple benefits. In many cases such planning efforts are informed by sophisticated modeling efforts, including the Department of Ecology's Watershed Characterization model. The Watershed Characterization model is particularly useful in stormwater acquisition planning for its ability to identify basins across the landscape where additional protection and restoration actions would have the greatest impact on improving water quality and water flow functions.

King County has also developed a process to address Type 2 drainage problems in the Structural Stormwater Control program. King County's Stormwater Services Section is made aware of Type 2 drainage problems either through drainage complaints or while conducting outfall reconnaissance surveys. If a Type 2 drainage problem is found, each problem is to be evaluated through a feasibility study to prioritize the problem and identify potential solutions. Upon completion of the feasibility study, a plan is enacted to address and correct the problem area.

### Maintenance Projects with Capital Construction Cost $\geq$ \$25,000

The planning process for these types of projects includes the following steps:

- 1) A problem is identified during regular inspection of a stormwater control facility/best management practice (BMP) that appears to require capital construction to fix.
- 2) An engineering review is performed to confirm the problem and a rough estimated cost to fix.
- 3) The problem is referred to the stormwater capital program where more detailed assessment and costing is done to create a capital project.
- 4) The problem is prioritized with other stormwater capital projects for funding.

**STRUCTURAL STORMWATER CONTROLS LIST  
KING COUNTY  
2013**

Project Name	Type <sup>1</sup>	Start Year	Status <sup>2</sup>	End Year	Cost Estimate <sup>3</sup>	Funding (%)			WQ Benefit (Est. TSS or TS reduction lbs/yr) <sup>4</sup>	Hydro Benefit (Est. Avg. % flow reduction) <sup>5</sup>	Hydro Benefit Option #	Retrofit Incentive <sup>6</sup>	Other Benefit	Monitoring Planned (Y/N)	Lat / Long (X, Y)	Receiving water body name	Comments
						Local	State	Federal									
Clough Creek Buyout and Sediment Facility	1	2013	1. Planning	2018	\$1.7M	51	7	42	N/A	N/A	N/A	N/A	None	Yes	47.47354/-121.78639	Clough Creek	Alternative analysis underway - chosen alternative and amount of FEMA grant may change funding percentages.
Issaquah Hobart Road at NE 113th St	1	2013	2. Design and permitting	2014	\$200K	100			N/A	100	2a	0.75	None	Yes	47.48462/-122.02791	Issaquah Creek	Provide bioretention.
Kirkland Pump Station Upgrade	1	2002	3. Construction	2014	\$75K	100			N/A	100	2a	N/A	None	No	47.676445/-122.203728	Lake Washington	Joint King County-City of Kirkland project. Install silva-cell system to increase infiltration around landscaped area and pervious asphalt paving on the street. Upon completion, the street will be turned over to the City.
Evans Creek Tributary 108 Basin-wide Retrofit Siting	2	2013	1. Planning	2014	\$300K	24	86		N/A	N/A	N/A	N/A	None	Yes	47.675415/-122.056882	Evans Creek	Planning and predesign for three retrofit projects with detention and bioretention stormwater facilities.
May Creek Tributary 291A Small Basin Retrofit	2	2013	1. Planning	2014	\$216K	45	55		N/A	N/A	N/A	N/A	None	Yes	47.49543/-122.12522	May Creek	Planning, predesign, and final design to for one retrofit project with detention and bioretention stormwater facilities.
North Base Stormwater ISGP Upgrade	2	2013	1. Planning	2015	\$500K	100			N/A	N/A	N/A	7	None	Yes	47.74691/-122.3013	Thornton Creek	Additional treatment units installed within an existing stormwater system. Monitoring will take place at outfall.
Cedar Grove Road Water Quality Pond	2	2013	2. Design and permitting	2014	\$200K	100			N/A	N/A	N/A	6	Habitat	Yes	47.43985/-122.06384	Cedar River	Construct water quality pond to reduce sediment load from road. Pit sites along the road have significant track out. Source control enforcement is also being pursued.
Avondale Rd	2	2013	2. Design and permitting	2014	\$150K	100			N/A	100	2a	0.5	None	Yes	47.71543/-122.09057	Cottage Creek	Retrofit bioretention swale within right-of-way to treat runoff from high use intersection.
Kerristan Rd Flow Dispersion	2	2013	4. Complete/Maintenance	2013	\$74K	100			N/A	100	2b	1.5	None	Yes	47.42845/-121.9294	Rock Creek	Disperse flow to reduce erosion and increase infiltration.
Covington-Sawyer Rd at 179 Ave SE	2	2013	2. Design and permitting	2015	\$200K	100			N/A	100	2a	0.25	None	Yes	47.295278/-122.273333	Soos Creek	Bioretention system.
Dockton Rd	2	2014	2. Design and permitting	2014	\$500K	100			N/A	100	2a	0.7	None	Yes	47.41245/-122.43744	Puget Sound	Construct bioinfiltration swale.
Black Diamond Ravensdale Rd	2	2014	2. Design and permitting	2014	\$60K	100			N/A	100	2a	1	None	Yes	47.34711/-121.98993	Ground	Construct bioinfiltration swale.
140th Avenue SE at SE Petrovitsky Road	2	2014	2. Design and permitting	2014	\$100K	100			N/A	N/A	N/A	1	None	Yes	47.44557/-122.15501	Cedar River	Enhance existing retention/detention pond to treat runoff from high use intersection.
Issaquah Hobart Road SE at SE May Valley Road	2	2014	2. Design and permitting	2014	\$100K	100			N/A	N/A	N/A	0.4	None	Yes	47.48462/-122.02791	Issaquah Creek	Construct water quality swale to treat high use intersection stormwater runoff.
SMag CSO Control Project Storage Facility	2	2014	3. Construction	2015	\$254K	Applied for state funding			7	100	2c	0.49	None	No	47.63298/-122.38664	Elliott Bay	Landscape infiltration via underdrains; driveway and roof runoff collected and routed to bioswales.
North Beach Pump Station and CSO Control Facility	2	2014	3. Construction	2015	\$140K				1	N/A	2c	0.08	None	No	47.701533/-122.390417	Puget Sound	State partially funded design. State funding of construction TBD. Area contributing to project for water quality benefit evaluation is drainage area to StormFilter catch basin insert.
Seola Creek Basin Facility Upgrade and Retrofit	3	2010	2. Design and permitting	2015	\$1.5M	35	65		30,911	18	1	304	None	Yes	47.51044/-122.36880	Seola Creek	Retrofit to add a wetpool to a flow control facility; partially funded by Ecology Grant 1200062.

**STRUCTURAL STORMWATER CONTROLS LIST  
KING COUNTY  
2013**

Project Name	Type <sup>1</sup>	Start Year	Status <sup>2</sup>	End Year	Cost Estimate <sup>3</sup>	Funding (%)			WQ Benefit (Est. TSS or TS reduction lbs/yr) <sup>4</sup>	Hydro Benefit (Est. Avg. % flow reduction) <sup>5</sup>	Hydro Benefit Option #	Retrofit Incentive <sup>6</sup>	Other Benefit	Monitoring Planned (Y/N)	Lat / Long (X, Y)	Receiving water body name	Comments
						Local	State	Federal									
Tuscani Facility Remediation	3	2011	4. Complete/Maintenance	2013	\$124K	100			118	100	1	8.2	None	Yes	47.70591/-122.07458	Bear Creek	Retrofit of flow control facility to stormwater wetland.
Military Rd at S 342nd	3	2013	3. Construction	2014	\$300K	100			N/A	100	2a	0.25	None	Yes	47.343611/-122.100833	Green River	Provide bioretention.
Kerriston Culvert	5	2014	2. Design and permitting	2014	\$540K	100			N/A	N/A	N/A	0.25	Fish passage	Yes	47.436164/-121.853633	Rock Creek	Control overflow from washing fines off gravel road surface; project is one element of a S4.F response undertaken by King County to address stormwater impacts caused by this gravel road.
Cedar Valley Facility Remediation	5	2013	4. Complete/Maintenance	2013	\$77K	10	90		164	100	1	11.4	None	Yes	47.38643/-122.01941	Cedar River	Conversion of a settling pond into a wetpond; partially funded by Ecology Grant G1100216.

**Notes**

N/A - not available or not applicable  
WQ - water quality  
TSS - total suspended solids  
TS - total solids  
FEMA - Federal Emergency Management Agency

<sup>1</sup>**Type**

1. New flow control facility, including Low Impact Development (LID) Best Management Practices (BMPs)
2. New treatment facility (or treatment and flow control facility), including LID BMPs
3. Retrofit of existing treatment and/or flow control facility
4. Property acquisition for water quality and/or flow control benefits (not associated with future facility)
5. Maintenance with capital construction costs ≥ \$25,000

<sup>2</sup>**Status** (as of December 31st of the reporting year)

1. Planning
2. Design and permitting
3. Construction
4. Complete/ Maintenance
5. Project Cancelled
6. Property acquisition

<sup>3</sup>**Cost Estimate** - Costs to be updated to reflect final costs when Status 4 or 6 is reached.

<sup>4</sup>**WQ Benefit** - KC S8.d loading rates used for LDR, HDR, Commercial land use types

<sup>5</sup>**Hydro Benefit**

1. Project's volume ratio
- 2a. 100%
- 2b. 100%
- 2c. Project's volume ratio

<sup>6</sup>**Retrofit Incentive** - From Washington State Department of Ecology *Retrofit Incentive Table*

**APPENDIX E: NPDES SOURCE CONTROL  
INSPECTION PROGRAM – SITE LIST DEVELOPMENT  
AND MODIFICATION**

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## **NPDES Source Control Inspection Program - Site List Development and Modification**

### **Introduction**

This document has been developed in collaboration with other Phase I jurisdictions and describes the program by which King County will prepare, and annually modify, a list of potentially pollution generating sites that meets the requirements of NPDES Phase 1 municipal stormwater permit section S5C7. Permittees must inspect 20% of the sites on the list in any given calendar year, but are not required to inspect 100% of sites over a 5 year period. Consequently, the list must contain a well-defined set of guidelines to identify appropriate sites and processes to include or remove these sites from a central database.

### **Business License and Parcels**

Depending on the permittee (City or County), the basic elements in compiling the initial list is either the business license (for Cities) or the legal land parcel (for Counties). The difference is due to the fact that most Cities have local business licenses, whereas Counties do not. However, due to the complexities and limitations of each method, the initial list may contain elements generated by both office records and field surveys. Through time, the list will be refined to maximize the number of elements that should be regulated as “sites” in the context of the source control program of the NPDES permit.

### **Official date of list**

Permittees must inspect 20% of the sites on the list in any given calendar year. To determine compliance with this requirement, the number of sites must be fixed for that year. The permit does not define a date upon which the official list for the year will be fixed. For the purposes of establishing the official number of sites by which to determine compliance metrics for any given calendar year, an “official” list will be established at a date within the jurisdiction’s budget preparation schedule, with the understanding that as businesses are identified through field survey or other methods cited in this paper, they will be added (or dropped) from the list, as appropriate. Although the total number of businesses will remain constant, it is anticipated that the specific named businesses will shift as businesses relocate or additional businesses missed in records are found in the field. Thus the final list of inspected businesses at the end of the year may include some businesses not originally on the “official” list.

### **Initial site list development**

King County developed its’ list for the 2013 program using the current list of developed parcels located in the current stormwater audit program inventory. King County will modify the inventory for use in future years by the following methods.

#### **Step 1 – assemble list of sites based on office records**

**Developed parcels with commercial or industrial zoning:** King County has used the current commercial or similar stormwater fee classification in the drainage utility database for commercial and industrial zoned parcels. This list will be supplemented using the current municipal business licenses and any other sets of municipal records.

**Developed parcels with multifamily zoning (includes both apartments and condominiums):** King County has defined properties with 3 or more residential units and current multifamily or similar stormwater fee classification for inclusion in the drainage utility database based on potential impact.

### **Step 2 – Add any sites identified by field or database surveys**

These databases are both internal to the County and external from other agencies. The databases include the following:

1. The existing database of business/commercial sites that have approved flow control and/or water quality treatment facilities (1,458 as of 2/1/09), which is maintained SWS;
2. The existing database of business/commercial sites with simple drainage conveyance systems (418 as of 2/1/09), which is maintained by SWS;
3. The existing database of all properties owned/operated by King County (2,500), which is maintained by King County Real Estate Services and the Department of Executive Services Facility Management section; and

These databases and their respective updates will be used to modify the current list of addresses, and winnow out those already listed via commercial, industrial, or multifamily zoning. These datasets will be verified by a combination of telephone, database and field verifications of the businesses existence, and relevance for inclusion in this program.

An additional step in the program will be to identify businesses by conducting field surveys of targeted roads or geographic areas with potential high density of businesses of interest. The program will select target roads or geographic areas and conduct “windshield surveys” to field identify business sites based on visible evidence of commercial activity such as advertising signs or commercial-scale or type of material storage or activities. These businesses will be verified by comparing them to the current database.

### **Modification of initial site list**

King County will modify the initial list by the following methods:

- Modifying multiple legal parcels that should be dealt with as one site.
- Modifying single parcels with multiple businesses (e.g. shopping malls) that should be dealt with as multiple sites.
- Correcting database as occupant records change.
- Adding developed sites shown as undeveloped in office records.
- Identifying the presence of pollutant generating activities using citizen reports, field investigations, or other methods.

### **Exclusions from the List:**

Due to overlapping authority in stormwater compliance, Phase I Permittees propose the following exclusions from the Appendix 8 List:

- NPDES permitted sites within other permittee's jurisdiction;
- Port of Seattle and Tacoma properties;
- Sites which fall under the jurisdiction of, are owned, or managed by Secondary Permittees; and,
- Those categories, which through an audit of existing inspection reports or field surveys representative of the category, are found to be non-pollutant generating.

### **Counting Inspections**

For the purpose of complying with the permit conditions to inspect 20% of the sites on the permittee's "official" list of pollution-generating businesses, the following shall be counted:

1. Inspections performed by staff of the permittee;
2. Inspections performed by contractors representing the permittee and for which the permittee performs any needed follow-up enforcement activity;
3. Inspections performed by staff from other jurisdictions under an MOA or MOU with the permittee (e.g. inspections performed by King County in the Densmore basin under an MOA);
4. Inspection performed by Source Control Specialists funded by Ecology as part of the Local Source Control Program or the Urban Waters Initiative;

**APPENDIX F: EDUCATION AND OUTREACH  
TOPICS BY PROGRAM**

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