# Appendix D: Fact Sheet for the 2016 Modification to the

# Phase I Municipal Stormwater Permit

National Pollutant Discharge Elimination System and State Waste Discharge General Permit
for discharges from Large and Medium Municipal Separate Storm Sewer Systems

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Phase I Municipal Stormwater General Permit

**STATE OF WASHINGTON**
**DEPARTMENT OF ECOLOGY**
**OLYMPIA, WASHINGTON 98504-7600**

**May 18, 2016**

# 2016 Phase I Municipal Stormwater Permit Modification

# Introduction

This Fact Sheet accompanies the proposed 2016 permit modification for the National Pollutant Discharge Elimination System (NPDES) Phase I Municipal Stormwater Permit covering Large and Medium Municipal Separate Storm Sewers (the permit).

The purpose of this permit modification (with the public comment review period beginning May 18, 2016) is twofold.

Ecology's first purpose in modifying the permit is to incorporate, into Appendix 10 of the permit, Ecology's determination of equivalency for the stormwater programs submitted by the cities of Seattle and Tacoma, and by Clark, King, Pierce, and Snohomish counties. The permit required these Phase I municipalities to adopt a stormwater program that will provide equal or similar protection of receiving waters and pollutant control as compared to Appendix 1 of the permit. Part 2 of Appendix 10 will now list the manuals, ordinances, and other documents that the Phase I municipalities are relying on to meet this permit requirement.

Ecology's second purpose in modifying the permit is to incorporate Appendix 13 into the permit. This appendix will describe and require the City of Seattle to implement an adaptive management plan for pollutants that discharge from their municipal separate storm sewer system (MS4) to the Lower Duwamish Waterway.

This Fact Sheet documents the legal, technical, and administrative decisions Ecology has made in the process of modifying the Phase I Municipal Stormwater Permit for a second time.

You may download copies of the proposed permit modification documents at:
www.ecy.wa.gov/programs/wq/stormwater/municipal/permitMod2016.html

## *Historical Context of this Permit Modification*

The Washington Department of Ecology (Ecology) issued the first Washington State Municipal Stormwater Permits on July 5, 1995. Three permits were issued for the Phase I permittees in three specific water quality management areas.

Ecology issued a second cycle of Municipal Stormwater Permits on January 17, 2007. Under this permit cycle Phase I communities were no longer grouped by water quality management areas; instead they were issued separate coverages under a general Phase I permit.

Ecology issued a third cycle of Municipal Stormwater Permits on August 1, 2012 that became effective on August 1, 2013. The biggest change as part of this cycle was the incorporation of Low Impact Development requirements for new development and redevelopment into the permit.

The Phase I Municipal Stormwater Permit that went into effect on August 1, 2013 was first modified in 2015 to address resolutions of appeals under settlement agreements and as remanded by the Pollution Control Hearings Board (PCHB) in accordance with WAC 173-220-190(1). The modification went into effect on January 16, 2015.

This fact sheet addresses the second proposed modification to the Phase I Municipal Stormwater Permit that went into effect on August 1, 2013. The Washington Department of Ecology (Ecology) issues this Fact Sheet as Appendix D to the November 9, 2011 Fact Sheet that accompanied the October 20, 2011 formal drafts of the Phase I Municipal Stormwater Permit and the Western Washington Phase II Municipal Stormwater Permit, both effective August 1, 2013.

A timeline of the history of the Municipal Stormwater General Permits and additional information is available on Ecology's website: http://www.ecy.wa.gov/programs/wq/stormwater/municipal/PermitsPermittees.html.

# Public Involvement

## *Public Comment Period*

Ecology invites public comment on the proposed permit modification from May 18, 2016 until 11:59 p.m. on June 30, 2016. In order to allow Ecology to adequately address comments, please include the following information with each comment:

- The specific language used in the draft modification subject to your comment. Include the page number(s) and, where indicated, permit section reference (e.g., S8.D.2.b), or reference to the equivalent document.
- A brief, concise comment including the basis for the comment, and in particular the legal, technical, administrative, or other basis for the concern.
- Suggested language or a conceptual alternative to address your concern.

Per the Code of Federal Regulations, 40 CFR 122.62, when a permit is modified, only the conditions subject to modification are reopened. Ecology recommends that reviewers of this proposed permit modification limit comments to Appendix 10, Ecology's decisions to accept the Phase I municipalities' stormwater programs as equivalent to what is required by the permit in S5.C.5.a, and Appendix 13.

## *How to Submit Comments*

Ecology will accept written and oral comments on the modified permit and supporting documents until **11:59 p.m., June 30, 2016**. Ecology will accept comments sent in by any of the following three ways:

1. **Preferred method** – By email to: SWPermitComments@ecy.wa.gov
2. By postal mail to:

   Municipal Permit Comments
   Washington State Department of Ecology
   P.O. Box 47600,
   Olympia, WA 98504-7600

3. By oral testimony at the public hearings

### *Public Workshops and Hearings*

**June 23, 2016 9:00 a.m.** – In person at:

**Gene J. Colin Educational Hall, Room 111**
**6737 Corson Avenue South**
**Seattle, WA 98108**

**June 29, 2016 2:30 p.m.** – Via webinar* and in person at the:

**Washington State Department of Ecology**
**300 Desmond Drive**
**Lacey, WA 98503-1274**

*For more details about the webinar, please visit: http://www.ecy.wa.gov/programs/wq/stormwater/municipal/permitMod2016.html.

The purpose of the workshops is to explain the proposed changes to the permit, and to answer questions about the proposed changes. Ecology will accept formal oral testimony or comments on the draft permit modification and/or fact sheet after the public workshops, during the hearings. The hearings will immediately follow the workshops. People may testify both in person and over the phone (as part of the webinar hearing component for the second hearing).

## *Issuance of the Final Modified Permit*

Ecology will issue the final modification after it considers all public comments and makes final changes to the draft modified Permit. If public comments cause a substantial change in the Permit conditions from the final draft permit modifications, another public notice of draft modification(s) and comment period may ensue.

If Ecology receives significant comments on the new Appendix 13, we may delay including Appendix 13 in the initial modification until comments are addressed. We would then issue another modification and supplemental response to comments, relying on the single draft comment period.

Ecology expects to issue the final modified permit in July 2016. The permit modifications will be effective 30 days later in August 2016. Ecology will send a copy of the Notice of Issuance to all persons who submitted written comment or gave oral testimony at the public hearing.

With the issuance of the Final Modified Permit, Ecology will publish a *Response to Comments* as Appendix E to the Fact Sheet which will address the comments submitted during the public comment period. People who submit comments will receive a notice on how to obtain copies of the final permit and Ecology's response to comments.

## *Ecology Contact Information*

Please direct questions about the workshop, hearing, and requests for printed copies of the draft modification to Abbey Stockwell (360) 407-7221, or abbey.stockwell@ecy.wa.gov, or

Abbey Stockwell
Washington State Department of Ecology
PO Box 47600
Olympia, WA 98504-7600

# Phase I Municipal Stormwater Permit, Second Modification

The proposed modification focuses on two appendices – Appendix 10 and Appendix 13.

## *Appendix 10 - Equivalent Programs for Runoff Controls for New and Redevelopment and Construction Sites*

Ecology proposes to modify Appendix 10, Part 2 of the Phase I Municipal Stormwater Permit (the permit) that went into effect on August 1, 2013 and was first modified on January 16, 2015. The proposed modification implements the outcome of Ecology's determination that each Phase I municipality adopted and made effective a local program that meets permit requirements S5.C.5.a.i and S5.C.5.a.ii.

### Historical Context of Appendix 10

On April 8, 2008 the Pollution Controls Hearing Board (PCHB) issued a Summary Judgment and Order on Dispositive Rulings for Phase I appeals. The PCHB summary judgment agreed with appellants that Ecology's determinations of stormwater program equivalency under the 2007 Phase I Municipal Stormwater Permit lacked a public process and constituted a permit modification. The order required Ecology to name approved alternative stormwater programs within the permit in order to allow, through the major permit modification requirements in WAC 173-220-060, a public review, public comment, and appeal process on Ecology's decision.

Ecology implemented the PCHB's order by modifying the 2007 Phase I Municipal Stormwater Permit on June 17, 2009. This modification included a list of approved documents in a new appendix to the Phase I permit, Appendix 10.

In the Phase I Municipal Stormwater Permit that went into effect on August 1, 2013, Permittees were required to continue implementation of their ongoing programs as well as modify their programs by the deadlines established within the permit. With this in mind Ecology divided Appendix 10 into two parts. Part 1 continued to list the documents associated with the ongoing programs that had received equivalency approval per the requirements in the 2007 Phase I Municipal Stormwater Permit. Part 2 served as a placeholder to eventually list the documents that would receive equivalency to meet the permit requirements in S5.C.5.a.

On January 16, 2015, Ecology modified the permit to address resolutions of appeals under settlement agreements and as remanded by the PCHB. In their ruling, the PCHB also directed Ecology to modify the *Stormwater Management Manual for Western Washington*. As part of

the January 16, 2015 permit modification, Ecology incorporated the *Stormwater Management Manual for Western Washington as Amended in 2014* into the permit requirements.

With this second permit modification, Part 2 will no longer serve as a placeholder. Part 2 of Appendix 10 will now list the documents that Ecology has determined to be functionally equivalent to Appendix 1 and the applicable parts of Ecology's *Stormwater Management Manual for Western Washington as Amended in 2014*. This modification will also allow the public a chance to review, comment, and appeal Ecology's determinations of stormwater program equivalency under the permit requirements.

## Associated Permit Requirements

S5.C.5.a of the permit requires permittees to adopt and make effective a program designed to prevent and control the impacts of runoff from new development, redevelopment and construction sites as part of their Stormwater Management Program (SWMP). The permit requires these programs to include:

- Minimum requirements, thresholds, and definitions that are equivalent to those listed in Appendix 1 of the permit.
- 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 maximum extent practicable.
    - Satisfy the state requirements under chapter 90.48 RCW to apply all known, available and reasonable methods of prevention, control, and treatment prior to discharge.

Permittees may have chosen to meet these requirements through the adoption of Appendix 1 and the required portions of Ecology's *Stormwater Management Manual for Western Washington* (SWMMWW). Phase I permittees that chose to implement programs that varied from the adoption of Appendix 1 / SWMMWW were required to submit their draft enforceable requirements, technical standards, and manuals to Ecology for review and approval. This process is generally referred to as an "equivalency review."

## Appendix 10, Part 2

Ecology proposes modifying Appendix 10, Part 2 to include a list of approved document packages for each of the six Phase I municipalities: King County, the City of Seattle, the City of Tacoma, Pierce County, Clark County, and Snohomish County. Ecology also included the approved document package for the Washington State Department of Transportation (WSDOT). Each jurisdiction has taken a different approach to meeting the permit requirements contained in S5.C.5.a.i, ii and iii that is specific to their municipal codes and land conditions.

## Ecology's Review Process

Ecology conducted a review process of each of the programs proposed by the Phase I municipalities (and WSDOT). Ecology assigned both an Ecology permit administrator and technical review lead to each of the manual reviews. Ecology staff worked with the permittees

(and WSDOT) to review multiple iterations of each program until Ecology determined that each program was functionally equivalent to Appendix 1 and the applicable portions of the SWMMWW; and that each program met the requirements in S5.C.5.a.i and S5.C.5.a.ii of the permit.

The Phase I documents, and records of Ecology's original comments and their resolution, are available on Ecology's website at: http://www.ecy.wa.gov/programs/wq/stormwater/municipal/Phase1equivalentstormwatermanualsWestern.html.

## Revisions to Phase I Programs after Ecology's Equivalency Determination

If a Phase I permittee chooses to revise their program from that listed in the finalized version of Appendix 10, the responsibility is on the Permittee to document how the revisions to their program meets the permit requirements as described above. In this case, the permittee cannot rely on Ecology's determination of equivalency associated with the Phase I programs because Ecology's equivalency determination is based on a review of the specific documents listed in Appendix 10. Permittees are cautioned that this practice may create potential liability.

## Considerations for Phase II Municipal Stormwater Permittees

Both the Phase I Municipal Stormwater Permit (special condition S5.C.5.a) and the Western Washington Phase II Municipal Stormwater Permit (WWA Phase II Permit) (special condition S5.C.4.a) require permitted cities and counties to establish enforceable programs to manage stormwater from new development, redevelopment, and construction activities.

For these special conditions, the primary distinction between the two permits is that Phase I permittees must submit their draft enforceable requirements, technical standards and manuals to Ecology for review and approval, whereas Phase II Permittees are not given the option to do so. Ecology does not have the capacity to review Phase II programs in detail, and thus relies on the Phase II Permit and Appendix 1 to ensure the minimum requirements, thresholds, and definitions are consistently applied to projects in Phase II coverage areas.

Without Ecology's approval and an associated determination of equivalency of a local stormwater program, the local jurisdiction must rely on its own justification and documentation that the local program meets the permit requirements. Ecology, EPA, or a third party may review such documentation to evaluate compliance with the permit.

Ecology encourages any permittee who is considering using an Ecology-approved equivalent Phase I program (or elements of such a program) to review the comments and resolution documentation associated with that Phase I program review. These materials are available online at: (http://www.ecy.wa.gov/programs/wq/stormwater/municipal/Phase1equivalentstormwatermanualsWestern.html).

In the subsections below, Ecology also provides some critical information that Phase II permittees should consider when adopting specific Ecology-approved equivalent Phase I programs. Ecology does not intend for the information below to be all inclusive.

### *Combining Different Manuals*

It is important to keep in mind that a Phase II Permittee may only establish alternative requirements to the minimum technical requirements, thresholds, and definitions contained in Appendix 1 (WWA Phase II Permit S5.c.4.a.i) through adoption of an Ecology-approved basin plan (Section 7 of Appendix 1) or through the adoption of an Ecology-approved Phase I program. Some Phase II Permittees have expressed interest in selecting specific components of several different Phase I equivalent programs and/or the SWMMWW, and combining these requirements into a unique local program.

Ecology expects that Phase II Permittees adopting an Ecology-approved Phase I program for S5.C.4.a.i requirements (i.e., in lieu of Appendix 1) are also adopting the associated site planning requirements, BMP selection, design, infeasibility criteria and limitations, and LID competing needs criteria (S5.C.4.a.ii) from that same Ecology-approved Phase I program. If a Phase I program has received Ecology's approval for alternatives to the minimum technical requirements, thresholds, definitions, adjustment and variance criteria in Appendix 1, such alternatives are only appropriate when implemented with the requirements, limitations and criteria addressing S5.C.4.a.ii.(a)-(f) that are part of that Ecology-approved program, and any additional conditions that Ecology places on such an approval.

If a Phase II Permittee chooses to select different BMP limitations or criteria, or site planning requirements (S5.C.4.a.ii.(a)-(f)) from several different Phase I programs, the responsibility is on the Permittee to document how this composite manual meets the permit requirements as described above. In this case, a permittee cannot rely on Ecology's determination of equivalency associated with the Phase I programs because Ecology's equivalency determination is based on a review of the individual Phase I program as a whole. It is incorrect to assume that individual elements of approved equivalent Phase I programs can be isolated, recombined, and still be equivalent to Appendix 1 and the SWMMWW. Permittees are cautioned that this practice may create potential liability[1].

### *Adopting Phase I Programs That Were Revised After Ecology's Equivalency Determination*

If a Phase I permittee chooses to revise their program from that listed in the finalized version of Appendix 10, the responsibility is on the permittee to document how the revisions to their program meets the permit requirements as described above. If a Phase II permittees decides to adopt a Phase I Program that was revised after Ecology's equivalency determination, the responsibility is also on the Phase II permittee to document how their program meets the permit requirements as described above.

In this case, neither the Phase I permittee or the Phase II permittee can rely on Ecology's determination of equivalency associated with the Phase I programs because Ecology's equivalency determination is based on a review of the specific documents listed in Appendix 10. Permittees are cautioned that this practice may create potential liability.

[1] Furthermore, it may be inappropriate to adopt a Phase I program designed to address specific general conditions in a Phase I community (e.g., highly urbanized, fully built-out city) in a jurisdictions with significantly different characteristics (large-lot suburbs at the fringe of an urbanized area).

### *King County's Stormwater Program Special Considerations*

Phase II permittees considering adopting King County's *Core Requirement #9: Flow Control BMPS* in King County's *2016 Surface Water Design Manual* will need to ensure they also adopt the bioretention sizing requirements in King County's *Surface Water Design Manual*.

### *City of Seattle's Stormwater Program Special Considerations*

Phase II permittees considering adopting the City of Seattle's Stormwater Manual Section 5.2 On-site Stormwater Management will need to ensure they also adopt the bioretention sizing requirements associated with the requirements in Section 5.2.

Additionally, many of the requirements in the City of Seattle's Stormwater Program apply specifically to highly urbanized areas that have had at least 40% total impervious areas since 1985 (refer to Appendix I-F, Volume I, of the SWMMWW). It may be inappropriate for Phase II permittees to adopt the City of Seattle's program requirements designed to address these areas.

### *City of Tacoma's Stormwater Program Special Considerations*

There are no applicable special considerations for the City of Tacoma's Stormwater Program.

### *Pierce County's Stormwater Program Special Considerations*

Pierce County completed an infiltration capacity analysis to justify placing Downspout Dispersion at the same list level as bioretention for sites that are underlain by Spanaway soils. The requirements, characteristics and descriptions of Spanaway Soils are defined and discussed in several locations in the approved Pierce County Stormwater Management and Site Development Manual (Pierce County's Manual). Phase II permittees adopting Pierce County's Manual will need to continue using the same information should they choose to adopt the Pierce County Manual.

Downspout Dispersion being placed at the same level as bioretention is not approved for any other soil.

### *Clark County's Stormwater Program Special Considerations*

Clark County Stormwater Manual references a Clark County-specific calibration of the 2012 Western Washington Hydrogeology Model (WWHM2012). Version 4.2.12 of WWHM2012 introduced this calibration in the Clark2012SG mapping unit.

The Clark2012SG is not approved by Ecology for use outside of Clark County. Phase II permittees outside of Clark County must continue using the standard WWHM2012 or another approved continuous runoff model, even if they choose to adopt this manual.

Phase II permittees within Clark County may use the Clark2012SG in conjunction with other approved stormwater manuals, and are not constrained to using solely Clark County's Stormwater Manual simply because they choose to use the Clark2012SG.

### *Washington State Department of Transportation's Highway Runoff Manual (HRM) Special Considerations*

Ecology has determined the HRM to be equivalent to both of Ecology's Western and Eastern Stormwater Management Manuals for minimum design requirements and best management practices for public road projects. Permittees may adopt and employ these equivalent sections (only) for use for public road projects within their jurisdictions. It should be noted that there are some different thresholds, additional provisions (or exemptions) in the HRM that apply only to Washington State Department of Transportation and are not appropriate for local governments to follow and implement.

### *Snohomish County's Stormwater Program Special Considerations*

There are no applicable special considerations for Snohomish County's Stormwater Program.

## *Appendix 13 – Adaptive Management Requirements*

Ecology proposes to add a new appendix, Appendix 13, to the Phase I Municipal Stormwater Permit that went into effect on August 1, 2013 and was first modified on January 16, 2015 (the permit). Appendix 13 will incorporate requirements in response to a significant long-term municipal separate storm sewer system (MS4) adaptive management response effort under Special Condition S4.F.3. The proposed Appendix 13 is applicable to one Permittee: the City of Seattle. Ecology expects that in the future, as additional significant adaptive management response plans applying to other municipal stormwater permittees and/or other geographic areas are developed, they will become incorporated into Appendix 13 of the Phase I Permit, or similar municipal stormwater permit appendices, as appropriate.

The proposed Appendix 13 contains requirements specific to the City of Seattle's MS4 discharges to the Lower Duwamish Waterway (LDW) in accordance with Special Condition S4.F.3. The City of Seattle has developed a comprehensive Source Control Implementation Plan (SCIP) to control sources of sediment pollution in the LDW to support the pending sediment Superfund cleanup. Ecology proposes to express the relevant and applicable aspects of the SCIP as municipal stormwater adaptive management response actions described in Appendix 13 of the Permit.

## History of Special Condition 4 (S4) Compliance with Standards

### *Intent of Provision*

Special Condition 4 (S4), Compliance with Standards, was originally developed for the 2007 versions of the Municipal Stormwater Permits (Phase I permit and the Phase II NPDES Municipal Stormwater General Permits for Eastern and Western Washington). This condition is constructed to address federal law, where § 1342(p)(3)(b) of the Clean Water Act does not require strict compliance with water quality standards for municipal stormwater discharges, while at the same time the condition does not provide a categorical exemption for compliance with State Water Quality Standards for municipal stormwater discharges.

"Condition S4.F represented Ecology's best professional judgment to 'reconcile the irreconcilable,' that is, to balance the state law requirement to comply with water quality standards against the practical and technical realities that permittees will not, in the foreseeable future, be able to ensure that every discharge from their MS4s will not cause or contribute to violations of water quality standards." (Pollution Control Hearings Board (PCHB) Findings of Fact, Conclusions of Law and Order, Condition S4, PCHB Nos. 07-021, 07-026, 07-027, 07-028, 07-029, 07-030, 07-037 Phase I and 07-022, 07-023 Phase II, August 7, 2008, pg. 13)

Special Condition S4.F provides for an adaptive management response approach when municipal stormwater discharges are causing or contributing to a violation of water quality standards in the receiving water body and the Stormwater Management Program requirements of the Permit are not designed to adequately address the problem.

Ecology recognizes that it is extremely difficult for local governments to control, or prevent from getting into their municipal separate storm sewers, pollutants from diffuse sources that are introduced throughout the area served by the stormwater collection system. Stormwater best management practices, including treatment, do not exist to fully address pollutants from diffuse sources.

Therefore, Ecology has determined that an adaptive management response approach is necessary when documented diffuse sources are influencing the quality of municipal stormwater at levels above what would normally be expected, and to the point where it is causing or contributing to a violation of water quality standards in the receiving water. "S4.F is to address situations where the pollutants are discovered at levels above what would normally be expected, while S5 and S6 are designed to address the typical pollutant-loading from municipal stormwater." (ibid, pg 22)

The proposed Appendix 13 contains requirements specific to the City of Seattle's MS4 discharges to the Lower Duwamish Waterway (LDW) because those discharges are, in some cases, causing or contributing to a violation of Surface Water Quality Standards and/or Sediment Quality Standards in the LDW. In other cases, those discharges could cause or contribute to such violations.

The City of Seattle has developed a comprehensive Source Control Implementation Plan (SCIP) to control sources of sediment pollution in the LDW to support the pending sediment Superfund cleanup. Ecology proposes to express the relevant and applicable aspects of the SCIP as adaptive management response actions for the City of Seattle's municipal stormwater discharges into Appendix 13 of the Permit. Ecology wants to encourage additional proactive monitoring and investigative efforts to ensure progress toward attaining applicable water quality standards in the LDW.

### *Previous Pollution Control Hearings Board (PCHB) Decision*

On June 17, 2009, Ecology modified the Phase I permit and the Phase II NPDES Municipal Stormwater General Permits for Eastern and Western Washington in part to address the PCHB's

*Findings of Fact, Conclusions of Law and Order, Municipal Stormwater General Permits Condition S4*, dated August 7, 2008.

The PCHB's *Findings of Fact* affirmed that the permit's adaptive management approach to a violation of water quality standards is a valid regulatory approach, and ordered modifications to the permit language to clarify the intended meaning, operation, and effect of the permit condition S4.F. The PCHB order included minimum requirements for the specific information that a Permittee must include in the notification under S4.F. In addition, the PCHB order clarified the conditions under which Ecology may determine that an adaptive management response is not required. In the adaptive management report, the PCHB order added a requirement for the Permittee to describe monitoring or other assessment and evaluation efforts to determine the effectiveness of the Best Management Practices implemented to address the discharge.

Additional language addressed timeframes for Ecology's response and for submittal of a revised report, and options for further action by Ecology should the adaptive management response fail to correct the water quality standard violation. The PCHB also clarified that when a Permittee follows the notification process in S4.F, the Permittee remains in compliance with permit conditions S4.A and S4.B prohibiting discharges that violate water quality standards.

As part of the 2009 permit modification, Ecology also added a sentence to S4 to implement a settlement agreement with Puget Sound Energy and PacifiCorp clarifying the relationship of S4 to federal and state laws governing cleanup of hazardous substances. The modification removed a conflict with Washington State RCW 70.105D (Hazardous Waste cleanup - Model Toxics Control Act) and the United States 42 USC 9601 (Comprehensive Environmental Response, Compensation, and Liability Act of 1980, or CERCLA).

### *S4 Implementation and Guidance Development*

Ecology processed S4.F notifications submitted under the modified 2009 permits differently than notifications and correspondence prior to the modified permit language. Many early S4.F notifications were rejected because they did not include site specific data from the MS4 or the receiving water body. Other S4.F notifications were the result of a one-time illicit discharge (i.e., vehicle collision) and the Permit's illicit discharge detection and elimination (IDDE) and/or source control requirements were designed to address such problems.

In September 2009, Ecology published guidance for Permittees regarding Special Condition S4 (Publication Number: 09-10-068; https://fortress.wa.gov/ecy/publications/summarypages/0910068.html) and updated a related illicit discharge reporting guidance (Publication Number: 07-10-089; https://fortress.wa.gov/ecy/publications/summarypages/0710089.html).

## History of S4.F with the City of Seattle and the Lower Duwamish Waterway

In November 2007, Seattle submitted a notification under S4.F for discharges to the Duwamish River and phthalates. Ecology responded that adaptive management was not necessary at the time provided Seattle continued to participate in LDW source control efforts led by Ecology's Toxics Cleanup Program.

Following the 2009 permit modification and associated implementation guidance, Seattle submitted an S4.F notification for discharges from the six-acre S. Myrtle Street MS4 basin (July 2010). Source tracing data had shown a recurring problem with PCBs in storm solids, and in-waterway sediment data exceeded sediment quality standards. S. Myrtle Street is relatively narrow with an unpaved parking shoulder and is subject to heavy industrial use. Ecology regulates an adjacent industrial facility under an individual NPDES permit and Seattle had formally referred the facility to Ecology after pursuing its local enforcement authority to the maximum extent. In response to Seattle's S. Myrtle Street S4.F notification, Ecology requested an adaptive management response report due to the uncontrolled soil tracking and runoff from the unpaved shoulder under Seattle's control, acknowledging that other source controls needed in the vicinity are under separate authority and responsibility.

Beginning in November 2010, Ecology reviewed and commented on multiple Seattle plans and reports, and Seattle implemented focused Best Management Practices (BMPs), including street sweeping and increased frequency of stormwater infrastructure maintenance inspections in the S. Myrtle Street MS4 basin. Seattle conducted a feasibility study of right-of-way improvements along S. Myrtle Street that would reduce stormwater impacts, but the evaluated project was not a priority Seattle capital project in the Duwamish. At the same time, new source tracing data reinforced the focus on issues at the adjacent industrial facility.

In October 2011, Ecology therefore approved Seattle's S. Myrtle Street adaptive management response plan as an appropriate near-term plan, resulting in Seattle implementing an increased frequency of operational best management practices in this six-acre basin. Ecology's response also noted that "additional adaptive management planning may be necessary to identify long term solutions for MS4 discharges at S. Myrtle Street & throughout the LDW" to emphasize the likely long-term need to identify a credible and comprehensive approach to prioritizing actions between stormwater basins.

Between 2012 and 2016, several major milestones in the Lower Duwamish Waterway superfund cleanup and source control efforts occurred:

- In 2012, the United States Environmental Protection Agency (EPA) released the LDW Proposed Plan for public comment under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) together with an appended revised draft Ecology Source Control Strategy. Ecology's Source Control Strategy is based on the coordinated use of federal, state and local authorities to control sources and/or pathways of pollution to LDW sediments.
- In 2014, EPA released the LDW Record of Decision, which documented EPA's selected Superfund remedy for the in-waterway sediments over the 5-mile LDW.
- Also in 2014, Ecology and EPA signed a new Memorandum of Agreement that in part reinforced the role of water quality authorities and programs in controlling sources to the LDW.

Also during this time, Ecology and City of Seattle representatives were working to develop Seattle's Source Control Implementation Plan, intended to be one of several future plans appended to the Ecology LDW Source Control Strategy. Seattle provided their first draft SCIP to Ecology in November 2013 for review.

In December 2013, Seattle submitted an S4.F notification under the Phase I Permit for municipal stormwater discharges from five specific outfalls that the City had determined were causing or contributing to a violation of applicable sediment quality standards in the LDW for PCBs and/or phthalates.

## Invoking Adaptive Management for Seattle's LDW Stormwater Discharges

In June 2014, based on previous experience with S4.F in the LDW and the municipal stormwater management-related content of the SCIP, Ecology required Seattle to develop an adaptive management response plan to address all Seattle MS4 discharges and all LDW sediment contaminants of concern (COCs).

Ecology determined that it is appropriate to expand the adaptive management response to include all of the City's MS4 discharges to the LDW for all LDW sediment COCs for the following reasons:

- A substantial amount of stormwater system data is available for numerous MS4 drainage basins that discharge to the LDW.
- Protocols for evaluating data will be refined over time. Rather than requiring future additional notifications for different MS4 discharge location and parameter combinations, this approach allows the City and Ecology to focus on program implementation. Results of future City data evaluations, including additional outfalls/discharge points and parameters, will be reported to Ecology as part of adaptive management annual reporting.
- The City and Ecology need to be able to prioritize additional actions and expenditures across all City MS4 discharges to the LDW. An LDW-wide source control adaptive management plan will provide an agreed-to framework for such prioritization.
- The City's draft Source Control Implementation Plan is LDW-wide. Some of the additional stormwater management activities identified in the plan are prioritized to occur in MS4 drainage basins that were not the subject of the City's December 2013 S4.F notification.
- Many of the source control actions that will be implemented do not address just one parameter. Instead, they will serve to address any contaminant that is present in stormwater solids.

## Relationship between Seattle's Adaptive Management and Source Control Implementation Plans

The Seattle Source Control Implementation Plan (SCIP) was developed in response to Ecology's comprehensive Source Control Strategy aimed at minimizing the risk of recontaminating LDW sediments above applicable criteria from a wide range of sources and pathways. Seattle's SCIP, therefore, encompasses topics and identifies actions that are not relevant to S4.F adaptive management because they are outside the scope or authority of the Phase I Permit. The S4.F adaptive management plan includes only those actions which are conducted or planned to manage discharges from or to the Seattle MS4.

The SCIP is a stand-alone separate document that is not subject to review and comment as part of this proposed Permit modification. Instead, Ecology proposes to express the relevant and applicable aspects of the SCIP as adaptive management response actions for the City of Seattle's municipal stormwater discharges. The proposed minimum performance measures for Seattle's adaptive management response actions are described in Appendix 13 of the Permit. Ecology encourages reviewers of the draft Appendix 13 to comment on the adequacy and completeness of the proposed minimum performance measures as compared to the relevant discussions in Seattle's SCIP.

Nothing in Appendix 13 is intended to limit state or federal actions under other authorities, nor is Appendix 13 intended to take the place of site-specific adaptive management or other actions necessary to control discharges from individual Seattle-owned or operated properties. Seattle's SCIP and associated MS4 adaptive management response plan provides an LDW-wide framework for controlling sources of pollution to LDW sediments.

The proposed Appendix 13 contains minimum performance measures for each of Seattle's municipal stormwater-related SCIP actions anticipated during the remainder of the permit term (through August 2018). Ecology expects to include updated minimum performance measures in the next permit cycle. In addition, Ecology expects that the SCIP will be substantially updated every 5 years. Because there is limited time remaining in the current Phase I permit term, Ecology will require the Seattle adaptive management plan to be substantially updated in accordance with terms and conditions of the next version of the Phase I Permit. Therefore, the proposed Appendix 13 does not include a requirement to comprehensively update the adaptive management response plan at this time.

## Adaptive Management Response Plan Applicability

The following sections describe the geographic applicability of the proposed Appendix 13 requirements, relevant pollutants, and an overview of each required action.

### *Geographic Area*

The proposed Appendix 13 contains requirements specific to the City of Seattle's MS4 discharges to the Lower Duwamish Waterway (LDW) as described in Tables 1 and 2 within Appendix 13. Table 1 in Appendix 13 identifies all the known outfalls owned by the City of Seattle that discharge stormwater collected from an associated Seattle municipal stormwater drainage basin into the LDW. Table 2 in Appendix 13 identifies all the known outfalls to the LDW that are owned or were installed by other entities to which Seattle's MS4, and associated basin, discharges.

It is important to note that many outfalls are used by multiple types of discharges. Three outfalls are also permitted combined sewer overflow (CSO) outfalls. Many outfalls also receive discharges from other NPDES permittees. Additionally, due to the complicated and overlapping drainage system, not all properties within an MS4-delineated basin drain to the MS4 – some drain to the combined sanitary sewer system or through a private conveyance to the LDW.

***Relevant Pollutants of Concern***

The pollutants that Seattle's LDW adaptive management response plan is designed to address include:

- Metals
- Total polychlorinated biphenyls (PCBs)
- Semi-volatile organic compounds (SVOCs) including phthalate esters and polycyclic aromatic hydrocarbons (PAHs)
- Total petroleum hydrocarbons (TPH)

Seattle's existing and proposed future source tracing sampling and effectiveness monitoring programs analyze samples for concentrations of these parameters or suites of parameters. For a complete list of analytes, refer to Table A-1 of *Pollutant Source Tracing in the Lower Duwamish Waterway, Sampling & Analysis Plan*, Seattle Public Utilities & Pyron Environmental, June 2009.

As a result of LDW source control efforts since 2002, Seattle has extensive documentation of pollutant concentrations in storm drain solids found in public and private stormwater system catch basins, pipes and or sediment traps. Seattle compiled pollutant concentrations in storm drain solids from near-end-of-pipe locations in the MS4 that represent the quality of storm solids discharged to the LDW and identified available in-waterway surface sediment samples within specified proximities to the MS4-influenced outfalls. Using screening values based on Sediment Management Standards criteria and/or sediment remedial action criteria established in the EPA Record of Decision for the LDW, the pollutants Seattle has found in LDW storm drain solids can be sorted into three general categories:

**Table 1: Relevant Pollutant List Categorized by Concentration Trends in Storm Drain Solids**

| **<20% Above SCO/LAET Screening Levels** | **>20% Above SCO/LAET, but <25% Above CSL/2LAET Screening Levels** | **>50% Above CSL/2LAET Screening Levels** |
|---|---|---|
| Arsenic | Zinc | Bis(2-ethylhexyl)phthalate (BEHP) |
| Copper | PCBs | |
| Lead | Dimethylphthalate (DMP) | |
| Mercury | Butylbenzylphthalate (BBP) | |
| LPAH[a] | cPAH[c] | |
| HPAH[b] | | |

a. LPAHs are low molecular weight and include: acenaphthene, acenaphthylene, anthracene, fluorene, naphthalene, phenanthrene

b. HPAHs are high molecular weight and include: **benzo[a]anthracene**, **benzo[a]pyrene**, **benzo[b]fluoranthene**, **benzo[k]fluoranthene**, benzo[g,h,i]perylene, **chrysene**, **dibenzo[a,h]anthracene**, fluoranthene, **indeno[1,2,3-cd]pyrene**, pyrene. **Bold** text indicates a carcinogenic PAH (cPAH)."

Seattle's source tracing and adaptive management effectiveness monitoring programs involve analyzing samples for the pollutants listed in Table 1 above. In addition, total organic carbon and grain size data are collected to inform data interpretation.

## Required Actions

It is Ecology's expectation that Seattle will implement the actions specified in Appendix 13 in the LDW in addition to implementing the requirements of Special Condition S5 of the Phase I Permit, including but not limited to public involvement, public education and outreach, coordination and mapping.

The additional actions required in Appendix 13 are classified into six categories. Each category is discussed in the subsections below:

### *Source Tracing & Sampling Program*

Seattle implements a data-driven source tracing program to find controllable sources of pollutants to the MS4. In addition to routine grab sampling of storm drain solids from catch basins and conveyance lines for source tracing purposes, Seattle will resample previously sampled locations following stormwater conveyance line cleaning to help distinguish between legacy sources and potential ongoing sources. Improvements to the source tracing and sampling program will involve collecting data in MS4 basins lacking data and the potential use of a new field screening technique: trained dogs.

### *Effectiveness Monitoring Program*

In addition to grab sampling, Seattle's existing source tracing program uses sediment traps in some locations to collect storm drain solids that are present within the stormwater flow, not solids that have settled to the bottom of a catch basin or pipe. Samples from a sediment trap installed near an outfall's discharge location are generally representative of solids discharged to the receiving water.

Seattle will add to existing near-end-of-pipe sampling locations to form the basis of an effectiveness monitoring program to track and evaluate contaminant concentration trends in MS4 discharges and to inform priorities for the implementation of Best Management Practices (BMPs) across the different MS4 drainage basins in the LDW. The new locations will be sampled using a smaller sediment trap, if proven effective based on ongoing trap redesign pilot testing, or using grab sampling methods. In the proposed QAPP revision, Seattle will identify the selected sampling methods for each location.

When the revised QAPP is implemented, Seattle will conduct effectiveness monitoring at all known outfalls that Seattle uses for MS4 discharges, except for the outfall locations listed below in Table 2. The reasons why these outfall locations were not selected for effectiveness monitoring are described below in Table 2.

**Table 2: MS4 outfall locations not selected for effectiveness monitoring**

| Storm Drain (SD) Outfall Name | Reason(s) Not Selected |
|---|---|
| ***East side of waterway*** | |
| S Nevada St | Primarily serves Port of Seattle property; source tracing sampling only |
| North Boeing Field | No active connections remaining |
| 16th Ave S, east | Serves a small approach to the South Park Bridge |
| I5 SD at S Ryan St | Used by Seattle MS4 during high flow bypass events only; data from S Norfolk St. effectiveness monitoring location is representative |
| ***West side of waterway*** | |
| 2nd Ave S | No feasible Seattle MS4 effectiveness monitoring location available; source tracing priority only |
| S Webster St | Receives flow from a single catch basin |
| S 96th St | Discharge location monitored by others |
| Duwamish substation SD#1 | Source tracing sampling only |
| Duwamish substation SD#2 | Source tracing sampling only |
| Duwamish substation SD#3 | Source tracing sampling only |
| W Marginal Pl SW | Seattle MS4 contribution from the Duwamish substation; source tracing sampling only |

### *Business Inspection Program Enhancements*

Specified changes to Seattle's business inspection program are intended to enhance its effectiveness over time.

### *Operations & Maintenance*

Seattle will take action in four different operations & maintenance program areas as follows:

1. Seattle will implement a stormwater system cleaning program (e.g., line cleaning) for its MS4 conveyance in the LDW. The identified minimum performance measure of 4,000 linear feet per calendar year is an annual average value based on a likely performance of 3,000-5,000 linear feet per year within Seattle's program budget. Seattle will conduct additional cleaning when financial assistance is available.

2. Seattle will evaluate the possibility of implementing an asset management program for MS4 infrastructure in the LDW similar to the type of asset management program used for sanitary sewer infrastructure (e.g., Capacity, Management, Operation & Maintenance, CMOM). This type of program includes, but is not limited to, planning and conducting repair work based on infrastructure condition and pollution prevention performance. Appendix 13 requires Seattle to identify actions and associated measurable targets for future implementation.
3. Similar to the planning effort for MS4 asset management, Seattle will identify capital projects to improve roadway surfaces in order to minimize pollutants in roadway runoff or increase the effectiveness of BMPs. Ecology expects the identified capital projects to be implemented as part of future SCIP and/or adaptive management response plan activities.
4. Seattle will also continue to implement the operational BMPs in the S. Myrtle Street basin as originally approved in 2011. The proposed Appendix 13 language provides an opportunity for future adaptive management activities in this basin to change if warranted given the LDW-wide prioritization approach established in the effectiveness monitoring program and described in the SCIP.

***Structural Controls***

The proposed Adaptive Management Response requirement includes a compliance schedule for two structural control projects approved under the Integrated Plan submitted with Seattle's Combined Sewer Overflow (CSO) Long Term Control Plan. The two projects, South Park Water Quality Stormwater Treatment Facility and Street Sweeping Expansion-Arterials, are MS4 projects that occur in drainage basins subject to this adaptive management response. The two projects are part of Seattle's LDW SCIP.

The proposed compliance schedule milestones will ensure reasonable progress toward completing the projects and associated reporting of relevant activities under S4.F.3.d. The compliance schedule is necessary because existing regulatory documents associated with Seattle's CSO Long Term Control Plan and Integrated Plan (e.g., federal Consent Decree under Civil Action No. 2:13-cv-00678, NPDES Permit No. WA0031682) do not specifically list milestone dates for the MS4 projects planned in the drainage basins subject to this adaptive management response and approved under the Integrated Plan. Ecology does not expect the proposed compliance schedule to conflict with terms of the federal consent decree or Seattle's CSO NPDES Permit No. WA0031682, in part because those documents do not contain interim milestones for these projects. However, if any due dates in the compliance schedule change based on allowances under the terms of the federal consent decree, Ecology will modify the proposed Appendix 13 to reflect those changes.

For the South Park Water Quality Treatment Facility, the relevant activities for the time remaining before the expiration date of this permit are focused on implementing a treatment technology assessment (i.e., pilot testing). The compliance schedule therefore identifies interim reporting milestones associated with pilot test results. For the Street Sweeping Expansion-Arterials project, the compliance schedule identifies specific relevant details to be reported on an annual basis.

For detailed information about Seattle's CSO Long Term Control Plan and associated Integrated Plan, refer to the following website: http://www.seattle.gov/util/EnvironmentConservation/Projects/SewageOverflowPrevention/IntegratedPlan/index.htm.

***Annual Prioritization and Reporting***

Annual reporting of Seattle's relevant activities in the LDW will also provide an opportunity to adjust priorities for the upcoming year if necessary based on new data or other information. Ecology expects to use the information in the annual report(s) as input to LDW source control status reports or other publications and evaluations.