



STATE OF WASHINGTON  
DEPARTMENT OF ECOLOGY

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May 26, 2016

TO: Ben Parrish, Chair, Pooled Resources Oversight Committee

CC: Pooled Resources Oversight Committee Members, Alternates, and Interested Parties

THROUGH: Bill Moore, Water Quality Program Development Services Section Manger

FROM: Brandi Lubliner, Regional Stormwater Monitoring Program Coordinator

**SUBJECT: Regional Stormwater Monitoring Program Quarterly Report  
for January 1, 2016 through March 31, 2016**

The Regional Stormwater Monitoring Program (RSMP) is funded by municipal stormwater permittees and administered by the Washington State Department of Ecology (Ecology) under the direction of the Pooled Resources Oversight Committee (PRO-Committee) and the Stormwater Work Group (SWG). More information about the RSMP is available at <http://www.ecy.wa.gov/programs/wq/stormwater/municipal/rsmp.html>.

Ecology delivers quarterly reports on RSMP implementation to the PRO-Committee. The PRO-Committee briefs the SWG and requests direction as needed to clarify priorities and goals.

Attached please find Ecology's eighth quarterly report as the RSMP administrator, for the period from January 1 through March 31, 2016. Please contact RSMP Coordinator Brandi Lubliner at [brandi.lubliner@ecy.wa.gov](mailto:brandi.lubliner@ecy.wa.gov) or (360) 407-7140 for more information.

Attachment (4pp.)

# Regional Stormwater Monitoring Program Quarterly Report

For Jan 1 through Mar 31, 2016

## RSMP accomplishments and key decisions reported for the quarter

- USFWS delivered the final report concluding the bioretention soil mix (60/40 mix) prevents pre-spawn mortality in adult Coho salmon.
- The first six effectiveness studies continue to produce study designs and deliver monitoring results.
- Two effectiveness contracts were let this quarter to Puyallup and USFWS. Two remaining scopes of work are under development.
- Washington Department of Fish and Wildlife (WDFW) and volunteers retrieved mussel cages at the 40 RSMP randomized marine nearshore locations, as well as the additional 33 sites sponsored by multiple organizations and local governments. WDFW processed the samples for contaminant analysis.
- BEACH staff compiled marine nearshore indicator bacteria data from 27 different sources around the Puget Sound. The project was given approval to conduct the optional data analysis task in the contract.
- A draft memo (meta-analysis) of permittees' illicit discharge detection and elimination (IDDE) incident tracking reports in the Permit and Reporting Information System (PARIS) was completed.

## RSMP budget for the previous quarter and anticipated for the coming quarter

Table 1 shows detail for each RSMP component and for the whole program. Encumbrances in excess of projected revenues will be for projects spanning multiple years. Ecology's program administration expenses are limited to 5% of the total RSMP revenue and are not separately accounted for by the three RSMP components; indirect charges are applied quarterly. The total balance and anticipated expenditures for the coming quarter include Ecology's administrative expenses. Revenue is expected in the 3<sup>rd</sup> quarter (August) of each calendar year.

Table 1. Summary of revenues, expenditures, encumbrances, and available funds for each RSMP component

Reported and projected income and expenditures	Status and trends (4-year project total: \$3,638,710)		Effectiveness studies (4-year project total: \$6,299,238)		SIDIR (4-year project total: \$677,250)		RSMP total (4-year project total: \$10,615,198)		
	Jan-Mar 2016	Apr-Jun 2016 <i>(anticipated)</i>	Jan-Mar 2016	Apr-Jun 2016 <i>(anticipated)</i>	Jan-Mar 2016	Apr-Jun 2016 <i>(anticipated)</i>	Ecology's Jan-Mar administration expenses	Jan-Mar 2016	Apr-Jun 2016 <i>(anticipated)</i>
Balance at start of quarter	\$587,149	\$197,800	\$2,887,168	\$2,590,912	\$338,628	\$310,841	-	\$3,909,938	\$3,162,628
Revenues	\$0	\$0	\$0	\$0	\$0	\$0	-	\$0	\$0
Expenditures	\$389,349	\$193,761	\$296,257	\$517,896	\$27,787	\$16,954	\$33,917	\$747,310	\$748,611
Balance at end of quarter	\$197,800	\$4,039	\$2,590,912	\$2,073,016	\$310,841	\$293,887	-	\$3,162,628	\$2,414,017
Encumbrances	\$954,760	\$1,121,340	\$3,731,930	\$3,649,224	\$79,468	\$62,514	-	\$4,766,157	\$4,833,078

## RSMP Activities

### Status and Trends Monitoring

The RSMP Coordinator is managing the small streams monitoring and data management; King County is leading the multi-agency team of scientists to analyze the streams data. Washington State Department of Fish and Wildlife (WDFW) is managing the nearshore marine monitoring project. The U.S. Geological Survey (USGS) is

leading the nearshore sediment monitoring project. The Ecology/Washington Dept. of Health BEACH coordinator is conducting the marine nearshore bacteria data compilation and analysis project.

### ***Small streams water quality and watershed health***

All chemistry data collected at the RSMP small streams sites was entered into EIM by Ecology's Environmental Assessment Program (EAP). Outstanding data are the benthos and periphyton taxa, which are anticipated next quarter from the lab. Data analysis agreements were finalized with King County (lead), USGS, and EAP. PSP staff are assisting in this effort. GIS products, water quality index and habitat metrics are expected deliverables this summer.

### ***Marine mussel contaminant monitoring***

Marine mussel cages were retrieved in February 2016 from the 40 RSMP randomized sites and the additional 33 sponsored by multiple other stakeholders; 7 cages total were lost (5 were RSMP cages). Mussel composite tissue samples were sent for laboratory analysis. WDFW prepared a KING 5 news story (3/18/2016) and set up a Google map for the project.

### ***Marine nearshore sediment chemistry***

USGS, WDNR and King County will conduct the summer 2016 nearshore sediment sampling. Contract scopes will be finished next quarter. The Quality Assurance Project Plan (QAPP) for the summer sampling will be submitted for approval next quarter.

### ***Nearshore bacteria***

BEACH staff gathered bacteria indicator data from 27 (of 78 contacted) entities gathering data along Phase I or II permittees' Puget Sound urban shoreline boundaries. Entities included non-government organizations, universities, tribes, conservation districts, and local and state governments. A memo and map were delivered showing available data in terms of both temporal and spatial extent. The optional contract task to conduct analysis of this compiled data set was approved by the Pooled Resources Oversight Committee (PRO-C) this quarter.

## **Effectiveness Studies**

### ***Active studies***

- USFWS delivered the final report for bioretention soil mix toxicity reduction. The 60/40 mix prevented pre-spawn mortality in adult Coho and eliminated toxic sub-lethal impacts to developing Coho embryos during a portion of the developmental period. Due to the lack of rain, this study wasn't able to test the most sensitive developmental periods. The 60/40 mix was found to capture carbon, PAHs by 91%; other contaminant reduction ranges were 7-47% for bacteria, 75% for suspended solids, and 26-88% for less mobile metals (Cd, Cr, Cu, Pb, and Zn). The 60/40 mix exported calcium, nutrients, and mobile metals (As, Ag, and Ni). Total carbon concentrations were sufficient to prevent toxicity from metals.
- King County's QAPP for the Federal Way Hylebos study was approved. Monitoring began this spring, but given the delay and lack of rain the project will not reach the target number of storms this wet season.
- King County has proposed to drop the detention tank monitoring from the scope on the Echo Lake highway retrofit BMPs monitoring project. The technical advisory committee and PRO-C concur. Agreement adjustments will be made based on evolving understanding of site conditions.
- Lakewood submitted a final study design and surveys for the business inspection source control effectiveness study. The survey and data request will go out to MS4 permittees in the coming quarter.
- The final QAPP was approved for the LID hydrologic performance study led by Bellingham. Monitoring will begin the fall of 2016 due to the delayed start. Equipment purchases and site preparation will take place this summer.
- Agreements for two more effectiveness studies were signed this quarter:
  - USFWS: assessment of plant and fungi impacts on performance of bioretention soil mix.

- Puyallup: regional protocol for assessing rain garden effectiveness.

### ***Future studies/activities***

Agreements for two remaining effectiveness studies are expected to be completed in the coming quarter:

- King County study of PCB treatment/sequestration in bioretention soils. King County will coordinate this field effort with USFWS assessment of plant and fungi impacts of performance of bioretention soil mix, but the agreement is separate for the PCB sampling and analyses.
- King County assessment of catch basin inspection effectiveness.

When these two agreements are finalized, all ten first round RSMP effectiveness studies will be under way or completed. A second round of RSMP effectiveness studies will be solicited next quarter. The process will be longer and include technical review in advance of a workshop, followed by permittee voting.

### **Source Identification Information Repository (SIDIR)**

Lakewood's consultant began compiling 2015 IDDE data from PARIS submitted by permittees in a database. An intern with Ecology is assisting with hand data entry for results submitted in PDF format. Analysis and reporting on the compiled data is expected this summer.

### **RSMP contracts and agreements**

Several modifications of agreements and two new agreements were finalized this quarter with the following partners:

- Amendments to contracts with King County and USGS for analysis of the streams data for a total of approximately, and agreements with Ecology EAP and Puget Sound Partnership (PSP) totaling \$407,061 to conduct RSMP streams analysis.
- Amendment to the agreement with Bellingham to begin monitoring bioretention facilities totaling \$378,552.
- Amendment to the agreement with Redmond to add final water quality equipment and fund 3 years of water quality and habitat monitoring to the paired basin study totaling \$935,560.
- New agreements with USFWS and Puyallup for effectiveness studies totaling \$424,920 and \$ 175,000.

### ***In the coming quarter, Ecology expects to complete agreements with:***

- New agreements with King Co (catch basin cleaning and PCB entrainment in bioretention) for two effectiveness studies totaling \$ 257,936 and \$ 117,254.11.
- New agreements with the RSMP marine sediment team member agencies totaling \$360,340.
- Revision to the King County BMP retrofit study at Echo Lake to reduce the scope of work to discontinue flow monitoring.

### **RSMP deliverables received in the previous quarter**

All contract scopes of work and deliverables that have been reviewed and approved by the RSMP Coordinator are posted to the RSMP website: <http://www.ecy.wa.gov/programs/wq/stormwater/municipal/rsmp/rsmp.html>

### **Status and Trends**

- Final field and lab deliverables for streams monitoring from September - December. Water and sediment chemistry data (nutrients, metals, PAHs, PCBs, and flame retardants) were reviewed for quality assurance and the data entered to EIM.
- Mussel cages from marine nearshore locations were retrieved; field data and field costs were approved.
- Data compilation memo summarized the amount and spatial/temporal extent of available data along the urban shorelines in Puget Sound.

## Effectiveness Studies

- The USFWS gave a final presentation at the 2016 Salish Sea Conference on the success of using the 60/40 bioretention soil mix for treatment of stormwater to prevent toxicity to Coho salmon.
- Equipment bids and progress report for Redmond's paired urban watershed retrofit effectiveness study, and installation of remaining monitoring equipment.
- Final QAPP for Bellingham's LID hydrologic performance study, and progress report.
- Final study design and survey for Lakewood's business source control study, and progress reports.
- Progress report for King County's study monitoring BMP retrofits along Highway 99 at Echo Lake.
- Progress reports for King County's study monitoring of the regional detention facility BMP retrofits in Federal Way at Hylebos Creek.

## SIDIR

- Progress on hand entry required population of IDDE incident tracking database.

## RSMP deliverables expected in the coming quarter

### Status and Trends

- Stream watershed health (habitat and benthos) data QC review and upload to EIM. Metric calculations for habitat, water quality index, benthos and periphyton.
- Marine nearshore caged mussel post-retrieval data on survival, completeness of the field sampling, and biological metrics.
- Marine bacteria indicator data analysis report.

## Effectiveness Studies

- Equipment bids for monitoring LID facilities in the Bellingham LID hydrologic performance study.
- 2015 progress report and field site info (descriptions, coordinates, photos) for the Redmond paired basin retrofit study.
- Technical Advisory Committee meetings, final study design, and survey responses for the Lakewood business source control study.
- Draft QAPP for USFWS plant and fungi performance study in bioretention soil mix.
- Draft QAPP for King County study on PCB treatment/sequestration in bioretention soil mix.
- Final QAPP for King County Hylebos BMP retrofit study and early flow sampling on the retrofitted pond and bioretention cells.
- Field sampling and progress reports for King County Echo Lake Highway 99 retrofit study.

## SIDIR

- Populated IDDE incident tracking database.

## RSMP issues that need to be resolved or for which stakeholder input is desired

The PRO-C is discussing ways to fill the need for a communication strategy to share progress, results and findings from the RSMP studies with permittees, stormwater managers, and other stakeholders. We'd like to learn more about your trusted sources of information on stormwater science to help convey RSMP news and findings.