

# Recommendations for Regional Stormwater Monitoring

---

September 18, 2013

- Decision  
 Discussion  
 Information

**SUBJECT:** Roads and Highways Subgroup (RHS) Recommendations to the Stormwater Working Group (SWG)

**ISSUE:** Define monitoring needs related to roads and highways (Task 11 from SWG '13-'14 Work Plan)

## BACKGROUND:

What monitoring and assessment information is needed and why?

The SWG directed the convening of a subgroup (i.e., RHS) to take a holistic approach to defining monitoring needs related to roads and highways across the full spectrum of urban to rural roads in Puget Sound<sup>1</sup>, and to make specific recommendations as to how WSDOT's permit-required monitoring should address a subset of those needs. The big picture of monitoring needs should include status and trends monitoring, effectiveness studies, and source control.

Who was involved in the Subgroup, and how were decisions made?

The following individuals were involved in the RHS:

### Cities

- Russell Cotton-Betteridge (Bellevue)
- Nancy Aldrich (Richland)
- Lynn Schmidt (Spokane)
- Art Jenkins (Spokane Valley/Staff to Subgroup)
- Mary Henley (Tacoma)

### Counties

- Rod Swanson (Clark County)
- Jennifer Keune (King County Roads)
- Rob Fritz (King County Roads)
- Bob Hutton (Clark County alternate)
- Chris May (Kitsap County)
- Matt Zarecor (Spokane County)

### State

- Fred Bergdolt (WSDOT)
- David Duncan (Ecology)
- Kathleen Emmett (Ecology)

---

<sup>1</sup> The RHS took upon itself to define monitoring needs related to roads and highways for other areas the state as well.

## Recommendations for Regional Stormwater Monitoring

---

- Dick Gersib (WSDOT)
- Foroozan Labib (Ecology/WSDOT's municipal SW permit administrator)
- Greg Lahti (WSDOT)
- Mark Maurer (WSDOT)
- Larry Schaffner (WSDOT/Subgroup Chair)

### *Federal*

- Chris Konrad (USGS)
- Ryan McReynolds (USFWS)

### *Other Stakeholders*

- Emmett Dobey (WSAC)
- Katelyn Kinn (Puget Soundkeeper Alliance)
- Aimee Navickis-Brasch (Gonzaga University)
- Curtis Nickerson (Cardno TEC)
- Heather Trim (Futurewise)

### Special thanks to:

- Zack Holt (WSDOT), Chad Hoxeng (Clark County), and Janice Sloan (WSDOT) who gave presentations during our first meeting.
- Kimberly Adams (Ecology) and Diana Hendrickson (WSDOT) who provided meeting logistical support throughout our process.

The RHS's decisions were made using an iterative deliberation process that involved reviewing and discussing proposals put forth by various subgroup member proponents. Proposals considered were not "voted on" per se. However, the RHS did employ the use of polling techniques early on in the process to help identify areas of common interest. The decision process also considered lessons learned from previous and existing monitoring and research efforts, particularly those conducted in road and highway settings. The recommendations put forth represent the product of our process and include those that received varying degrees of support. Degrees of subgroup member support for the recommendations ranged from broad consensus to areas with more narrow interest. Even in those areas with more narrow interest, the deliberations aimed to reveal whether any opposition to the proposed recommendation existed amongst the participants.<sup>2</sup>

Where are we in the SWG approval process, and when are decisions needed?

The RHS draft recommendations were discussed during the SWG's June 12, 2013 meeting. The RHS reviewed, discussed, and considered the feedback provided by the SWG during their effort to further develop and refine their recommendations. The finalized recommendations below represent the outcome of these efforts. The RHS submits these recommendations for consideration and approval during SWG's September 18, 2013 meeting.

---

<sup>2</sup> None of the RHS members expressed opposition to any of the recommendations appearing below.

# Recommendations for Regional Stormwater Monitoring

---

Ecology's projected release date for the public review draft of the WSDOT municipal stormwater permit, the SWG is November 6, 2013. The projected reissuance date of the permit is March 6, 2013.

How and when are recommendations envisioned to be implemented?

Details regarding implementation vary by recommendation and are include with the recommendation's supporting materials.

What are the funding implications?

Details regarding funding implications vary by recommendation and are contained in the research proposal supporting materials.

## ALTERNATIVES CONSIDERED:

Alternatives considered by the RHS were numerous and included, but were not limited to, deliberations on:

- Priority BMP effectiveness studies
- Priority source identification and diagnostic studies
- Priority characterization studies
- Additional monitoring needs, if any, specific to the Puget Sound basin, including status and trends monitoring sites
- The 2014 reissuance of the WSDOT municipal stormwater permit and further reissuance of other municipal stormwater permits

The SWG's *support page* (and companion Ecology support page) for the RHS contains more information on the various alternatives considered by the subgroup:

- <https://sites.google.com/site/pugetsoundstormwaterworkgroup/home/runoff-from-roads-and-highways>
- <http://www.ecy.wa.gov/programs/wq/psmonitoring/roadshighwaySubgrp.html>

## RECOMMENDATIONS AND REASONING:

### **Priority BMP effectiveness studies**

1. Evaluate stormwater treatment performance of Modified Vegetated Filter Strips. See *Attachment A* for further details and the reasoning behind this recommendation.
2. Evaluate the effectiveness of Roadside Ditch Water Quality Enhancements for pollutant removal from rural roads. See *Attachment B* for further details and the reasoning behind this recommendation.
3. Evaluate the water quality treatment benefits of Porous Asphalt Shoulders and the optimization of its performance through operations and maintenance. See *Attachment C* for further details and the reasoning behind this recommendation.

## Recommendations for Regional Stormwater Monitoring

---

4. Evaluate the use of Compost-amended Biofiltration Swales to reduce pollutant concentrations at road maintenance yard in eastern Washington. See *Attachment D* for further details and the reasoning behind this recommendation.
5. Evaluate stormwater BMP performance in ultra-urban settings. See *Attachment E* for further details and the reasoning behind this recommendation.

### **Priority source identification & diagnostic studies**

6. Identify stormwater pollutant hotspots in road and highway projects. See *Attachment F* for further details and the reasoning behind this recommendation.
7. Test for the presence of PCBs in motor oils and fuels. See *Attachment G* for further details and the reasoning behind this recommendation.

### **Priority characterization studies**

8. None. However, the RHS recognizes that additional characterization monitoring typically occurs as a necessary component of effectiveness study designs.

### **Additional monitoring needs specific to the Puget Sound basin**

9. The attached Pollutants of Interest List (i.e., *Attachment H*) contain pollutant parameters of interest from a roads and highways perspective to consider including for analysis as part of the Puget Sound Region's status and trends monitoring efforts.

The list was built by examining the RSMP parameter lists. *The Pollutants of Interest List* includes the RSMP parameter lists alongside pollutants identified in the studies/papers reviewed to develop the pollutants of interest list. *Attachment I* identifies the studies and papers reviewed in generating the list of recommended parameters. The general listing and discussion of priorities in the [2011 AASHTO Stormwater Community of Practice Paper](#) was considered particularly useful in identifying and confirming pollutants of interest from a roads and highways perspective.

Based on some of the pesticides, herbicides that the WSDOT is using, the RHS recommends to possibly add diclobenil and 2,4-D to the list. Some road departments typically follow WSDOT herbicide use and guidance so would probably use the 2,4-D as well. Inclusion of these constituents should warrant future review as risk priorities are weighed from use on roadway areas versus non-roadway areas and cause(s) of impairment downstream, if any.

In addition to the papers and studies listed in Attachment I, the RHS reviewed the following investigating the roads and highways/phthalate connection:

- [Potential Effects of Highway Runoff on Priority Fish Species in Western Washington](#)
- [Highway Stormwater Runoff Study](#)
- [Monitoring of Contaminants in Delaware Street Sweeping Residuals and Evaluation of Recycling/Disposal Options](#)
- [Summary of Findings and Recommendations from the Sediment Phthalates Work Group](#)
- Excerpt from the City of Tacoma's *Thea Foss and Wheeler-Osgood Waterways 2003-2004 Stormwater Source Control Report*

# Recommendations for Regional Stormwater Monitoring

---

10. Obtain a better understanding regarding the long-term impacts and performance, including under extreme conditions, of infiltrative best management practices (BMPs) and flow control facilities (including low-impact development facilities). While not roads and highways-specific, the RHS identified the assessment of flow attenuation on small streams as a gap in the overall Puget Sound Region's status and trends framework. See *Attachment J* for details for further details and the reasoning behind this recommendation.

## **Municipal stormwater permit-related recommendations**

11. Endorse the preliminary draft monitoring language for the *2014 WSDOT municipal stormwater permit* contained in *Appendix K*. The objectives of the proposed permit's monitoring program include evaluating BMP effectiveness at facility and highway monitoring sites.<sup>3</sup> A byproduct of effectiveness monitoring efforts would include enriching the highway and facility characterization data set. The proposed permit requirements build off the efforts and lessons learned under WSDOT's existing permit and are intended to:

- Produce scientifically credible and representative data;
- Provide information that WSDOT can use for designing and implementing effective stormwater management strategies for WSDOT's highways and facilities; and
- Provide information WSDOT can use to refine requirements, guidelines, and procedures contained in the *Highway Runoff Manual (HRM)*.

12. The Department of Ecology should include background and supporting information regarding their decision to eliminate the Whole Effluent Toxicity testing requirement (a requirement also removed from the 2012 reissued Phase 1 municipal stormwater permits) in the *Fact Sheet* for the reissued WSDOT municipal stormwater permit.

13. Consider the RHS's priority effectiveness monitoring and source identification & diagnostic research proposals for inclusion in future permits and/or as part of Puget Sound Regional monitoring efforts.

## **Additional Recommendations:**

14. Hold an annual reoccurring daylong workshop regarding roads & highways-related research and monitoring. The workshop would provide an opportunity to share research finding, facilitate dialog, and foster collaborative partnerships. Planning discussions have already been initiated with the Washington Stormwater Center for such a reoccurring event.

15. Sunset the RHS in September. Upon delivery of the subgroup's final recommendations to the SWG and Ecology, the RHS completed its assigned task. RHS members see the annual reoccurring daylong workshop described in recommendation #14 as a venue for future dialog, direction, and the development of collaborative partnerships on roads & highways stormwater-related monitoring and research efforts.

---

<sup>3</sup> This includes evaluation of the modified VFS, RHS recommendation #1. Evaluation of Compost-amended Biofiltration Swales, RHS recommendation #4, is another effectiveness study under consideration for inclusion in the reissued WSDOT municipal stormwater permit.