MEETING AGENDA

KELSO STORMWATER ADVISORY COMMITTEE

DATE: December 1, 2010
TIME: 4:00 pm – 5:00 pm
LOCATION: Kelso City Hall, Suite 203

Unfinished Business

1) August 25, 2010 meeting minutes approval

New Business

1) Stormwater monitoring, this permit cycle and the next – Van McKay

Kelso Stormwater Advisory Committee Meeting
December 1, 2010 @ 4:00 p.m.
City Hall Conference Room 203
203 S. Pacific Ave.

Attendees: Dan Howell = Excused absence KA C

1. Don Lemmons
2. Van McKay
3. Michael Dyer
4. Gloria Nichols
5. Jay Friedrich
6. Shstanie Taylor
7. Tim Weaver
8.
9. Stephanie Helem KA C
10.
11.
12.
13.
14.
15.

Engineering Phone 360-423-6590
Fax 360-423-6591
Operations Phone 360-423-5730
Fax 360-423-8196

CITY OF KELSO
Public Works Department
203 S. Pacific Ave., Suite 205
PO Box 819
Kelso, WA 98626

Stormwater Advisory Committee Meeting

August 25, 2010

Call to Order:

Gary Fredricks called the meeting to order at 4:05 p.m., at City of Kelso City Hall, 203 S. Pacific Ave., Conference Room 203.

Those present were as follows:

Advisory Committee Members:
Gloria Nichols
Steffanie Taylor
Don Lemmons
Gary Fredricks
Michael Dyer

Staff:
Van McKay, City of Kelso
Stephanie Helem, City of Kelso

Excused Absence: Dan Howell
Unexcused Absence: Tim Wines

Approval of Minutes:

Don Lemmons made the motion, seconded by Gloria Nichols to approve the minutes of May 26, 2010. Motion carried, all in favor.

New Business:

1. Advisory Committee Youth Member Introduction

Van McKay introduced Michael Dyer the new Advisory Committee Youth Member. Michael Dyer is a sophomore at Kelso High School and has been coordinating with local agencies to discuss solutions regarding the 2009 flooding of the High School's parking lot and auditorium.

2. Stormwater issues and directions; National, State, Local

Van McKay gave a brief overview of the following documents provided to the committee members:

A. State of Washington Department of Ecology - "Proposed Requirements and Timelines to Update Development Codes to Incorporate LID".

- Environmental concerns/lawsuits on NPDES Permit. To strict to enforce?
- Possible change of ordinance to include LID "where feasible". Look at requirements.
- The Department of Ecology (DOE) is currently receiving public input to include information in the 2012 NPDES Permit. Van McKay attended a meeting and DOE is proposing to drop the 1 acre threshold. Attendees commented to leave the 1 acre threshold.

B. Environmental Protection Agency (EPA) – "Coming Together for Clean Water: EPA's Strategy for Achieving Clean Water, Public Discussion Draft – August 2010"
   - Discuss pharmaceuticals. Water quality inventories. Shifting needs and priorities.

C. "SW WA Phase II Monitoring Proposal" Draft
   - Discussed the high cost of stormwater to stream monitoring. DOE currently has a group for the Puget Sound area looking at how to do monitoring in a 3 phase approach.
   - SW Region (Clark County, Camas, Cowlitz County) to propose DOE monitoring of the BMP's. No instream monitoring as there is no funds. Monitoring Report is due December 2010.

D. "Municipal Stormwater Capacity Grants Program Funding Agreement between the State of Washington Department of Ecology and City of Kelso"

Next Meeting:

Committee discussed and agreed the next meeting shall be held December 1, 2010.

Meeting adjourned at 4:55 pm.

Approved:

Tim Wines, Chairperson

Stephanie Helem, Recording Secretary

KELSO STORMWATER MONITORING PLAN

This plan satisfies S8.C of the Phase II Municipal Stormwater NPDES Permit (Permit). It is comprised of two components, stormwater monitoring and Stormwater Management Plan (SWMP or "Program") effectiveness monitoring. This plan does not address any water quality monitoring associated with a Total Maximum Daily Load (TMDL, including Appendix II of the permit or any 303(d) listing). It also does not address any sampling associated with the Illicit Discharge Detection and Elimination (IDDE) program. Results will be used to support the adaptive management process and lead to refinements of the SWMP. Map and photos of the proposed sample sites are attached.

STORMWATER MONITORING

Stormwater monitoring is intended to help characterize stormwater runoff at a limited number of locations in a manner that allows for the analysis of loadings and changes over time. As required in the Permit and in a collaborative effort, Cowlitz County and the Cities of Longview and Kelso will partner to monitor stormwater at two locations, one "commercial" outfall and one "high-density residential" outfall.

Commercial Site

Site	Start of CDID1 Ditch 4 (Peardale cul-de-sac, west)
Why selected	Commercial site in Longview site adjacent to County Fairgrounds and West Kelso city limit. Former sampling site for various 303(d) studies.
Site Limitations	*Access:* On improved ROW and CDID1 Property. Steep slope, but recently improved, and bottom is not mucky. *Vandalism:* Only minor vandalism known at this location. No through vehicle traffic. Not a heavy pedestrian throughway. However, it is only a few blocks from the Jail, Court House, Work-release, Juvenile Detention, Parole, Progress Center, Bail Bonds companies, Women's shelter, high density housing, commercial areas, etc. *Power:* Available, but no existing service. *Suitability:* One Outfall. Represents target land-use and partner jurisdictions.
Basin Characteristics	*Size (acres):* TBD *Dominant Land-uses (%):* TBD. *Other:* Not tidal Influence. Limited baseflow (groundwater seepage from Cowlitz River). Some backwater.
Water Quality Concerns	Fecal Coliform.

High-Density Residential Site

Site	End of Columbia Heights Creek (Ditch), Beginning of CDID1 Ditch 6E (Canyon Place)
Why selected	High density residential site in Longview site adjacent to West Kelso city limit and receiving significant County drainage.
Site Limitations	*Access:* On private road, City of Longview Property, adjacent to CDID1 easement. Relatively flat at sample site. *Vandalism:* Dead-end quiet road. Not too far from high crime area. Lots of vigilant elderly neighbors. No pedestrian or vehicle through traffic. *Power:* Available, but no existing service. *Suitability:* One Outfall. Represents target land-use and partner jurisdictions.
Basin Characteristics	*Size (acres):* TBD *Dominant Land-uses (%):* TBD. *Other:* Not tidal Influence. Limited baseflow (groundwater seepage from Cowlitz River). Some backwater. *Slope:* Steep slope upstream. High volume and velocity in storm. Prone to flooding.
Water Quality Concerns	None known – typical for this area and landuse.

SWMP EFFECTIVENESS MONITORING

Stormwater program effectiveness monitoring is intended to improve stormwater management efforts by evaluating issues that significantly affect the success or confidence in stormwater controls. This component of the monitoring plan is designed to answer two questions of significance to the Longview-Kelso area:

Question One

Question	How effective is the Nutrient, Integrated Pest Management and Herbicide Plan (Plan) at controlling herbicides in stormwater runoff from City-owned properties?
Hypothesis	Implementation of the Plan by City employees is effective at controlling herbicides in stormwater runoff from City-owned properties?
Measurement	*Parameter:* Herbicide array (specific EPA Standard Method to be determined) *Media:* Stormwater. *Location:* Tam O'Shanter Park. Specific sample site to be determined.
Expected Modifications	The Plan is expected to be satisfactory.
Significance	Herbicides can enter stormwater causing stormwater pollution. Herbicides have negative effects on bird populations and are a human concern as carcinogens. Roundup (used at the park) in low concentrations has been found to kill human embryonic, placental and umbilical cells.

Question Two

Question	Does the construction stormwater management component of Kelso's SWMP improve turbidity of runoff from construction sites citywide?
Hypothesis	Relative to areas beyond Phase I or Phase II jurisdictions in Southwest WA, constructions sites in the Kelso-Longview area have cleaner stormwater runoff.
Measurement (Via DMR Survey)	*Parameter:* Turbidity. *Media:* Stormwater. *Locations:* Various NPDES permitted construction sites across the City and in areas of Southwest WA not covered by a Municipal Phase II Permit.
Expected Modifications	The SWMP may not be effective, if as general adoption in the Kelso-Longview area of Cowlitz County (non-GMA) trends closer to rural sites.
Significance	Construction sites are the main contributor to the loss of topsoil. Sediment loss is generally deleterious to fish health because it covers spawning areas, covers gills, etc. Anecdotal evidence suggests a slower adoption of construction BMPs in this part of Southwest WA.

ATTACHMENTS

Maps and photos of the proposed sample sites.

October 29, 2010

Ted Sturdevant, Director
Washington State Department of Ecology
P.O. Box 47600
Olympia, WA 98504-7600

Dear Mr. Sturdevant:

The Stormwater Work Group (SWG) is a coalition of federal, tribal, state and local government, business, environmental, agriculture, and research interests working to develop a Stormwater Monitoring and Assessment Strategy for Puget Sound. The strategy is intended to provide a coordinated, integrated approach to quantifying the stormwater problem in Puget Sound and to help us efficiently and effectively manage stormwater to reduce harm to the ecosystem.

In the past year we have reached two important milestones. On July 1, 2010 the SWG submitted to you and to the Puget Sound Partnership our 55 Key Recommendations for a new regional stormwater monitoring program for Puget Sound. Today we are submitting 33 further recommendations focused on proposing stormwater monitoring requirements that the Department of Ecology (Ecology) should include in National Pollutant Discharge Elimination System (NPDES) municipal stormwater permits for Puget Sound. The region's five Phase I and 76 Phase II cities and counties, the state Department of Transportation, and the Ports of Tacoma and Seattle are subject to these permits.

Our latest recommendations are divided into two categories, the first describing how to pool resources to maximize efficiency, and the second describing the components of the monitoring program. The first category of these recommendations focuses on creating an administrative means (the "pay-in option") to pool the resources of municipalities and others to conduct regional monitoring and assessment activities. The pay-in option is important to allow all permittees, including small jurisdictions with no monitoring capacity or expertise, to contribute collectively and equitably to a regional monitoring program that answers important questions about managing stormwater. We believe that, at this time, Ecology is the only viable entity capable of administering the pay-in option for the next permit term scheduled for 2012-2017.

The second category of these recommendations focuses on describing which specific monitoring activities should be conducted or paid for by NPDES municipal stormwater permittees. In the previous recommendations in our July 1, 2010 report, we proposed that a new type of monitoring focused on receiving waters, instead of outfalls, be required for the next permit term. There is strong support of this overall concept by our work group caucuses and by the nearly 200 stakeholders that attended our three public workshops on *Stormwater Monitoring for the Future*. In our new *Recommendations for Municipal Stormwater Monitoring* we specifically recommend that municipal stormwater permittees collectively conduct or fund:

- Status and trends water quality, sediment, and stream benthos monitoring of small streams at 50 sites inside Urban Growth Areas and 50 sites in rural areas in the Puget Sound Lowlands, and assessing stream gauging activities and future needs.
- Status and trends monitoring of as many as 50 marine nearshore sites for bacteria, toxics in sediment, and toxics in mussels.

- Improved information sharing and coordination for source identification and diagnostic monitoring, and development of a region-wide database for reporting source identification and diagnostic monitoring data so that analyses can be made to support new policy initiatives.
- Effectiveness studies focused on each of the six programmatic stormwater management elements required in the permits.

The monitoring activities we are recommending are founded on existing local, state, and federal program capacity and further supported by funds that will be contributed by municipal stormwater permittees in Puget Sound. At this time we have not identified specific new additional state funding requests for Ecology or the Partnership. However, we do support your efforts to seek funding to support the infrastructure and processes required to sustain the program. We have identified specific existing state monitoring programs to continue in order to address stormwater, and we encourage strategic expansion of the recommended monitoring activities to answer more questions about the ecosystem and about the effectiveness of stormwater management activities to improve conditions in Puget Sound.

Now that the SWG has made its 33 further *Recommendations for Municipal Stormwater Permit Monitoring*, the group will continue to work with the Department of Ecology and others to ramp up for implementation of the new regional stormwater monitoring program. At the same time, the group will turn its attention to working with the Puget Sound Partnership to incorporate their efforts into the ecosystem monitoring program currently being developed by a launch committee. In the coming months, the SWG will begin developing a new work plan for 2011 and beyond, detailing how it plans to continue progress toward a comprehensive regional stormwater monitoring program.

We appreciate Ecology's continued support of our efforts and look forward to meeting with you to discuss our monitoring recommendations for the NPDES municipal stormwater permits. Please feel free to contact either me at 206.296.1986 or jim.simmonds@kingcounty.gov or Karen Dinicola, our Project Manager, at 360.407.6550 or karen.dinicola@ecy.wa.gov if you have any questions or concerns.

Sincerely,

Jim Simmonds, Chair
Stormwater Work Group

Attachments

cc: David Dicks, Executive Director, Puget Sound Partnership
Bill Wilkerson, Chair, Forum on Monitoring Salmon Recovery and Watershed Health

Recommendations for Municipal Stormwater Permit Monitoring

STORMWATER WORK GROUP REPORT TO ECOLOGY
OCTOBER 29, 2010

CONTENTS

INTRODUCTION

On June 30, 2010 the Puget Sound Stormwater Work Group (SWG) finalized the *2010 Stormwater Monitoring and Assessment Strategy for the Puget Sound Region* (2010 Strategy) and submitted it to the Washington State Department of Ecology (Ecology) and Puget Sound Partnership. The 2010 Strategy included 55 Key Recommendations for establishing a new Stormwater Assessment and Monitoring Program for Puget Sound (SWAMPPS), and indicated that much work remained to be accomplished to implement such a program.

Since the 2010 Strategy was finalized, the SWG has worked to address remaining key issues including:

- Costs, and allocation of funding among participating entities.
- Establishing an administrative entity to support collective regional stormwater-related monitoring and assessment efforts.
- Linking the types of monitoring.
- Detailed experimental designs.

- How monitoring proposed in the 2010 Strategy fits into NPDES municipal stormwater permits.
- A process to select regional effectiveness studies.

We have not addressed how to address other land uses, other water bodies, and other NPDES permits. In the coming months we will develop a new work plan for 2011 and beyond.

This report presents our next set of recommendations to Ecology. These recommendations are specific to writing monitoring requirements for the next NPDES Phase I and II municipal stormwater permit term. Further context, detail, and background information are provided in the sections following the recommendations.

RECOMMENDATIONS

The SWG has endorsed 33 new recommendations for Ecology to consider in writing and issuing the next round of NPDES municipal stormwater permits. These recommendations fall into two major categories: recommendations for a "pay-in option" to pool permittees' and others' resources to support and conduct SWAMPPS; and specifically which elements of SWAMPPS should be funded by permittees and the context within which permittee-funded monitoring should be implemented. The latter category of recommendations is further broken down into specific recommendations for each of the three categories of monitoring proposed in the 2010 Strategy: status and trends (in small streams and nearshore areas), source identification and diagnostic monitoring, and effectiveness studies.

Recommendations for a "Pay-In Option"

By consensus, the SWG recommends:

1. Create a pay-in option for the NPDES municipal stormwater permit monitoring requirements.
2. The administrative entity that handles the money contributed by municipalities and others to support and conduct regional monitoring should have the following key characteristics:
    a. It can ensure that funds collected are dedicated to monitoring and cannot be redirected to other activities.
    b. It allows for the future expansion of the coordinated monitoring to other geographic areas, other types of permits, other types of organizations (*e.g.*, NGOs, tribes, etc.).
    c. It is able to demonstrate that it is accountable and credible with transparent processes.
    d. It has the capacity to manage contracts and funds in an efficient manner following all appropriate rules and laws.
3. For monitoring funded by municipalities, the pay-in option should be implemented via contractual arrangements between each municipality and the administrative entity.

4. Require all municipal stormwater permittees to pay-in for infrastructure: SOPs and data bases for all three categories of monitoring (status and trends, source identification, and effectiveness), literature reviews, and analyses.
5. Require all municipal stormwater permittees to pay-in for status and trends monitoring.
6. Write the permit in a manner that states that participating in the pay-in option (entering into the contractual arrangement and paying the invoices) would satisfy the requirements in section S8 (monitoring) in the permit.
7. There should be an independent review of the administrative entity in advance of the 2017-2022 permit term; the review should include a survey of participants as to their satisfaction with the administrative entity, in meeting the characteristics noted in #2 above. There might also be an evaluation of the readiness of other organizations to serve as the entity.
8. If the Ecology is the administrative entity (see #11 below), then AWC and WSAC should pass resolutions endorsing this option.
9. The administrative entity should leverage existing capacities, including capacities at local municipalities and of other organizations, to conduct the monitoring.
10. Regardless of the final selection of the administrative entity, an oversight board should be created with broad representation to oversee the financial and technical aspects of the monitoring conducted. We further recommend that the SWG serve in this role.

The SWG endorsed but did not come to consensus on the following recommendations. The SWG considered numerous options for proceeding with establishing the pay-in administrative entity and focused on evaluating the Stormwater Technical Resource Center, the Center for Urban Waters at University of Washington Tacoma, the Association of Washington Cities, and the Washington State Department of Ecology. For further explanation of the SWG's discussion about this proposal, see the Context and Details section that follows our Recommendations, and the first Appendix to this report.

11. If the permit reissuance schedule remains as currently anticipated, then Ecology should serve as the administrative entity for the next permit term. If the schedule is extended such that the next round of permits will be issued later than 2012, then other options should be reevaluated and reconsidered. The SWG agreed that Ecology is the only viable option to serve as the administrative entity at this time.
12. Allow a "go it alone" option for permittees to conduct effectiveness studies.

Recommendations for Municipal Stormwater Permit Monitoring Elements and Context

By consensus, the SWG recommends the following monitoring requirements be included in the next NPDES municipal stormwater permit term:

Overall:

1. Permittees who conduct monitoring themselves should be required to apply all QAPPs, SOPs, reporting methods, etc. associated with SWAMPPS. The purpose of this

requirement is to provide standardization and consistency, and to facilitate regional understanding of stormwater management impacts and effectiveness of management actions.

2. Existing Phase I permit requirements should evolve into the next permit term and transition from individually-conducted monitoring to regionally-conducted monitoring activities.

Status and Trends Monitoring in Small Streams:

1. The next permit term should allow three years to conduct ramp-up activities (site selection, QAPP development, training, equipment purchases, *etc.*) in preparation for full implementation of the monitoring program in the fourth and fifth years of the permit term. In year 1, permittees will not be required to contribute funding for these activities; although Ecology and others will likely conduct ramp-up activities to move the monitoring program forward without permittee funding support. In years 2-3, all permittees should contribute equitably to ramp-up costs. No status and trend monitoring is conducted during the ramp-up period.

2. During years 4-5 of the next permit term all permittees should contribute equitably to implementation of status and trends monitoring at the 100 randomly selected sites in wadeable Puget Sound lowland streams. Monitoring is expected to be conducted at the frequency recommended in the 2010 Strategy for the entirety of the following permit term. This program follows the 2010 Strategy's recommendations with the following modifications:

    a. The number of sites for the Puget Sound regional status and trends program should be expanded from 30 to 100, with 50 located inside UGAs and 50 outside UGAs. This is based on a precision table published by EPA (http://www.epa.gov/nheerl/arm/surdesignfaqs.htm) that determines how accurately you can see change over five year period given a certain number of sites.

    b. WRIA-scale status and trends monitoring (390 sites distributed across 13 sub-watershed areas) should not be implemented at this time because resources are limited and we want to see SWAMPPS move forward to successful implementation. We will answer our most important status and trends questions at the regional scale. Our goal is still to move toward the WRIA scale in the future, and other funding sources could be pursued to implement this more detailed design in one or more WRIAs at any time.

    c. We support using the Water Quality Index as recommended in the 2010 Strategy, However, it might be reasonable to scale back other constituents in the water column parameter list and/or increase the frequency to provide a better connection between instream conditions and stormwater inputs. We support Ecology facilitating these discussions prior to finalizing the sampling design and associated QAPPs.

d. Sediment sampling should occur once every five years. The timing of this sampling event should coincide with the state's EMAP sample collection schedule.

e. Habitat data are a necessary element of site characterization for stream benthos sampling, and therefore permittees should be required to collect this information.

f. Fish monitoring will not occur unless funding becomes available from another source.

g. Continuous flow monitoring might not be conducted. An analysis is needed to determine to what extent questions about loading, stream flashiness, etc. relevant to stormwater management can be answered with existing data, and to recommend what existing gages need to be maintained and whether new gages need to be added to the network. Permittee pay-in contributions should fund this analysis.

h. Continuation and expansion of the collaborative stream benthos data management system should be included in the regional program.

i. A collaborative system for stream gauge data management should be created and utilized.

3. Permittees should contribute funding to conduct all of the sample collection and analysis regardless of where the randomly selected sites are located. It is anticipated that there will be a small number of sites located outside the geographic area covered by the permits. However, the full sample size is required in order to answer the questions: what percent of streams in Puget Sound lowlands meet various standards, how do urban and rural areas compare, and are conditions improving or worsening?

4. Permittees should plan for ongoing data collection in future permit terms.

5. Permittees should pay into a collective analysis of initial data during the next permit term. Permittees should plan to continue data evaluation at appropriate intervals in future permit terms.

Status and Trends Monitoring in Marine Nearshore Areas:

1. The next permit term should allow three years to conduct ramp-up activities (such as site selection, QAPP development, training, equipment purchases, etc.) in preparation for full implementation of the monitoring program in the fourth and fifth years of the permit term. In year 1, permittees will not be required to contribute funding for these activities; although Ecology and others will likely conduct ramp-up activities to move the monitoring program forward without permittee funding support. In years 2-3, all permittees should contribute equitably to ramp-up costs. No status and trend monitoring is conducted during the ramp-up period.

2. During years 4-5 of the next permit term, permittees should contribute funding for:

   a. Fecal coliform sampling monthly at 50 sites in UGAs (to be compared to WDOH sampling locations in rural shellfish growing areas).

b. Sediment chemistry every five years at 30-50 sites in UGAs (to be compared to PSAMP sampling locations outside UGAs). (We are considering increasing the number of samples to 50 from 30; a power analysis for the nearshore sampling should back up the decision: if there is a compelling increase in level of information provided with the additional samples, then we should collect them.)

c. Mussel Watch annually beginning in the fourth year of the next permit term at 30-50 sites near stormwater outfalls (to be compared with Mussel Watch sampling locations away from stormwater outfalls). (We are considering increasing the number of samples to 50 from 30; a power analysis for the nearshore sampling should back up the decision: if there is a compelling increase in level of information provided with the additional samples, then we should collect them.)

3. Follow the overall approach outlined in the 2010 Strategy. Where possible, conduct marine benthos monitoring to provide for toxicity triad analyses/information and to get more holistic picture of the health of nearshore.

4. Permittees should be expected to pay for sample collection and analysis as described above regardless of where the randomly selected sites are located. It is anticipated that there will be a small number of sites located outside the geographic area covered by the permits. However, the full sample size is required in order to answer the questions: what percent of marine nearshore areas in Puget Sound UGAs meet various standards, how do urban and rural areas compare, and are conditions improving or worsening?

5. Permittees should plan for ongoing data collection in future permit terms.

6. Permittees should pay into a collective analysis of initial data during the next permit term. Permittees should plan to continue data evaluation at appropriate intervals in future permit terms.

Source Identification and Diagnostic Monitoring:

1. Permittees should continue existing source identification and diagnostic monitoring as required in the current permits, particularly in sections S7 (TMDLs), S5.C.6 (IDDE, with appropriate modifications per discussions being held elsewhere), and S4.F (water bodies impaired due to stormwater).

2. For the next permit term, the 2010 Strategy should provide a guidance tool for other permit requirements, but not result in stand-alone monitoring requirements. Local monitoring needs vary from place to place. When impairments are discovered, prioritization of local problems will allow for effective allocation of resources to address issues. A coordination function for local jurisdictions should still be considered.

3. SWAMPPS will contribute standard methods and tools, analysis of existing information and dissemination of lessons learned. SWAMPPS status and trends data will be a credible data source for informing S4.F Compliance with Standards investigations of problems identified by other monitoring.

4. In the next permit term, permittees should contribute funding to: conduct a literature review, develop a QAPP library with DQOs and report templates, build a repository for information to evaluate current source identification programs, and design a database and

reporting requirements to support Puget Sound scale analyses to identify problems that can be addressed by region-wide source control initiatives (*i.e.*, product substitutions).

5. The information and tools created during the next permit term should result in improved approaches to source identification and diagnostic monitoring in future permits, particularly in connecting this category of monitoring to status and trends monitoring and effectiveness studies. Findings should be shared broadly.

Effectiveness Studies:

1. The SWG should articulate a recommended process and criteria by which studies will be selected from among those ideas submitted by Phase I and Phase II jurisdictions in their annual reports due March 31, 2011 along with other ideas submitted by members of the caucuses of the SWG. This process should be informed by the findings of the literature review. The process is envisioned to be ongoing in order to learn and adapt and continue to select and conduct future studies.
2. Studies should be outcome-based and focus on evaluating each of the six permit-required programmatic stormwater management elements: public education and outreach; illicit discharge detection and elimination; controlling runoff from new and re-development; pollution prevention/operations and maintenance; structural stormwater controls (retrofits); and source control.
3. Once the studies are selected, a list of needed SOPs should be identified and developed.
4. Permittees should plan to continue to fund effectiveness studies in future permit terms.

The SWG endorsed the following recommendation but did not come to consensus on it. For further explanation of the discussion of this recommendation, see the "Context and Details" section below.

5. Permittees should contribute funds in years 2-5 of the next permit term to support effectiveness studies, a literature review, and associated development of SOPs.

CONTEXT AND DETAILS

In addition to the fully endorsed recommendations above, the SWG wishes to provide Ecology with additional context and detail to support the recommendations and explain the reasons we did not come to consensus on all of our recommendations.

Pay-in option

The SWG's most important overall recommendation for the next NPDES municipal stormwater permit term is that a viable administrative means be identified to pool the resources of municipalities and others to implement SWAMPPS in this and future permit terms. About 40 possible administrative entities were considered and narrowed that list to four that were recommended to the SWG as organizations that might realistically serve as the administrative entity for the next permit term (see Tables 2 and 3 in the Appendices for these lists). A different

organization might be chosen for successive permit terms. The appendix provides additional detail and more information about the options the SWG considered and discussed.

Recommendation as to which organization should serve as the administrative entity to handle money for the next permit term: Ecology was the only option the committee members unanimously agreed was *viable* for the next permit term; members were split on preference among Ecology, the Stormwater Technical Resource Center (SWTRC), and the Center for Urban Waters at UW Tacoma, with none preferring Association of Washington Cities. The local government caucus representatives support Ecology taking on the role of the entity for the next permit term. Writing a permit requirement to send money to Ecology puts the agency in a difficult situation, and some SWG members still consider it an unpalatable means to pool local government and other resources. All SWG members want the pay-in option to succeed, wherever it is housed.

Recommendation to allow a go-it-alone option for permittees to conduct their effectiveness studies rather than requiring participation in the regional program: Many SWG members believe that Ecology should require full permittee participation in SWAMPPS. The committee as a whole recognized it might be more strategic to give permittees an option because the SWAMPPS cost estimates seem reasonable and permittees are likely to participate. There is ample opportunity for contracting, and for paying back out, within the recommended framework.

Small streams status and trends

Decision to scale back small stream status and trends to Puget Sound lowlands urban/rural design: We first decided which question was most important to answer and which scale was most important for the initial launch of the regional stormwater monitoring program: all of Puget Sound, only the Puget Sound lowlands, or the WRIAs. Table 1 shows the questions we considered in making this decision. We agreed that this initial effort should focus on understanding urban and rural areas of the Puget Sound lowlands at the regional scale (Question 2 was selected as the most important for SWAMPPS status and trends monitoring to answer).

The SWG reviewed comments on the April 2010 draft of the 2010 Strategy and agreed to a scaled-back approach to status and trends monitoring in small streams (Paulsen 1997; Cusimano *et al* 2006). The new design is a regional approach; it has no WRIA component but it is still scalable, and the increased-density sampling might be pursued with other funds in some WRIAs. The committee believes this is a good start that will provide a lot of information to work from. Although it will not have the specificity or detail at WRIA level, will answer important questions about stormwater at a lower cost.

The SWG recommends moving forward with this design, evaluating what we learn at this scale, and adapting as needed. Ecology's status and trends program does not include all of these parameters (*i.e.*, the water quality index (WQI)). The focus of the monitoring recommended here is to understand the impacts of stormwater, which the state program does not specifically address. The WQI provides a better connection between status and trends monitoring and source identification and diagnostic monitoring.

The SWG struggled with defining requirements for flow monitoring. Flow has an enormous impact on what happens in streams; and stormwater has an enormous impact on flows; but flow

Table 1. Possible Questions to Answer with a Small Streams Status & Trends Monitoring Program

Question	Approx. number of sites	Discussion
1. What percent of streams in Puget Sound (PS) Lowlands meet or do not meet standards or targets?	50	Current Salmon Recovery Funding Board and Washington Forum on Monitoring effort for Salmon Recovery and Watershed Health at the general Puget Sound scale (lowlands plus forested areas).
2. What percent of streams in urban areas and rural areas of PS Lowlands meet various standards or targets, and how do urban and rural areas compare?	100	Recommendation for NPDES next permit (focused on stormwater dominant, wadeable streams): provides information at the Puget Sound scale for urban and rural areas, meshes with salmon recovery monitoring needs at a Puget Sound scale: More affordable and feasible for the initial monitoring effort.
3. What percent of streams in PS lowlands meet various standards or targets in each Action Area, and how do the Action Areas compare?	210-350	Considered: provides information for each action area and powerful information at the Puget Sound scale. No differentiation between urban and rural.
4. What percent of streams in PS lowlands meet various standards or targets in each WRIA, and how do the WRIAs compare?	390	Framework recommendation: focused on stormwater-dominated, wadeable streams, provides information for WRIA level trends and management, extremely powerful for urban/rural questions at the Puget Sound scale, meshes with salmon recovery monitoring needs.
5. What percent of streams in PS lowlands meet various standards or targets in urban and rural areas within each WRIA, and how do the urban and rural areas within each WRIA compare?	1300	Considered but not recommended: focused on stormwater-dominated, wadeable streams, provides powerful information at the WRIA level, extremely powerful for multiple questions at the Puget Sound scale, meshes with salmon recovery monitoring needs.

is difficult and expensive to work into the random sampling design, which would be ideal. The new SWG recommendation is to analyze the existing flow gauges and use that information for stormwater management; look at the data in first year and if there are not sufficient data to answer the questions, then add gages. Questions that remain include:

- How many sites should be monitored long-term? Should they be random or targeted?
- If more stream gauges are needed, how/when will they be funded? This cost is not currently identified under the proposed permittee responsibilities for the next permit term.
- Should we use only available data? Or consider adding and using staff gauges?
- How do we ensure that existing gauges are maintained?
- Should there be a Phase I vs. Phase II difference in implementing flow monitoring?
- Should flow be approached on pilot basis?

Marine Nearshore status and trends

The SWG made progress toward prioritizing the activities and refining the design of this monitoring. See the summaries in Tables 4 and 5 in the Appendices for more specific information about the SWG's proposed marine nearshore status and trends monitoring activities. More work needs to be done during the ramp-up period to finalize these designs.

Source identification and diagnostic monitoring

The SWG recommends that the monitoring activities required in section S8 of the NPDES municipal stormwater permits address development of common infrastructure for future reporting and collective regional analyses of the information collected by permittees, but not require the monitoring approach described in the 2010 Strategy. The permittees should have ample opportunity to participate in defining the fields and format of the future database, and should contribute to a literature review and process for sharing the information.

Effectiveness studies

The SWG recommends that permittees fund a literature review, selected effectiveness studies, and associated development of SOPs. At this time the SWG is not making a recommendation as to the total dollar amount that should be targeted to conduct effectiveness studies in the next permit term. SWG members struggled to define both the level of effort needed and the appropriate burden to place on NPDES municipal stormwater permittees with regard to effectiveness studies. A total investment of about $7M per year in effectiveness studies was recommended in the 2010 Strategy; this amount represented about half of the estimated total annual SWAMPPs program costs and was *not* anticipated to be fully funded by these permittees (other efforts such as the state-funded TAPE and LID studies are providing important effectiveness information for stormwater managers).

Collectively, Phase I permittees (including the Ports of Seattle and Tacoma, and WSDOT) are conducting 31 effectiveness studies during the current permit term. Ecology estimates that between $150-160M is being spent annually on stormwater management by NPDES Phase I and II municipal stormwater permittees in Puget Sound. Many SWG members consider that an investment between 5-10% of the annual expenditures represents a reasonable level of effort to evaluate the overall effectiveness of the management practices. The revised cost estimate for all permit-required recommended monitoring is about $11M for 4 years.

The local government caucus proposes to spend $6M on effectiveness studies, or $1.5M/year in each of the last 4 years of the next permit cycle. These funds would be targeted to the six programmatic stormwater management elements, with an average of about $1M per element, to fund a permit term total of about 15 studies at an average cost of $400K per study. This amount represents about 1% of the total estimated investment in stormwater management; work group members do not agree as to whether this level of investment will provide enough information to meaningfully improve management practices. (It is important to note here that important information about stormwater management program effectiveness is also to be gained over time by the status and trends monitoring.) Other work group members think that perhaps the permittees' annual investment in effectiveness studies should be closer to the $6-8M/yr range. One local government caucus representative was unwilling to "sign a blank check" by endorsing a recommendation with no known dollar amount.

The SWG did not make further recommendations about which effectiveness studies should be conducted by the regional monitoring program. The SWG believes that it is most productive and appropriate to review the ideas that municipal permittees are required to submit in their annual reports due on March 31, 2011. The SWG has requested the other caucuses to submit other ideas to Ecology on the same timeline so that all of the ideas can be considered collectively.

The SWG has assigned a subgroup to work on finalizing a recommended process and criteria for selecting which studies will be chosen for implementation. The SWG will review the subgroup's proposal in early 2011 and will submit recommendations to Ecology before the end of March 2011 so that the evaluation and selection process is described in advance of the deadline for submitting ideas for effectiveness studies.

REFERENCES

Cusimano, R., G. Merritt, R. Plotnikoff, C. Wiseman, and C. Smith. 2006. Status and Trends Monitoring for Watershed Health and Salmon Recovery Quality Assurance Monitoring Plan. Washington State Department of Ecology. Publication No. 06-03-203. 62 pp. Available for download at http://www.ecy.wa.gov/pubs/0603203.pdf

Paulsen, S. 1997. Environmental Monitoring and Assessment Program: Integrated Quality Assurance Project Plan for Surface Waters Research Activities. U.S. Environmental Protection Agency, Office of Research and Development, Corvallis, OR. 129 pp.

U.S. Environmental Protection Agency. Aquatic Resource Monitoring - Frequently Asked Questions - Survey Design. http://www.epa.gov/nheerl/arm/surdesignfaqs.htm

APPENDICES

Background and process to recommend an administrative entity for collective funding and coordinated implementation of monitoring

The SWG expects that NPDES municipal stormwater permittees in the Puget Sound basin will participate in regional stormwater monitoring and assessment via permit requirements for three types of monitoring activities: status and trends, source identification and diagnostic monitoring, and effectiveness studies. The implementation mechanisms for each category of monitoring are envisioned to be different; however, all will benefit from collective funding and coordinated implementation. A viable means to pool municipal permittees' resources to conduct regional monitoring must be sufficiently defined to be included in the next NPDES municipal stormwater permit term, currently scheduled to be issued for 2012-2017. Ecology's schedule to issue the next round of permits requires that a pay-in option be clearly defined and established before the end of October 2010.

To meet Ecology's schedule, the SWG tasked a subgroup with identifying one or more interim mechanisms to facilitate the pay-in option for the next round of permits, with an eye towards

defining and creating a more robust, satisfying administrative entity in the coming years. The subgroup was tasked with developing specific recommendations to establish the pay-in option and allocating and prioritizing costs by the end of October so that Ecology can realistically include the pay-in option in the next cycle of municipal NPDES stormwater permits. The subgroup submitted its recommendations to the SWG in mid-September for discussion at the SWG at its September 27 meeting and approval at the October 13 meeting. The endorsed recommendations for the pay-in option are included in the SWG's report to Ecology. This appendix is intended to document the workings and interim decisions of the subgroup.

Our effort focused on defining the pay-in option, not on allocating and prioritizing costs. Subgroup members included: Neil Aaland (Washington Assn. of Counties), Karen Dinicola (SWG Project Manager, Ecology), Dick Gersib (WSDOT), Nathalie Hamel (Partnership), Heather Kibbey (Everett), Andy Meyer (Assn. of Washington Cities), Bill Moore (Ecology), Joyce Nichols (Bellevue), Mel Oleson (Boeing), Mark Palmer (Puyallup), Jim Simmonds (King Co.), Phyllis Varner (Bellevue), and Bruce Wulkan (Partnership). The subgroup's initial report was discussed at the SWG's September 23 meeting and revised in light of discussions and new information received at that meeting and at subsequent SWG meetings on October 13 and 26.

Characteristics of the Pay-In Option: A brainstorming session resulted in a list of the desired characteristics of the administrative entity:

1. Meets goals of permit pay-in concept
    a. Able to have some sort of reliable agreement with Ecology to ensure permit-required monitoring is done
    b. Local governments can write a check to directly to the entity or to Ecology using a boilerplate interagency agreement or in process similar to payment of permit fee
2. Competent in management, monitoring, and contracting
    a. Money will be well managed
        i. Funding dedicated to stormwater monitoring can't be redirected
        ii. Non-profit activity (not a for profit, shareholder-driven organization)
        iii. Low overhead
        iv. Best value for dollars
    b. Capacity to meet deadlines
    c. Can accept federal and state money
    d. Can accept federal and state money without going out for bid
    e. Existing stable organization with some history, don't start from scratch
    f. Entity has technical experience in stormwater monitoring (yes or no)
    g. Capability to do data analysis
    h. Can provide repository for data
    i. Experience managing large contracts
3. Accountable and credible
    a. Willing to have oversight by board
    b. Perceived as neutral and transparent: open (harder for private entities?)
    c. Everyone trusts the data
4. Broader than NPDES municipal stormwater permittees in Puget Sound
    a. Expandable geographically (*i.e.*, to southwest and eastern Washington)
    b. Expandable/accessible to other types of permits/permittees

   c. Includes more entities than local jurisdictions: all entities participating in cost-sharing arrangements
5. Fits core mission or goals of the organization: a priority for the entity
6. No potential conflict of interest
7. Able to evolve to take on more functions
8. Long-range view of monitoring

A subset of these characteristics was recommended as the "Key Characteristics" that the SWG agreed to include in the recommendations to Ecology.

Characteristics of an Oversight Mechanism: A brainstorming session resulted in a list of characteristics needed in the oversight of the administrative entity:

1. Allows us to start small with required functions and expand over time.
2. Depends somewhat on the entity selected.
3. Who makes decisions/sets priorities?
   a. We want broad agreement, and need Ecology buy-off.
   b. Only folks paying in, or broader representation?
      i. Buying a package of services; end of "say" for permittees?
      ii. Ecology determines whether package complies with NPDES requirements
      iii. If accountability lies with municipalities, each will have to demonstrate
      iv. If accountability lies elsewhere, it depends how the contracts are written up: becomes contract law rather than CWA liability
   c. What is relationship to ecosystem monitoring program?
   d. What is relationship to SWG?

Roles of the Administrative Entity: A brainstorming session resulted in a list of possible roles and responsibilities of the administrative entity. These need to be better defined to begin set-up and keep long-term vision in mind. We envision more than one organization sharing and/or taking on these roles and responsibilities:

1. Manage money (administer pay-in, collect/handle money, and contract out).
2. Conduct or contract:
   a. Data analysis.
   b. Data management
      i. Who owns the data? Need to spell out in contracts.
   c. Data storage.
   d. Status and trends in small streams and nearshore.
   e. Source identification and diagnostic monitoring
      i. Regional prioritization
      ii. Data repository
      iii. Possible pay-in for service to meet permit requirements.
   f. Effectiveness studies
      i. Run an RFP program for effectiveness studies.
3. Provide quality assurance and control.
4. Maintain an open and inclusive process for prioritization.
5. Establish and use a process for communicating with permittees.

6. Report back to permittees and to others.
    a. This entity creates the message for existing outreach programs to share.
    b. Disseminating information to the general public is a role for the Partnership and/or Ecology, not the entity.
7. Audit function.
8. Look for opportunities to improve effectiveness, reduce costs.
9. Recommend improvements in monitoring to Ecology and the Partnership.

Benefits of the Pay-In Option: We identified numerous benefits of having a pay-in option. In particular, it is anticipated that:

- A coordinated monitoring program will cost less to implement than a series of independent monitoring programs;
- Having a pay-in option will lessen the level of difficulty associated with satisfying NPDES permit requirements for monitoring;
- A coordinated monitoring program can still offer permittees some flexibility;
- Data consistency will be improved;
- Monitoring data will more easily be collected at multiple geographic and temporal scales;
- Existing monitoring capacities will more easily be leveraged, without requiring each municipality to develop in-house expertise;
- Using a coordinated, pay-in approach will allow the region to address specific near term actions in the Action Agenda;
- Using a coordinated, pay-in approach will allow the region to address the highest priority monitoring questions.

Creating and Narrowing Down an Initial List of Candidate Entities: We developed an initial list of candidate entities (Table 2) in a brainstorming session, including suggestions from others such as the Local Government Caucus. We discussed possibly issuing a request for proposals for organizations to serve as the administrative entity but agreed that no funding or staff capacity was available to issue the RFP or review the proposals, and also that sufficient time was not available to do this solicitation given Ecology's permit reissuance schedule. Based on these circumstances, the subgroup instead agreed to focus on a short list of four possible entities that could work for the next permit term. It was agreed that the selected entity would not necessarily be the entity selected in future permit terms.

The four entities initially selected for further investigation included Ecology, the new Stormwater Technical Resource Center (SWTRC), USGS, and the Association of Washington Cities (AWC). We decided to not recommend USGS for the short-list of entities to consider to administer the pay-in option, but instead to consider USGS as an option as a contractor for implementing the streams status and trends monitoring program. We agreed that based on the comparison of the three remaining entities, Ecology was the most likely to be successful initially for the upcoming permit term (also, two sub-options could be pursued at Ecology: one with funding derived from the local Toxics Fund, another with funding directly from local jurisdictions).

Table 2. July-August 2010 brainstormed list of possible options for the administrative entity

State Agencies	Non Profits
Department of Ecology	People for Puget Sound
Puget Sound Partnership	Puget Soundkeeper Alliance
Department of Transportation	Bullitt Foundation
Department of Natural Resources	Cascade Land Conservancy
Academic Institutions	Sierra Club
UW Applied Physics Laboratory	New NGO/Trust focused on monitoring
UW Tacoma Urban Waters Institute	Assn of Washington Cities (AWC)
WSU Puyallup	Washington State Assn of Counties (WSAC)
WWU	Salish Sea Institute
PLU	Center for Watershed Protection
Centers/Institutes	Private
Stormwater Technical Resource Center	Battelle
Puget Sound Institute	Boeing
Local Jurisdictions	Herrera
King County	Brown & Caldwell
Pierce County	Parametrix
Snohomish County	Taylor Associates
City of Seattle	Other Consultants
Other Cities or Counties	Other
Federal Agencies	Have the Legislature create an entity
USEPA	
US Geological Survey	
Pacific Northwest National Laboratory	
US Navy	
NOAA Fisheries	

Neither the SWTRC nor AWC currently have capacity to administer the funds that will be generated by the pay-in option; however, WSU-Puyallup could serve as the entity on behalf of SWTRC. The SWTRC has not yet established its legal structure and its advisory board is not in agreement as to whether taking on stormwater monitoring might help or hurt its efforts to succeed in its primary tasks. Late in our process, the Center for Urban Waters at UW Tacoma expressed interest in serving as the entity and we considered them as well. These four entities were evaluated for meeting the key characteristics we identified (Table 3).

Draft Organizational Structure of Pay-In Option: A draft organizational structure was developed (Figure 1). The administrative entity is expected to receive and handle funds from permittees and others and contract with others to implement the priority activities identified by the SWG, with approval from Ecology and in an appropriate manner to ensure that permit monitoring requirements are implemented.

Table 3: September 2010 Evaluation of Four Possible Options for the Pay-in Administrative Entity

Option	Washington State Department of Ecology (Ecology)	Stormwater Technical Resource Center (SWTRC)	Center for Urban Waters at UW Tacoma (Urban Waters)	Association of Washington Cities (AWC)
Description of pay-in administrative mechanisms	Ecology would establish contractual agreements with every municipality. Each municipality would send money to Ecology to conduct and/or contract for the monitoring. Ecology could contract with municipalities with capacity to get monitoring done. Overhead relatively low: applies to FTEs, not to amount paid in.	This would be one of three lines of business of SWTRC, in addition to TAPE and LID. SWTRC would establish legal structure, staff up, and establish agreements with each municipality. WSU Puyallup would most likely serve as the administrative entity. Each municipality would send money to WSU and enter into contracts with SWTRC. SWTRC would contract out for the monitoring with the exception of LID studies. Might staff up in future. No overhead estimate yet; negotiable. May form a non-profit.	The stormwater monitoring program would be a program at Urban Waters, parallel to others being created including the Puget Sound Institute (PSI). Each municipality would contract with UW's main campus, who would contract out for everything except the synthesis, which Urban Waters would conduct. Urban Waters has negotiated with the main UW campus to get a 26% overhead rate, but there might be further negotiation. Have formed a non-profit.	AWC would staff-up appropriately, and then modifies existing agreements with every city, modifies/creates agreements with counties. Each municipality would send money to AWC, who would contract out for all of the monitoring activities. Overhead would be set to cover costs.
Assurance that municipalities' funds dedicated to monitoring?	Yes, if done using contractual arrangements.	Yes, if done using contractual arrangements.	Yes, if done using contractual arrangements.	Yes, if done using contractual arrangements.
Expandable to other geographic areas and other permits?	Statewide expansion would be straightforward. Some businesses have restrictions on giving money to regulatory agencies; would need to work this out.	Yes, the mission of the SWTRC is already state-wide and the SWTRC is already working with industry.	Yes, although the Center for Urban Waters is currently focused on urban Puget Sound. Non-profit could attract businesses participation.	Expandable state-wide for municipalities, but not sure how it would work for industries and businesses and non-profits and tribes.
Accountable and credible?	Yes, assuming oversight boards and contractual arrangements. General perception that Ecology will manage contracts well and appropriately implement them. Lots of scientific expertise, including stormwater. EAP is credible.	TBD; in the process of establishing boards and advisory committees. SWTRC is a new entity with no track record, but WSU Puyallup has history and track record.	UW is highly respected. Urban Waters is a new Center with no track record.	AWC would not be bidding to conduct monitoring program activities. No risk of perception issues or conflict of interest.

Capacity to manage funds and contracts	Lots of grant management and contract management experience. Currently have existing contractual relationships with all Phase I and II municipal permittees.	SWTRC has legislature-provided funding and staff only for planning through June 2011. Need funding and work program after that, to staff accordingly. Would need an interim funding source between June 2011 and 2013 when municipal pay-in would start.	UW has existing contracting and grant management experience. Need to develop standardized contracts with each municipality and with contractors.	Would serve solely in contract management and administrative role. Existing capacity is very limited and already used for ongoing business.
Other issues and potential barriers	Conflict of interest not really an issue with regard to enforcement. May appear self-serving to have monitoring requirements in Ecology's permits that call for municipalities to send money to Ecology. Some municipalities have poor relationships with Ecology. Need to get enough municipalities to pay-in to get enough critical mass. This option has been discussed with program managers at Ecology, but not with higher level management.	Long-term viability in question: need to develop and implement a sustainable business plan. Still don't know the business structure. Could be an option to be implemented in future permit terms. Overhead rates are negotiable. Boards have discussed this issue and there is some disagreement as to whether the timing of this venture would help or hinder SWTRC in its overall mission.	Urban Waters business plan is not known. Not certain how PSI and stormwater monitoring would interface. Urban Waters is not really interested in housing administration functions. They primarily want to be involved in the synthesis.	No in-house scientific expertise. This option has not been discussed with AWC board and executive director.

Recommendation that Ecology serve as the administrative entity for the next permit term: After fully considering all of these options, the subgroup came to the conclusion that any of these options could work, but that Ecology is most likely to be *viable* for the next permit term. The SWG did not unanimously agree that Ecology should serve as the administrative entity for the next permit term; several members still preferred that WSU-Puyallup or UW be the administrative entity. However, the work group members did agree that Ecology is the only viable option to serve as the administrative entity at this time, and that establishing a feasible means of pooling permittees resources is of ultimate importance for the next permit term.

On October 21, 2010 the co-directors of the SWTRC sent a letter (Figure 2) to the SWG indicating their preference that Ecology serve as the administrative entity at this time; the SWTRC, WSU-Puyallup, and Urban Waters/UW Tacoma are still interested in playing an active role in SWAMPPS, with each organization contributing the services it is best suited to providing.

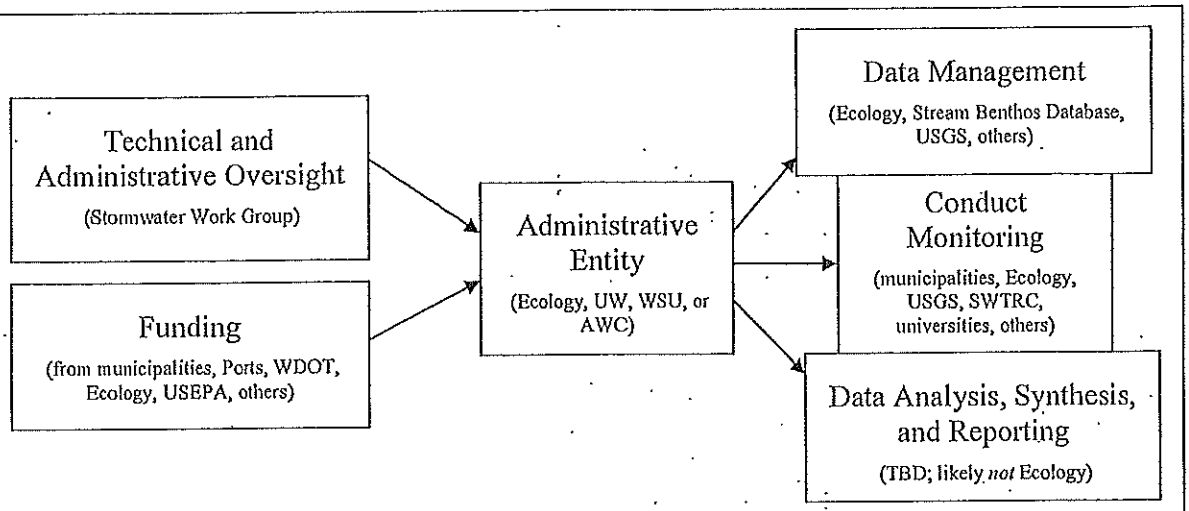

Figure 1. Proposed organizational structure for the pay-in option

Issues for Further Discussion/Consideration: The subgroup identified several issues which may need to be addressed at any or all of the possible organizations that might house the administrative entity:

- Some municipalities will object to sending any money anywhere.
- Is it possible to structure the pay-in option such that every municipality wants to participate?
- How would this be done and what is the "go it alone" option and how much does that cost?
- What if pay-in itself is too onerous? Would municipalities pull out and not participate?
- All organizations proposed to be the entity would need to staff up to handle the increased work load to manage funds and contracts beyond their existing work load.
- No matter which entity is chosen, its overhead will need to be evaluated to make sure it covers appropriate administrative capacity.
- Specific interest would need to be expressed by municipalities in having Ecology serve as the administrative entity to help overcome the skepticism that exists about having Ecology serve in this role.
- It is not clear if these options are defined well-enough for getting approval on them by the entities themselves. A lot still needs to be worked out to operationalize the administrative mechanism: including getting the municipalities' funds, entering into contracts with each, providing assurances to Ecology and the permittees that the required tasks will be accomplished, and contracting out all the work required to conduct the monitoring, store the data, and analyze the information.
- Need to clarify if the pay-in option is mandatory or optional. If it is optional, need to clarify if "go it alone" is equal to "pay in" or if "go it alone" needs to be more onerous to encourage "pay in". From a practical perspective, it will be difficult for Ecology to manage two separate programs regardless of the organization that serves as the administrative entity, though how difficult is unknown.

To:
Karen Dinicola
Jim Simmonds
Stormwater Work Group

RE: The Monitoring Entity

October 21, 2010

Dear Karen and Jim,

As we have discussed recently, the Stormwater Work Group has been working to identify an "entity" that would work to complete stormwater monitoring requirements for municipalities. Municipalities would pay-in to a fund operated by the entity, which in turn would be responsible for planning and completing the monitoring work.

Over the past few months, we have discussed with you the possibility of either the Stormwater Technical Resource Center (SWTRC) or Urban Waters being this entity. After much discussion with our respective universities and others, both of us believe that the best approach for the pay-in option would be to name the Department of Ecology as the primary Entity during the important next few years as the Regional Monitoring Program is created. Simply stated, Ecology has in place the necessary legal and contractual mechanisms to quickly implement the pay-in option.

Although we recommend choosing Ecology as the primary Entity, we agree with many others that the work required to establish a fully functioning Regional Monitoring Program will require capacity beyond what any single organization can provide. Both Urban Waters and the SWTRC would like to play significant roles by assisting Ecology and the Stormwater Workgroup to design and operate elements of the monitoring program. For example, the considerable expertise gathered under the SWTRC umbrella could assist in performance monitoring of specific BMPs. At Urban Waters, the Puget Sound Institute supports analysis and synthesis of Puget Sound data, and could provide resources to integrate results from the stormwater monitoring program within the context of the evolving Sound-wide monitoring effort. These are examples, and would work closely with your Work Group, Ecology, the Puget Sound Monitoring Launch Committee and other interested parties to build the most efficient and effective program possible.

We hope that this model works for the Stormwater Work Group. If have any questions, please contact us.

Thanks for your time and consideration of this matter.

Sincerely,

John Stark, Washington State University Puyallup
Joel Baker, Urban Waters, University of Washington

Figure 2. Letter from SWTRC directors to SWG regarding the selection of an administrative entity.

- The designated entity could possibly remain ambiguous for preliminary draft language, but more certainty (*i.e.*, a real entity) would be needed by summer 2011 for draft permit issuance.
- It is not viable to switch from Ecology to another entity in the middle of a permit term. If there is a transition, it needs to happen at the end of the next permit term.
- Monies from municipalities and federal agencies cannot be redirected by the Washington State Legislature. Using contractual arrangements ensures that the money will be dedicated to monitoring and assessment. However, the use of any money that comes from the Legislature could be altered in future biennia.
- The SWG has not yet received information about overhead rates that is comparable across the organizations being considered to serve as the administrative entity. This issue is of significant concern to municipalities and others who might pay in.

Summary Table and Cost Estimates for Monitoring

The SWG has used the two "working draft tables" shown in Tables 4 and 5 to help frame discussions about level of effort and prioritizing monitoring activities that will be included in SWAMPPS and funded by NPDES municipal stormwater permittees. We think this information will be useful to Ecology in implementing our recommendations and to local governments and others in understanding what is being proposed; however we include these tables here with the caveat that they are neither finalized nor have they been endorsed by the SWG.

Table 4. Draft summary description of the monitoring activities proposed to be included in NPDES Municipal Stormwater Permits

Monitoring Category and Activity	Description
Small Stream Status and Trends	
Water quality index monitoring	Monthly WQI monitoring for 2 years to characterize urban vs. rural in Puget Sound lowlands (100 sites)
Sediment chemistry monitoring	One round of sediment chemistry monitoring at same (or nearby) sites as WQI monitoring
Stream benthos monitoring	Annual stream benthos monitoring for 2 years at same sites as WQI monitoring
Stream benthos data management	Operate and maintain existing stream benthos data management system and provide staff support to allow for ongoing data submittals by all organizations collecting stream benthos data in the Puget Sound basin
Continuous flow & temperature gauging needs assessment	Assessment of existing gauging programs and data to answer questions and determine needs
Continuous flow & temperature gauging database development	Development of data management system to allow for joint data storage of gauging data
Marine Nearshore Status and Trends	
Marine nearshore fecal coliform monitoring	Monthly bacteria monitoring for 2 years at 50 randomly selected sites to characterize Puget Sound nearshore in Urban Growth Areas
Marine nearshore sediment chemistry monitoring	One round of sediment chemistry monitoring at same 30-50 sites as bacteria monitoring
Marine nearshore Mussel Watch monitoring	Annual Mussel Watch monitoring for 2 years at 30-50 sites near stormwater outfalls
Source Identification and Diagnostic Monitoring	
Literature review and report	Conduct literature review of source identification problems, approaches, and lessons learned in Puget Sound and elsewhere
QAPP library for all monitoring categories with DQOs and report templates	Develop an on-line library that has QAPPs, DQOs, SOPs, and report templates
Build repository to evaluate effectiveness of existing source identification programs	Build repository to evaluate current source identification programs
Design database and reporting requirements for regional analysis	Develop data management system for source identification monitoring reporting throughout the Puget Sound region to support regional synthesis and analysis
Effectiveness Monitoring	
Literature review and report	Conduct a literature review of stormwater management effectiveness
Development of SOPs	Develop necessary SOPs to implement regional effectiveness studies
Conduct effectiveness studies	Conduct effectiveness studies in six stormwater management programmatic categories

Table 5. Working draft cost estimates for proposed NPDES permittee-funded monitoring activities

	5-Year Cost	Average Cost
Total Cost for Proposed NPDES Monitoring Requirements*	**$8,158,800**	**$1,631,760**
*Does not include cost to conduct effectiveness studies		
Small Stream Status and Trends	**$4,874,400**	**$974,880**
Water quality index monitoring	$3,331,200	$666,240
Sediment chemistry monitoring	$331,200	$66,240
Stream benthos monitoring	$451,200	$90,240
Stream benthos existing program data management	$240,000	$48,000
Continuous flow & temperature gauging needs assessment	$117,600	$23,520
Continuous flow & temperature gauging database development	$403,200	$80,640
Marine Nearshore Status and Trends	**$2,012,400**	**$402,480**
Marine nearshore fecal coliform monitoring	$1,339,200	$267,840
Marine nearshore sediment chemistry monitoring	$219,600	$43,920
Marine nearshore Mussel Watch monitoring	$453,600	$90,720
Source ID Monitoring	**$672,000**	**$134,400**
Literature review and report	$72,000	$14,400
QAPP library with DQOs and report templates	$168,000	$33,600
Repository of existing source ID programs	$192,000	$38,400
Design database and reporting requirements for regional analysis	$240,000	$48,000
Effectiveness Monitoring**	**$600,000**	**$120,000**
Literature review and report	$120,000	$24,000
Development of SOPs	$480,000	$96,000
Conduct effectiveness studies	**	**
** An estimate is not yet proposed for conducting studies		