

Washington Department of Ecology
Western Washington Phase II Municipal Stormwater General Permit
2012 Permit Reissuance – Preliminary Draft Language
Explanatory Notes

May 16, 2011

Introduction

The Washington Department of Ecology (Ecology) invites informal comment on preliminary draft language for two components of the Western Washington Phase II Municipal Stormwater General Permit (WWA Phase II permit). Ecology issued the permit on January 17, 2007 under delegated authority from the United State Environmental Protection Agency (USEPA) to authorize discharges to surface water under the National Pollutant Discharge Elimination System (NPDES). The permit became effective on February 16, 2007. Ecology plans to reissue the WWA Phase II permit in July 2012.

These explanatory notes describe the basis for Ecology's proposed preliminary draft language for two areas expected as significant changes in permit requirements: low impact development and monitoring. These changes are in part intended to address the resolution of appeals to the Pollution Control Hearings Board (PCHB) in accordance with WAC 173-220-190(1). Copies of the appeals, settlements and PCHB rulings are available at

<http://www.ecy.wa.gov/programs/wq/stormwater/municipal/appeals.html>

Ecology's schedule for permit reissuance is:

Informal Public Comment Period on Preliminary Draft Permit Language for LID and Monitoring
(May 16 – June 17, 2011)

Ecology Reviews Comments from Informal Public Comment Period
(June 20 – October 19, 2011)

Ecology Issues Draft Permit for Formal Public Comment
(October 19, 2011 – February 2, 2012)

Workshops and Public Hearings
(December 2, 2011 – February 3, 2012)

Ecology Issues Final permits and Response to Comments
(July 2012)

Permit Effective
(August 2012)

Additional information on the permit reissuance process is available at <http://www.ecy.wa.gov/programs/wq/stormwater/municipal/2012Reissuance.html>

How to Submit Comments

Ecology invites public comment on the preliminary draft language for low impact development and monitoring from May 16, 2011 until 5:00 p.m. on June 17, 2011. Please address your comments to the specifics of the preliminary draft language for LID and monitoring rather than to other elements of the permit. We will issue a draft of the entire WWA Phase II permit for formal public comment in October, 2011.

In order to clarify your comments, please include the following information with your comments:

- The permit(s) subject to your comment.
- The permit reference and/or page number in the preliminary draft language.
- A brief, concise comment including the basis for the comment.
- Suggested permit language or a conceptual alternative, where appropriate, to address your concern.

Ecology will not issue a Response to Comments for the comments submitted during this informal comment period. However, we will read and consider all comments and use them to help us prepare the formal draft Permit.

Ecology provides an online comment form at www.ecy.wa.gov/programs/wq/forms/lidspubcomments.html

Send written comments to Ecology as follows:

Electronic file by e-mail to: SWPermitComments@ecy.wa.gov

Hard copy by mail postmarked no later than 5:00 pm June 17, 2011 to:

Municipal Stormwater Permit Comments
WA Department of Ecology
Water Quality Program
PO Box 47696
Olympia, WA 98504-7696

Low Impact Development Preliminary Draft Requirements – Explanatory Notes

Background

Preliminary draft low impact development requirements proposed for Western Washington Phase II cities and counties stem from appeals of the 2007 permit. The Pollution Controls Hearing Board (PCHB) issued a ruling on August 7, 2008 for the Phase I Municipal Stormwater General Permit (Phase I permit) for local governments covered under the Phase I permit, including King, Snohomish, Pierce, and Clark counties and the cities of Seattle and Tacoma. The *Findings of Fact, Conclusions of Law, and Order* for the Phase I permit stated that Ecology must “.....require non-structural preventive actions and source reduction approaches including Low Impact Development techniques (LID), to minimize the creation of impervious surfaces, and measures to minimize the disturbance of soils and vegetation where feasible...”

On February 3, 2009 the PCHB issued a *Findings of Fact, Conclusions of Law, and Order* for the WWA Phase II permit that recognized the wide range of capacity and expertise among Phase II jurisdictions for implementing low impact development requirements. The PCHB did not order Ecology to modify the 2007 permit to require low impact development, stating that “....it is reasonable for Ecology to allow some lag in timing between Phase I and Phase II jurisdictions as LID requirements are implemented by Phase II municipalities,....” The PCHB also gave Ecology “...some amount of discretion to determine the timing for moving Phase II permittees forward to broader implementation of LID.” The ruling acknowledged that Ecology should convene an advisory process to develop technical guidance and a performance standard for LID for both the Phase I and WWA Phase II requirements.

Using funding from USEPA Region 10, Ecology conducted a facilitated process from October 2009 until August 2010 to develop recommendations from two external stakeholder advisory committees: a technical advisory committee and an implementation advisory committee. A broad range of interests on the committees represented local government permittees, business, developer/builder associations, ports, scientists, consultants, environmental organizations, state agencies (Puget Sound Partnership and Department of Commerce), and federal agencies (USEPA and NOAA Fisheries). In August 2010, Ecology presented an outline of its thinking on LID requirements for three interrelated levels of requirements:

- Site and subdivision-scale requirements
- Local updates of broader codes, rules, and standards to implement LID, and
- A watershed-scale stormwater planning approach.

The LID stakeholder advisory committee meeting summaries, studies, and references are available along with Ecology’s proposal and public comments on the proposal at

<http://www.ecy.wa.gov/programs/wq/stormwater/municipal/LIDstandards.html>

The advisory committees agreed to the following definition of LID:

“Low impact development is a stormwater and land use management strategy that strives to mimic pre-disturbance hydrologic processes of infiltration, filtration, storage, evaporation and transpiration by emphasizing conservation, use of on-site natural features, site planning, rainwater harvest, rainwater re-use, and distributed stormwater management practices that are integrated into a project design. LID

strategies can be applied to new development, redevelopment, urban retrofits, and infrastructure improvements. LID strategies can have a site, subdivision, or basin scale focus.”

The existing permit defines LID as “...a stormwater management and land development strategy applied at the parcel and subdivision scale that emphasizes conservation and use of on-site natural features integrated with engineered, small-scale hydrologic controls to more closely mimic pre-development hydrologic functions.” While the PCHB ruling did not provide a definition for LID, it acknowledged that commonly accepted LID principles could be adopted at a basin or watershed level. Ecology proposes the following revision of the 2007 permit definition for LID in the preliminary draft language:

- **Low impact development** is a storm water and land use management strategy that strives to mimic pre-disturbance hydrologic processes of infiltration, filtration, storage, evaporation and transpiration by emphasizing conservation, use of on-site natural features, site planning, and distributed storm water management practices that are integrated into a project design.

LID design is not limited to specific stormwater best management practices (BMPs) such as bioretention (rain gardens), permeable pavement, and vegetated roofs. LID requires an approach to site assessment and design to conserve vegetation and minimize and disconnect impervious surface in project design. In order to clarify that implementation of LID includes these elements, Ecology has proposed to distinguish between “LID BMPs” and “LID principles” in the preliminary draft permit language, as follows:

- **LID Best Management Practices:** Distributed stormwater management practices, integrated into a project design, that emphasize pre-disturbance hydrologic processes of infiltration, filtration, storage, evaporation and transpiration. LID BMPs include, but are not limited to, bioretention/rain gardens, permeable pavements, roof downspout controls, dispersion, soil quality and depth, vegetated roofs, minimum excavation foundations, and water re-use.
- **LID principles:** Land use management strategies that emphasize conservation, use of on-site natural features, and site planning to minimize impervious surfaces, native vegetation loss, and storm water runoff.

By including both terms in the preliminary draft LID requirement in special condition S5.C.4.a.iv, Ecology intends that permittees will amend stormwater and land use codes, rules, standards, and other enforceable documents to apply both LID BMPs and LID principles to site and subdivision scale development, as described in the next section.

Site and Subdivision Scale LID Requirements

Appendix 1 Proposed Requirements

Introduction

Preliminary draft language for Appendix 1 includes those requirements, definitions, and thresholds that Ecology intends the permittees to adopt into local codes or other enforceable documents and apply to new and redevelopment projects. The proposed changes shown in Appendix 1 are those related to

implementing low impact development (LID) on the project scale. Appendix 1 may include more proposed changes for other reasons when the entire draft permit is released for public comment later this year.

Section 1: Exemptions

No changes

Section 2: Definitions

We have had to define some new terms to make the regulatory structure work. These include:

Permeable Pavements: This includes the range of pavements that allow passage of water through the pavement or wearing course.

Bioretention BMPs & Rain Gardens: We distinguish “Bioretention BMPs” from “Rain Gardens.” Both refer to depressions of compost-amended soils to which stormwater is routed and passed through before discharging into the ground or re-collected in a sub-surface drainage pipe. Rain Garden designs are used on small projects that do not trigger treatment or flow control requirements. They can use compost-amended on-site soils. Bioretention BMPs are used on projects that trigger treatment or flow control requirements. They use a specified soil mixture which ensures adequate pollutant removal capability, and a saturated hydraulic conductivity within an acceptable range.

Hard Surfaces: The previous thresholds that determined the applicable minimum requirements were partially based on the extent of impervious surfaces or pollution-generating impervious surfaces that were created and/or replaced as part of a project. The new proposed LID requirements make use of permeable pavements a priority. Because permeable pavements are not impervious surfaces, we have to revise the thresholds to acknowledge their use. We are introducing a new term, hard surfaces, to use in the thresholds. Hard surfaces are permeable pavements, impervious surfaces or vegetated roofs. The term, hard surfaces, generally replaces the use of impervious surfaces in the thresholds. Though permeable pavements should result in less surface runoff, they increase the amount of water potentially discharged to the ground. Because we are as concerned about ground water pollution as surface water; and because we want to maintain the same regulatory control over water quantity, we propose to use the same square footages of “hard surfaces” as we did “impervious surfaces” to trigger minimum requirements.

Note the overlaps and shuffling of surfaces into new categories. Hard surfaces can be impervious or permeable. Permeable pavements are pervious surfaces, but also hard surfaces.

Infiltration below pavement is a term introduced to allow the options of permeable pavement or impervious pavement with runoff directed below the wearing course into the underlying base course. There are a few other terms, used previously but not defined, for which a definition has been added. A handful of other terms have an amended definition because of the new LID requirements.

Section 3: Applicability of the Minimum Requirements

The significant change is the replacement of “impervious” surfaces with “hard” surfaces in the thresholds for determining which minimum requirements apply to a project. See the explanation for the new term, “hard surfaces,” above. Another change is the application of minimum requirements #6 - #9 to replaced hard surfaces at new development sites. Ecology is also proposing to remove the one-acre threshold for applying the requirements, which is discussed in detail below.

Section 4: Minimum Requirements

Minimum Requirement (M.R.) #1: Includes a new requirement for the site plan to use site-appropriate development principles to retain native vegetation and minimize impervious surfaces to the extent feasible. We intend to reference site planning procedures that will be detailed in the revised *Low Impact Development Technical Guidance Manual for Puget Sound*. We also expect local governments to have updated their local site development codes, rules, and standards to incorporate LID principles.

M.R. #2 has a new technical Stormwater Pollution Prevention Plan element that requires protection of LID Best Management Practices from sedimentation, erosion, and compaction during the construction phase.

M.R. #5, On-site Stormwater Management, has been significantly revised to include requirements for permeable pavement, bioretention or rain gardens, and vegetated roofs (only commercial sites). Larger projects have the option of demonstrating attainment of an LID performance standard by whatever means they choose.

Permeable pavements are considered readily available and reasonable technologies to use wherever site conditions make their use feasible. Specifications for porous asphalt, pervious concrete, and other forms of permeable pavements are readily available, but should conform to the guidance in the *Low Impact Development Technical Guidance Manual for Puget Sound*. Pervious asphalt and concrete cost more than the standard impervious versions. But as pervious pavements become common in construction the cost difference will diminish greatly as many suppliers have batches in frequent production and contractors gain experience in placement. Pervious pavements should be used almost everywhere that impervious pavements have been used. This provision does not mandate that all walkways and driveways must be paved. But wherever they are paved, pervious pavements must be used unless infeasible according to the criteria in Section 8.

Bioretention BMPs and rain gardens are also considered readily available and reasonable technologies to use wherever site conditions make their use feasible. Rain gardens do not have to meet a specific performance standard, so the general guidance in “Rain Gardens, A Handbook for Western Washington Homeowners” can be used for design, construction and maintenance. “Bioretention” specifications for design, construction, and maintenance can be found in the *Stormwater Management Manual for Western Washington*, and the *Low Impact Development Technical Guidance Manual for Puget Sound*. Bioretention facilities must be used on project sites that have to meet the Minimum Requirement for

Treatment, or the Minimum Requirement for Flow Control. Complying with the design specifications allows for reasonable assumptions in regard to their treatment and flow reduction benefits.

Vegetated roofs refer to roofs designed to sustain vegetation on a soil or artificial media. Vegetated roofs are used extensively in Europe. Their use is expanding on commercial buildings in the United States. Ecology considers them a proven and accepted LID technology in commercial projects, but not in residential projects. However, their costs in comparison to standard roof construction can be substantial, and their potential benefits in stormwater runoff reduction are limited.

The directives of Minimum Requirement #5 vary with project size: As required in the municipal stormwater permits issued in 2007, projects only subject to Minimum Requirements #1 through #5 must implement infiltration or dispersion of roof downspouts and other impervious surfaces (depending on soil type) and meet a minimum soil quality and depth requirement (BMP T5.13) for all lawn and landscaped areas. The proposed LID requirements in Appendix 1 would add requirements for these projects to use permeable pavements and “rain gardens” wherever feasible, as determined consistent with the criteria in Section 8.

Projects that are subject to minimum requirements #1 through #9, but which do not exceed 10,000 sq. ft. of new plus replaced hard surfaces, and convert less than $\frac{3}{4}$ acres of native vegetation to lawn and landscaping must implement the same LID BMPs as listed above, except that they must use “bioretention BMPs” on-site rather than “rain gardens” to the extent feasible, consistent with the criteria in Section 8.

Projects that are subject to minimum requirements #1 through #9, and which exceed 10,000 sq. ft. of new plus replaced hard surfaces, or which convert $\frac{3}{4}$ acres or more of native vegetation must either employ a designated mandatory list of LID BMPs or comply with the proposed LID performance standard, depending upon the project type and location.

Projects on parcels of 5 acres or larger outside the urban growth area must comply with the LID performance standard, which is discussed in detail in the next section. These projects have sufficient land area to utilize LID BMPs to keep stormwater on-site and meet the standard. In addition, these are generally areas where reasonably good aquatic habitat conditions exist. Compliance with the LID performance standard is a more reliable approach to not degrading those conditions. Inside the UGA, there can be more complicating factors that make keeping runoff on-site more difficult and application of some LID BMPs infeasible or unwise.

While we would prefer all sites to meet the LID performance standard, it may not be feasible in some cases. So we propose an LID mandatory list option. The mandatory list of LID BMPs includes generally the same LID BMPs as listed above (including bioretention BMPs instead of rain gardens) with some modifications. The mandatory list specifies that runoff, and overflows from other LID BMPs, should be routed through bioretention facilities of a designated minimum size. In addition, the mandatory list allows for infiltration below pavement, not just permeable pavements. And finally, the mandatory list

includes vegetated roofs. Projects that are able to implement all of the mandatory list items will likely meet the LID performance standard, although there is no requirement to demonstrate that it does. Projects choosing the mandatory list option are expected to employ all LID BMPs on the list except those determined infeasible in accordance with the criteria in Section 8.

A text box in the proposal asks whether smaller projects should be allowed to demonstrate compliance with the proposed LID performance standard instead of implementing the specified list of LID BMPs. Ecology would like comments regarding whether this local government and developer flexibility is appropriate.

LID Performance Standard: The proposed LID performance standard would require the project to match developed discharge durations to pre-developed durations for the range of pre-developed discharge rates from 8% of the 2-year peak flow up to 50% of the 2-year peak flow. Ecology has indicated that its bottom line interests lie in preserving and to the extent possible restoring high quality aquatic natural resources. So, Ecology prefers having an aspect to the LID requirement that focuses on achieving a hydrologic performance standard that would significantly reduce alterations in the natural hydrology and thus impacts on the beneficial uses that depend on that hydrology.

Ecology already has a stream erosion protection standard that controls the duration of flows in the range of ½ the 2-year flow to the 50-year flow, but that standard is only intended to prevent accelerated stream channel erosion from extreme high flows. It controls flows that are exceeded 1% of the time or less in a natural land cover situation. It does not guard against other significant alterations in the natural hydrology that impact the beneficial uses. Those alterations commonly occur with land development in most watersheds in western Washington.

The proposed LID performance standard extends the lower limit of the range of flows whose duration currently must be matched to a new lower limit of 8% of the 2-year flow. That flow rate is associated with flows that are exceeded approximately 10% of the time and less. This standard requires projects to retain on-site the runoff from smaller storms. Extending the duration standard to the 10% level will also have the effect of restoring site hydrology to more closely approximate the natural hydrology. The proposed LID performance standard would reduce the magnitude of deviations in the flows that are exceeded more than 10% of the time. By comparison, the current standard reduces the deviations from historical flows by projects that only have to match durations to the flows occurring at 1% frequency and lower. Ecology cannot quantify the relative benefits to the beneficial uses of this more stringent standard. It can say that more closely matching the natural hydrology will reduce the impact of land development on the physical aspects of surface water habitat, and will reduce pollutant loading to surface waters through trapping of pollutants in the soils.

The 10% exceedance level was selected because matching flows up to that level is achievable with LID BMPs that Ecology considers to be consistent with all known, available and reasonable methods of prevention, control, and treatment (AKART). However, the proposal allows the developer to choose a

different combination of LID BMPs than those in the “mandatory list” as long as the performance standard is achieved.

M.R. #6 – Treatment and M.R. #7 – Flow Control

The thresholds for these requirements have been modified to acknowledge the use of permeable pavements and the related new definitions. The intent is to continue to capture the same size and types of projects as previously.

Sections 5, 6

No changes

Section 7 – Basin Planning

The text is expanded to acknowledge that the new Minimum Requirement #5 can also be adjusted through a basin-specific management plan. Also, the availability of new computer software from USEPA can assist in basin planning.

Section 8: Feasibility Criteria for Low Impact Development BMPs

The Pollution Control Hearings Board directed Ecology to require the use of LID techniques where feasible. There are instances where an LID BMP is either technically infeasible or not advisable for public health and safety reasons. For each of the commonly accepted LID BMPs that appears in the proposed

Minimum Requirement #5 – rain gardens/bioretention, permeable pavements, and vegetated roofs - Ecology has drafted a list of site/engineering infeasibility criteria. An LID BMP is considered infeasible for the criterion or condition listed. The criteria are primarily drawn from the local American Public Works Association storm water managers group; AHBL Consultants recommendations to the Puget Sound Partnership, and the LID Advisory Committees formed by Ecology to provide advice on development of LID requirements in municipal stormwater permits.

Ecology is also proposing “Competing Needs” conditions or criteria which would render an LID BMP infeasible. This list is currently limited to two conditions: 1) where implementation of an LID BMP is in conflict with another federal or state requirement; and 2) where the LID BMP is incompatible with an existing development layout or aesthetics that are mandated by local code or rules (e.g., no building setback from public right-of-way could preclude use of bioretention along a road because of inadequate space). Ecology additionally proposes that the second condition only apply to areas substantially developed (75% or more of lots with pre-existing development).

Removal of the One-acre Threshold for Requirements

In the preliminary draft language Ecology proposes to apply the permit’s S5.C.5 requirements to new development, redevelopment and construction sites at project sites smaller than one-acre. The existing WWA Phase II permit does not require application of the S5.C.5 and Appendix I requirements to project sites smaller than one acre, except where the sites are part of a common plan of development or sale.

The proposed new thresholds in the preliminary draft of Appendix I are consistent with those in the Phase I permit.

Ecology's proposal to reduce the one-acre threshold is intended to prevent harm to aquatic habitat and water quality in many urban areas where, if the threshold is not reduced, the LID requirements would not apply to the significant proportion of development activities that occur as infill and/or on project sites smaller than one acre. Ecology's *Stormwater Management Manual for Western Washington* (2005) and the Phase I permit include the lower thresholds in recognition of the need to protect beneficial uses from the cumulative impacts of development on parcels smaller than one acre.

Ecology staff conducted an online review of available municipal codes in Western Washington Phase II jurisdictions in February and March of 2011 to evaluate the potential impact to permittees of reducing the one-acre threshold to a more restrictive threshold. Of the 80 Phase II cities and 5 Phase II counties (covering urban areas around Phase II cities) in Western Washington, the review found a total of 73 jurisdictions, or 85%, that apply stormwater standards to project sites of less than one acre. A total of 55 jurisdictions (or 64% of Phase II's) appear to meet the Phase I thresholds, while the study found about 22% apply requirements at a variety of thresholds between the Phase I standards and the one-acre threshold. The review identified approximately 5% of the Phase II jurisdictions that limit the requirements to the one-acre threshold. The remaining jurisdictions did not have codes available online.

These results indicated to Ecology that most Phase II jurisdictions recognize the importance of managing stormwater in urban areas at sites smaller than one acre. However, there are additional requirements in special condition S5.C.5 (Controlling Runoff from New Development, Redevelopment and Construction Sites) for which local government data was not available online. This review was limited to the thresholds for requiring site plan review and applying Appendix I Minimum Requirements to new and redevelopment projects. It did not provide information on the extent to which the jurisdictions apply additional S5.C.5 requirements, such as inspections before, during, and after construction or long-term maintenance.

These additional requirements that apply to S5.C.5 will increase the workload for cities and counties with the proposed reduction of the one-acre threshold. The number of site plans to review, inspections, and maintenance inspections will increase in many urban areas that currently may not apply all the S5.C.5 requirements to smaller project sites. Ecology notes that the 80% compliance rate for inspections was incorporated in the permit in 2009 to recognize the impacts of the economic downturn on local governments. Ecology proposes to consider retaining this compliance rate in the 2012 permit for WWA Phase II permittees, and welcomes input during this informal comment period on options for addressing the additional workload on local government staff.

Ecology proposes to require that when permittees update their codes, rules, and standards to include LID requirements, they also reduce the one-acre threshold to match the Phase I permit requirements. This proposed change is consistent with the broad application of LID described in the PCHB ruling, and

more effectively protects beneficial uses in all new and redevelopment. It is also consistent with or close to the requirements already in place for a majority of WWA Phase II permittees.

Proposed Requirements to Update Local Codes, Rules, Standards, or other Enforceable Documents

The preliminary draft language for LID in permit condition S.5.C.4.a.iv includes a requirement for local governments to review local codes, rules, and standards and where needed, to amend them to incorporate LID principles into enforceable documents regulating stormwater and broader development standards. As described in the introduction above, LID design requires implementation that goes beyond LID best management practices (BMPs) such as bioretention, permeable pavement, and vegetated roofs to apply LID principles that conserve vegetation and minimize impervious surface in project design. In order to provide flexibility to municipalities for implementation, Ecology does not propose to provide specific requirements such as minimum street widths, maximum impervious surface limits, or percent of native vegetation to be retained. Ecology's intent in the preliminary draft language is to allow local governments and developers the flexibility to apply a variety of LID principles and BMP's to meet the hydrologic performance standard described in the previous section.

The preliminary draft language in S5.C.4.a.iv(1) refers to a guidance document currently under development by the Puget Sound Partnership (PSP) with assistance from Ecology and others as an example of an appropriate process for updating local codes to implement LID: *Integrating LID into Local Codes: A Guidebook for Local Government*. The PSP will make a draft of this document available for review and comment during this informal comment period and Ecology will add the link to its website.

The PSP guidebook outlines the steps in the process and the types of regulatory documents that Ecology expects permittees to review, and where needed, to amend in local codes, rules, standards, and other enforceable documents. By referencing this guidebook and requiring submittal of a list of participants, enforceable documents reviewed, and amendments to the documents, Ecology proposes to provide a moderate level of structure and direction to this requirement. This will also provide a level of flexibility for local communities in implementation.

Another reference for this process is the stormwater runoff element of the EPA publication *Water Quality Scorecard: Incorporating Green Infrastructure Practices at the Municipal, Neighborhood, and Site Scales* (EPA publication 231B09001, October 2009).

The local codes review and amendment process must include opportunities for public participation, consistent with permit condition S5.C.2 requirements for public involvement.

The existing WWA Phase II permit required cities and counties to submit a report identifying barriers to LID and actions to remove those barriers. The reports also included LID BMPs appropriate for the jurisdiction, and measures and timing considerations for implementing LID requirements. Ecology added this reporting requirement in a 2009 permit modification to implement the PCHB's 2009 WWA

Phase II ruling on LID to prepare Phase II jurisdictions for adopting future LID requirements. The agency reviewed these Phase II reports for input to the preliminary draft language.

In the past decade, a number of Puget Sound jurisdictions received assistance from the PSP in reviewing and drafting updates to local codes, rules, and standards, and many have already amended codes to include LID opportunities or requirements. The existing WWA Phase II permit required cities and counties to “allow” LID in the S5.C.4 program to control runoff in new and redevelopment. While WWA Phase II jurisdictions differ in levels of experience and expertise with LID, Ecology assumes that the requirement to allow it and the 2011 LID reporting requirement in S9.E.4 have now provided all permittees with some experience and preparation.

Proposed Implementation Schedule

In the preliminary draft language, Ecology proposes a deadline of December 31, 2015 to update local government codes, rules, and standards as required in S5.C.4.a.iv and Appendix I. This deadline is based on a permit issuance date of June, 2012. The reports to identify barriers to LID and actions to remove them submitted by permittees in March 2011 to meet permit condition S9.E.4 built a foundation to prepare for this change.

Permittees can choose to modify local requirements all at once or incrementally. An incremental approach could include amending the stormwater code and manual first, and then the broader development codes, rules, and standards. In addition to the annual report submittals in 2011, permittees can begin preparing to amend documents, training local government staff, and educating the community.

Coordinating with Updates of Stormwater Manuals, Guidance, and the Hydrology Model

Ecology is engaged in updating or developing five important tools for local governments and developers that, taken together, comprise an integrated body of design standards and guidance for implementing the LID requirements. Coordinated timelines for public review will provide interested reviewers with a comprehensive view of these interrelated tools and guidance documents:

1. *Stormwater Management Manual for Western Washington*, Department of Ecology (expected publication 2012)
 - Ecology is drafting selected edits of the Ecology stormwater manual for Western Washington to incorporate the proposed LID requirements in Appendix I, as well as several other specific manual sections. Ecology plans to release the edits of selected sections of the manual for public review in October 2011 to coincide with the public comment period of the formal draft WWA Phase II permit.
2. *Low Impact Development Guidance Manual for Puget Sound*, Puget Sound Action Team and WSU Pierce County Extension (expected version 2011)
 - Ecology is participating in the update of the LID manual to ensure it is consistent with proposed Appendix I requirements and the edited sections of the Ecology manual. Led

by WSU Pierce County and the Puget Sound Partnership, the draft updated LID manual will be available for public review during fall 2011 and will be useful for most areas of Western Washington.

3. Western Washington Hydrologic Model (WWHM) (expected version late 2011/early 2012)
 - Ecology plans to update the WWHM to better address LID BMPs. The Ecology LID advisory committees identified this as a high priority for implementing LID. The target for completing the WWHM update is late fall of 2011.
4. *Integrating LID into Local Codes: A Guidebook for Local Governments*, Puget Sound Partnership, (in progress)
 - The Puget Sound Partnership's step-by-step guidebook for local governments to update stormwater and broader development codes for LID principles is referenced in S5.C.5.a.iii. The guidebook outlines a process to review and amend local codes, rules, and standards. Public review of the draft document is scheduled for June, 2011, with the draft available at www.psp.wa.gov and workshops are scheduled for June 2011.
5. *Rain Garden Handbook for Western Washington Homeowners*, WSU Pierce County Extension (2007)
 - WSU Pierce County will update the rain garden handbook during 2011-12 based on current research and lessons learned. Ecology preliminary draft language in Appendix I, Minimum Requirement #5 cites the updated handbook as guidance for construction of rain gardens on project sites that do not meet the thresholds for Minimum Requirements that require an engineering design.

Watershed-scale Stormwater Planning

Stormwater management is inherently related to land cover changes. Scientists recognize that it is not possible to maintain water quality and aquatic habitat in Puget Sound lowland streams and elsewhere in Washington State without considering land use and how the landscape is developed. This must occur at a watershed scale that is broader than individual site and subdivision projects. The PCHB Phase I ruling acknowledged the need for a watershed-scale approach to stormwater management based on the testimony of stormwater experts on all sides of the appeal. In response to that ruling, Ecology presents a preliminary draft proposal to address stormwater management at a watershed scale for informal public comment.

Ecology proposes watershed-scale stormwater planning that is initiated by specific land use actions that occur with urbanization. The proposal addresses watershed-scale impacts from future land use actions that change land cover, hydrology, and water quality. Ecology requests comment on the proposed triggers for an analysis, the analysis of hydrologic and water quality impacts, compliance thresholds, and reporting.

The proposed triggers for an analysis of water quality and hydrologic impacts for watersheds between 2 square miles and 40 square miles include:

- Expansion of the Urban Growth Area (UGA) by 80 or more acres within a watershed; and/or
- An increase in the total impervious area of a watershed by more than five percent of the existing impervious area of the watershed.

While the thresholds for the analysis are watershed-scale measures, the proposed analysis is limited to the impacts of the specific UGA/city boundary increase or land use action¹ that increases impervious area. The proposed land use change will benefit from site and subdivision scale LID requirements for new development in these areas of future growth, by reducing the hydrologic and water quality impacts. Widespread application of LID may even delay triggering the requirement by minimizing the increased impervious area. New pervious surfaces would not count toward the total impervious area of the watershed.

Once the analysis identifies the potential impacts, the jurisdiction may propose to minimize them by applying LID principles at the watershed scale. These include conservation of vegetation, limiting total impervious area, and disconnecting contiguous impervious areas. Ecology encourages jurisdictions to look ahead and conduct an analysis in a larger area of projected growth within a watershed, but limits the proposed requirement to the impacts from the specific land use action or boundary increase so that jurisdictions may choose the scale at which to implement the requirement. The watershed-scale approach and the LID site and subdivision standards will work together to reduce the impacts of new development in areas of future growth.

During the Ecology LID advisory process, several committee members proposed an alternative approach for watershed-scale stormwater planning, in which each permittee would select priority basins where impending growth threatens high-value habitat or water resources. Ecology had the following considerations in developing a proposed watershed-scale approach to protecting water quality and aquatic habitat:

- Ecology would like to avoid requiring permittees to revisit watershed-scale land use decisions made in the past. Instead the preliminary draft language primarily addresses future land use decisions. This approach reduces the need to retroactively change planning decisions, except where the permittees choose to do so to address the impacts from future development.
- Groups of permittees could take several years to select priority basins where jurisdictions within one watershed do not agree on priorities. Although several committee members suggested that Ecology name the watersheds in the permits, the controversy generated by these priority watershed decisions could take several years to resolve. Methodology for selecting “high priority” watersheds is lacking. Priority watersheds will differ substantially depending on the planning objective – for example if the objective is restoration verses protection.

¹ Ecology’s proposed language is intended to refer to land use actions such as changes in zoning, UGAs, and densities, rather than site specific projects, unless the project involves a broader land use action such as a change in zoning.

- Equity – selecting some high priority watersheds for stormwater planning would mean some jurisdictions would likely have to do or participate in multiple planning processes while other jurisdictions would not have any watershed scale stormwater planning requirements.
- Permit language mandating that permittees cooperate within a watershed would be a significant challenge to enforce. There may be jurisdictions within the watershed that are not covered by a Phase I or Phase II permit and refuse to participate.
- It is not clear how the outcomes of a “priority watersheds” planning process would be implemented and enforced. A number of watershed plans completed in the past under other authorities have not yet been implemented. The benefits of another overlay of watershed planning are not clear.

Thresholds for the Analysis

The PCHB ruling of August 7, 2008 on the Phase I permit stated (page 6) that the areas to be considered for basin planning in future phases of the permit should be “...where new developing is occurring, and from which discharges may impact aquatic resources.” Ecology proposes an approach that addresses new development or re-development, either in areas where a UGA or city is expanding or where a land use action increases the total impervious area of a watershed by a significant amount.

Ecology proposed the threshold of an 80-acre or more expansion of a UGA or incorporated city within a watershed in the LID advisory process in August 2011, and now adds proposed language to define the watershed size as between 2 square miles and 40 square miles. In August 2010, the threshold was proposed based on discussions with land use planners at the Washington State Department of Commerce. Ecology staff assessed this threshold further in early 2011 by evaluating quantitative data from the Office of Financial Management on cumulative changes in areas of UGAs and incorporated city areas between 2005 and 2010. The objective of the evaluation was to determine the potential number of permittees this threshold might affect. The amounts varied widely. It is interesting that a number of UGAs decreased in size, including some by significant amounts, as jurisdictions re-evaluated the land needed for projected population growth and considered the cost of urban infrastructure. The GMA requires cities and counties to provide sufficient land capacity for the 20-year projected growth (RCW 36.70A.115) in comprehensive plans.

The average change during 2005-2010 in the area of incorporated cities was an increase of 547.4 acres, while the median change was 100 acres. The average change in size of UGAs was a decrease of 285.2 acres, with a median change of an increase of 66.7 acres. It is likely that these changes occurred in various watersheds rather than a single watershed per jurisdiction. However, in terms of the potential impact on local governments, a total of 40 UGAs and 50 cities in permitted areas exceeded a cumulative total of 80 acres of increases during the five years.

The preliminary draft language also proposes to require, for watersheds of between 2 square miles and 40 square miles in size, an analysis of hydrologic and water quality impacts for land use actions that

would increase the percent of total impervious area in the watershed by more than five percent over existing impervious area. Research has found that as the total impervious area of a watershed increases, there is a predictable level of habitat and water quality degradation. A number of the LID advisory committee members recommended using a threshold of total impervious surface area as opposed to an earlier Ecology proposal related to density increases. Ecology requests comment on the proposed threshold of a five percent increase over existing impervious area for watersheds of two square miles to 40 square miles in size.

Based on an Ecology staff review, a size between two and 40 square miles captures many lowland urban watersheds within or at the boundaries of cities and UGAs. At this scale, small changes in impervious area can result in significant impacts to water quality and aquatic resources. A five percent increase of impervious area over the existing impervious area of a watershed means that in a watershed that has ten percent existing total impervious area, the analysis is triggered when a land use action results in an increase to a total impervious area of 10.5 percent. Examples of these thresholds in various watershed sizes and existing total impervious area (TIA) are:

Watershed Area	Area in Acres	Existing percent Total Impervious Surface Area	Acres of increased impervious surface to trigger analysis
5 sq mi	3,200	10	16 acres
10 sq mi	6,400	20	64 acres
15 sq mi	9,600	10	48 acres
20 sq mi	12,800	20	128 acres
25 sq mi	16,000	10	80 acres
30 sq mi	19,200	20	192 acres

The proposed thresholds would be applied to cumulative changes. Jurisdictions would track these changes over time by watershed, from the effective date of the permit until the threshold in a watershed was triggered. Permittees would track land use changes by watershed. Although the thresholds are measured at a watershed scale, the analysis is required only for the area within the jurisdiction, unless there is an agreement to cooperate with other jurisdictions. While there may be uncertainty in areas of the watershed under another jurisdiction, Ecology expects that the analysis will evaluate the area under zoning at the time of the proposed land use action.

Stormwater management is driven primarily by changes in land use and land cover from natural conditions to urban development. Research has shown that increases in impervious area with urbanization result in degraded water quality and aquatic habitat.² Ecology’s proposed language is intended to refer to land use actions such as changes in zoning, UGAs, and densities, rather than site specific projects, unless the project involves a broader land use action such as a change in zoning.

² 2002, Booth et al, *Forest cover, Impervious Surface and Mitigation of Stormwater Impacts*, JAWRA Volume 38, Number 3. Booth, D.B. and Jackson, C.R. 1997.

Ecology's proposed watershed-scale approach integrates water quality protection with land use actions in recognition of the integral relationship between land use decisions, land cover change, and stormwater.

The PCHB Phase I ruling discussed the relationship between state water quality law and the Growth Management Act (GMA), stating that: *"We conclude that there is no conflict between GMA and WPCA [State Water Pollution Control Act], nor the roles of local governments and Ecology under these statutes. These roles support and complement each other and can be harmonized to allow water quality efforts to be considered and integrated in the growth management process outlined in GMA."*

Proposed Water Quality and Hydrologic Analysis

The intent of the watershed-scale stormwater planning analysis is to identify the hydrologic and water quality impacts of the proposed land use action and to identify measures to protect beneficial uses. The analysis should include computer modeling of hydrologic flows and water quality impacts, as well as other best available science.

Although the water quality degradation and habitat destruction caused by urbanization is widespread and well-known, the tools predicting such impacts are not yet widely used. One such tool, USEPA's SUSTAIN model, is currently being tested in a number of pilot projects. Ecology intends to build on the tools and experience of these projects and provide guidance on the methodology for such an analysis. In addition, Ecology will look for funding support for these studies and will provide technical assistance to permittees. Additionally, Ecology will evaluate opportunities for incentives and for combining such analyses with studies of Total Maximum Daily Loads or Water Cleanup Plans.

If the hydrologic and water quality analysis finds that the proposed UGA expansion or increased impervious area will result in residual water quality impacts, the analysis must demonstrate that the proposed changes are in the public interest so as to justify the lowering of water quality. However, while some lowering of water quality may be allowed, in no case may the actions result in a violation of state water quality standards or impairment of beneficial use in receiving waters. For land use actions in urban areas, the public interest analysis can cite the Growth Management Act goal of concentrating growth inside UGAs. Actions are more likely to be in the public interest if they increase population inside the UGA rather than outside the UGA.

If the proposed action goes forward, the jurisdiction would be required to evaluate impacts against measurable set targets to prevent harm. The jurisdiction would establish measurable targets in the analysis. Measurable targets established for a watershed might include direct indicators such as chemical concentration and flow metrics, and indirect indicators such as a maximum percent of total impervious area, a minimum percent of forest cover, or conservation of specific connected areas of vegetation. The targets would depend on the existing level of development in the watershed, as well as other factors.

For example, in an already urbanized watershed, the targets could be to improve certain stream flow metrics by X%, reduce the loading of a chemical by Y%, reduce impervious area from 40% to 30%, and increase native land cover by 5%. In an un-impacted, healthy watershed that would be asked to accommodate a 50% increase in population, the targets could be no violations of water quality standards, maintaining flow metrics above certain values associated with healthy stream ecosystems, native ground cover of not less than 65%, and effective impervious area less than 10%.

Compliance and Reporting

Ecology does not propose to require that permittees submit the watershed-scale stormwater planning analysis for review and approval prior to taking the land use action. However, the preliminary draft language does call on permittees to submit the analysis as an attachment to the next annual report. Permittees would be responsible for tracking progress toward meeting the targets established in the analysis, and would report on this progress in the annual report at the end of each 5-year permit cycle.

S8 Monitoring Requirements Preliminary Draft Language - Explanatory Notes

Introduction

Ecology proposes Phase II preliminary draft language on monitoring requirements in two areas of western Washington:

- Puget Sound permittees include those in Clallam, Thurston, Kitsap, Pierce, King, Snohomish, Island, Skagit, and Whatcom counties.
- Southwest Washington permittees include those in Clark, Cowlitz, Lewis, and Grays Harbor counties.

The preliminary draft language proposes a collaborative, regional approach to stormwater monitoring throughout western Washington that was developed in a two-year stakeholder process in Puget Sound. The proposed structure includes a coordinated monitoring program based on shared costs among permittees, with Ecology acting as the service provider to administer contracts. Permittees would participate in a formal oversight committee. This proposed approach removes specific monitoring requirements from the permits and relieves individual permittees of the obligation to conduct Special Condition S8 monitoring activities. An important benefit is that the new approach would result in:

- Feedback on improvements in water quality in receiving waters,
- Regionally consistent methods to collect comparable and valid data,
- A repository of information on pollution sources, and
- Transferable studies of the effectiveness of specific stormwater program activities.

The preliminary draft language includes a conceptual approach for monitoring receiving waters in southwest Washington that is a scaled-back but similar approach to that in Puget Sound. Ecology welcomes regional input on monitoring requirements that address the geography, climate, soils, and

land uses of southwest Washington and encourages further discussions to develop a monitoring program that addresses specific regional issues and conditions.

Background

The current Phase I permit requires individual permittees to conduct stormwater monitoring, Best Management Practice (BMP) monitoring, and targeted program effectiveness monitoring. The current western Washington Phase II permit requires individual permittees to identify sites where stormwater monitoring might be conducted and to submit ideas for effectiveness studies to answer questions of importance to the jurisdiction. Ecology's intent in developing the Phase II western Washington permit requirements was to expand some of the current Phase I monitoring requirements to more western Washington permittees in the next permit cycle, at a reduced individual level of effort.

The current permit monitoring requirements were formally challenged but ultimately upheld by the Pollution Control Hearing Board (PCHB). The PCHB concluded that Ecology should require monitoring in future Phase II permits. Ecology believes that the current Phase I permit monitoring requirements have produced useful information; however the Department is not committed to continuing this monitoring in future permits. The PCHB endorsed the [Puget Sound Monitoring Consortium](#) (PSMC) process for framing a collaborative regional monitoring program.

The PSMC was funded by the Legislature at the request of permittees and other stakeholders with a broad scope that included stormwater and other regional water quality, habitat, and biota monitoring. The PSMC was initiated in October 2007 and staffed by Ecology. Jay Manning (Ecology's director at the time) formally requested in April 2008 that the PSMC provide specific recommendations through a specific stakeholder process to inform the next cycle of municipal stormwater NPDES permits. The Stormwater Work Group (SWG) was officially launched in October 2008, with Ecology providing staff support. Official SWG members were designated as representatives by the caucuses of federal, state, and local governments (including permittees); environmental groups; and businesses. Additional seats at the table were designated for tribes, ports, and agriculture.

Through the SWG process, Phase I and Phase II permittees and other stakeholders in Puget Sound developed and proposed a different approach to permit-required monitoring. Ecology believes this alternative approach represents a better way to utilize limited monitoring resources. It is expected to reduce Phase I permittees' overall expenditures on monitoring while providing information that is meaningful and useful to Ecology and to all of the permittees.

In September 2009 the SWG held a formal peer review and public comment period for a draft scientific framework for the regional stormwater monitoring and assessment program. In April-May 2010 the SWG held three public workshops and accepted public comments on the revised scientific framework, accompanied by a broad implementation plan. In June 2010 the SWG delivered the [2010 Stormwater Monitoring and Assessment Strategy for the Puget Sound Region](#) (2010 Strategy). In the strategy, the SWG recommended a regional stormwater monitoring program (RSMP) for Puget Sound. In October

2010 the SWG delivered its [*Recommendations for Municipal Stormwater Permit Monitoring*](#) whereby specific components of the RSMP would be funded and implemented by Phase I and II permittees through permit requirements.

Regional stormwater monitoring program (RSMP)

The SWG recommended specific stand-alone components of the RSMP for permittees to fund, plus a means to administer and implement the program collaboratively. The SWG further recommended a two-year ramp-up period to prepare for full implementation of the RSMP. Ecology has used these recommendations to develop a proposed scope of work for a western Washington RSMP collectively funded by all of the permittees. The RSMP includes:

- Collecting data on the status and trends of conditions in water bodies across western Washington. The Puget Sound monitoring effort was defined by the SWG recommendations and priorities. In the preliminary draft permit Ecology proposes a complementary approach for receiving water monitoring in southwest Washington (see “Southwest Washington” section below).
 - At 50 sites in marine nearshore areas in Urban Growth Areas of Puget Sound:
 - Monthly bacteria monitoring, and
 - Annual mussel tissue sampling, and
 - Sediment chemistry sampling once every five years.
 - At 100 sites in small, wadeable streams in Puget Sound lowlands:
 - Monthly water quality and instantaneous flow monitoring (note that a streamflow gauging network analysis currently underway will inform other monitoring needs),
 - Annual stream benthos and habitat monitoring, and
 - Sediment and toxicity sampling once every five years.
 - At 30 sites in small, wadeable streams in permitted areas of southwest Washington:
 - Monthly water quality and instantaneous flow monitoring for one year every five years,
 - Stream benthos and habitat monitoring once every five years, and
 - Sediment and toxicity sampling once every five years.
- Development of a source identification and diagnostic information repository for western Washington. Ecology proposes in the preliminary draft language that all western Washington permittees provide funding to create and maintain this repository. Permittees will be invited to participate in designing the repository.
 - Permittees will be able to use this repository to share information and improve their illicit discharge detection and elimination programs.
 - Collective analysis of this information will support regional source control initiatives.
- Regionally prioritized and collaboratively conducted studies of stormwater program effectiveness. Ecology proposes in the preliminary draft language that all western Washington permittees contribute to these studies. See the “Effectiveness studies” section below.

Detail on each of the components of the RSMP is provided in the SWG's 2010 Strategy and October 2010 recommendations, and also in the "Southwest Washington" section below. The proposed scope of work for the RSMP provided as an attachment to the [draft boilerplate agreement](#) between permittees and Ecology (more info on contracting arrangements is provided below in the "Governance and Administration" section).

The SWG's proposal represents a paradigm shift away from monitoring conducted by individual permittees and towards collaborative implementation of a new regional stormwater monitoring program (RSMP) with shared protocols, data management, and analysis and interpretation. Ecology believes this approach will provide better information for improving stormwater management activities and general permit requirements. The proposed status and trends monitoring will answer basic questions as to whether conditions in receiving waters are improving or deteriorating. The information repository will allow permittees to share source identification program information and provide a regional understanding of stormwater impacts on receiving waters, perhaps supporting new policy initiatives. The effectiveness studies will provide direct quantitative feedback about the results of different stormwater management activities and programs.

The preliminary draft permit language in Special Condition S8.C represents Ecology's translation of the SWG's October 2010 recommendations into permit language. Ecology was required to make several key decisions beyond those recommendations, each of which is described in the sections below.

Governance and administration of the RSMP

A substantial element of the collaborative RSMP involves pooling and administering funds. The SWG recommended that all permittees contribute funds to administer and implement the RSMP. The SWG made specific recommendations to Ecology as to how to do this, including asking the Department to:

- Write the permit in a manner that permittees may satisfy their S8 monitoring requirements solely by contributing funds to the RSMP.
- Require all permittees to contribute funds to cover administration, support, and infrastructure such as standard methods and protocols, data bases, literature reviews, and analyses.
- Implement the requirement to pay into the pooled resources fund via contractual arrangements with each permittee.
- Act as the administrative entity during this permit cycle, understanding that another entity may serve in this capacity in future permit cycles.
- Leverage existing capacities at local municipalities and other organizations to implement the RSMP.
- Convene an oversight committee to oversee the financial and technical aspects of the RSMP.

Permittees and others need assurance from Ecology that its administration of the RSMP will be technically and fiscally accountable; that all funds contributed by permittees will be committed to the RSMP; and that contracts to those conducting the monitoring will be awarded in a fair, open, and transparent process.

Ecology is sharing this preliminary draft language and supporting documentation for an informal comment period to get feedback on how Ecology proposes to implement the SWG's recommendations in western Washington. Accompanying the proposed permit language in S8.C is a [draft boilerplate agreement](#) between the Department and permittees and a scope of work that describes permittees' obligations and Ecology's obligations and deliverables. Ecology proposes in the preliminary draft language that each permittee would pay for a share of the RSMP. The proportion of each share is discussed in the "Cost Allocations" section below.

Ecology is receptive to the SWG recommendation to convene an oversight committee that would help develop requests for proposals, evaluate and rank applications, and award contracts to implement the RSMP. The SWG is currently developing recommendations as to the composition, scope, and decision-making approach of this committee. Ecology staff will consider those recommendations as they write the formal draft permit that is scheduled to go out for public comment in October 2011. Local governments with capacity and interest in implementing monitoring or other RSMP work will be eligible to compete for RSMP contracts for specific RSMP activities. Other qualified entities may also compete for RSMP contracts.

Southwest Washington

The SWG recommendations were developed specifically for Puget Sound with limited involvement by southwest Washington permittees in the local government caucus. Southwest Washington permittees have the same stormwater management program permit requirements as those in Puget Sound. Permittees in southwest Washington will also be required to conduct monitoring in the next permit cycle.

Ecology's preliminary draft proposal is that two components of the RSMP for Puget Sound be expanded to include southwest Washington: the regional effectiveness studies and the source identification information repository. The SWG caucuses have agreed to include broader western Washington members within their formal representation structure so that Southwest Washington stakeholder perspectives will be considered in making recommendations that affect areas outside Puget Sound.

With respect to receiving water monitoring, the Puget Sound status and trends monitoring proposal is not directly and proportionately expandable to southwest Washington. Ecology representatives have met twice with permittees in southwest Washington to discuss this monitoring. Ecology is proposing a preliminary draft approach to receiving water monitoring in southwest Washington. This draft proposal is included in the preliminary draft language to show how all three components of the RSMP would be implemented through the proposed collaborative administrative approach. Permittees in southwest Washington have independently begun to discuss priorities and possible approaches for monitoring in receiving waters related to stormwater management questions. They are developing proposals for this monitoring but Ecology staff and other stakeholders have not yet had an opportunity to review the proposals and contribute ideas.

In the preliminary draft language Ecology proposes monthly water quality monitoring for one year every five years at 30 randomly selected sites on small streams inside permitted areas in southwest Washington. Ecology also proposes sediment, toxicity, and benthic invertebrate monitoring once every five years at the same sites during the same year. The proposed monitoring design is a scaled-back version of the Puget Sound small streams status and trends monitoring. The data would be used in a western Washington status and trends analysis.

Ecology remains open to a different approach to monitoring receiving waters to replace this preliminary draft permit language. Ecology does not plan to create a new, formal stormwater monitoring work group for southwest Washington, but Department staff will continue to meet with permittees and stakeholders to discuss options for monitoring. To be certain that a different proposal is included in the formal draft permit language the monitoring approach should be broadly agreed upon and submitted to Ecology by August 31, 2011.

Ultimately the goal for monitoring is to collect information that is useful for Ecology and for local governments. Where possible, the monitoring program should take advantage of opportunities to leverage other monitoring efforts (local priorities, Total Maximum Daily Loads, etc.).

Effectiveness studies

Ecology has based preliminary cost estimates for the RSMP primarily upon SWG recommendations. However, the SWG as a whole did not recommend an amount of funding that permittees should be required to contribute to conduct effectiveness studies. Ecology has proposed a required level of funding after consideration of SWG discussions on this topic:

- Local government representatives proposed that permittees would collectively contribute \$1.5 million annually for effectiveness studies in Puget Sound.
- Other SWG members proposed a substantially higher investment, up to \$6 million per year to address the pressing need for this information and considering the magnitude of the overall costs of stormwater management.

In the preliminary draft language Ecology proposes that Puget Sound jurisdictions collectively contribute \$1.5 million annually for effectiveness studies in. Ecology believes this is a reasonable starting point for building a new RSMP, particularly in consideration of the proposed new investments by local governments in receiving water monitoring. The preliminary draft language proposes that this level of funding be proportionately expanded to southwest Washington on a per-capita basis (\$205,000 collectively) for each of permit years 2 through 5 during this permit cycle.

As recommended by the SWG, these funds would be targeted to six programmatic stormwater management elements, with an average of about \$1.14M per element, to fund a permit term total of about 15 studies at an average cost of \$450K per study. The SWG asked Ecology for additional time to identify and recommend effectiveness studies through an open and transparent stakeholder-driven

process to rank, evaluate, and determine which topics are of greatest regional interest for western Washington.

Since delivering their October 2010 recommendations the SWG has described the [stakeholder process](#) through which it proposes the study topics, questions, and/or ideas proposed by permittees and others be ranked and evaluated. As noted in the “Southwest Washington” section above, the SWG caucuses have agreed to include broader western Washington members within their formal representation structure when making recommendations that affect areas outside Puget Sound so that Southwest Washington stakeholders will be included in the processes of reviewing proposals.

The SWG invited permittees and others to submit ideas in January through April 2011. The SWG will include in this process all of the ideas that were submitted by Phase II jurisdictions in their annual reports that were due March 31, 2011. Ecology’s proposal is to include the SWG’s recommended final study topics in the formal draft permit to be issued for public comment in October 2011. In the final permit in July 2012, Ecology proposes to list the specific studies that will be conducted using pooled funds contributed by permittees.

Of the SWG’s 88 recommendations, nearly all were by consensus of all of the stakeholders. One of the few majority (not consensus) recommendations was that Ecology should allow permittees to choose not to participate in regional effectiveness studies, and instead allow permittees to conduct effectiveness studies themselves. The SWG did not provide a description of this “opt-out” alternative, including how or whether it would be coordinated with the RSMP effectiveness studies. Some expressed concern that an “opt-out” alternative would likely be inefficient for Ecology to implement and could potentially compromise the regional effort.

At this time, Ecology has not developed such an alternative, and the proposed language does not allow permittees to choose not to contribute funds for the RSMP effectiveness studies. Commenters who want such an option are encouraged to comment on this topic, specifically:

- What should the alternative look like?
- How it should be implemented?
- What will assure that the alternative complements the RSMP?

Cost allocations

The SWG recommended that Ecology require permittees to contribute funds to administer and implement the RSMP. The SWG did not propose a method for “equitably” allocating RSMP costs among all permittees. Ecology prefers an approach to dividing monitoring costs among permittees that is: simple to administer, objective, repeatable, based on readily available information (preferably using information generated by the Office of Financial Management, not information generated by Ecology), related to the municipal stormwater permits, and as fair and equitable as possible.

Ecology has received and considered the following suggestions for allocating costs:

- Base cost allocations solely on population.
- Apply a base investment for all permittees.
- Require all permittees to contribute a percentage of the cost of individual monitoring.
- Consider per capita income.
- Exclude populations that are not covered under municipal stormwater permits (populations served by combined sewers, or by discharging stormwater runoff to groundwater, or the portion of a Phase II permittee's population located outside the geographic area covered under the permit).
- Base the cost allocation on something related to the quantity of stormwater generated (impervious surface or effective impervious surface, drainage basin area, number of outfalls, pollutant loads).
- Mirror the way permit fees are set.
- Mirror the way capacity and other grants are given out.

Allocation of monitoring costs requires both estimated costs and methodology. Costs estimates are needed for planning, preparation, and full implementation of the RSMP. The methodology must include a basis for distributing costs among permittees and determination of a base-level contribution, if any.

Ecology has developed a spreadsheet tool (available on Ecology's [Informal Public Comment webpage](#)) for evaluating various proposed approaches to allocating costs. The methodology is primarily based on the total population of each jurisdiction. The spreadsheet also allows for a different base level contribution based on Median Household Income, but Ecology did not include this in the three options presented in the tables in S8.C.2 for Phase I and Phase II. The total costs allocated across western Washington (including Puget Sound and southwest Washington) by each method are the same, and include Phase I and Phase II permittees. In order to evaluate the approaches in full, commenters should review the tables in S8.C.2 for both the Phase I and the Phase II preliminary draft permit language.

The total RSMP costs used to develop the tables in the draft permit language were based on cost estimates provided by the SWG and the size of the pool for conducting effectiveness studies (see "Effectiveness Studies" section above). Costs for southwest Washington were determined by proportionately expanding the total pool for effectiveness studies; proportionately reducing the small stream status and trends monitoring to 30 sites for one year every five years; and spreading the source identification repository costs across all of western Washington.

The specific costs that were used in developing the tables in S8.C.2 for Phase I and Phase II are as follows:

	All of western Washington	Puget Sound	Southwest Washington
Annual costs for effectiveness monitoring	\$1,855,000		
Annual costs for source identification repository	\$168,000		
Two-year start-up cost for small streams status and trends monitoring		\$321,600	\$43,200
Two-year start-up cost for nearshore status and trends monitoring		\$43,200	
Annual implementation of small streams status and trends monitoring		\$2,133,600	\$302,000
Annual implementation of nearshore status and trends monitoring		\$984,600	

Notes on the costs above:

- Ecology will refine these cost estimates between now and fall 2011.
 - The estimates are based on preliminary working draft information the SWG provided with the October 2010 recommendations.
 - The SWG assumed that overhead and administrative costs are covered by these estimates; the SWG also assumed a 20% contingency fund for cost overruns. Ecology will evaluate these specific assumptions and revise costs estimates as needed, and plans to develop separate line items for administrative costs and cost overrun contingencies to improve transparency and accountability.
 - Costs in permit years 2 and 3 will likely be reduced because several tasks to prepare for full implementation of the RSMP are being done now, with other funding sources.
 - Tasks that would be implemented using proposed Phase I contributions during the first year of the permit cycle would also reduce overall costs in permit years 2 and 3.
 - Annual costs in future permit cycles should be lower as costs for receiving water monitoring conducted once per five years would be spread over 5 years instead of over 2 years.
- The annual amount for effectiveness monitoring includes costs for: a literature review, development of standard protocols, and the proposed western Washington pool of funds for conducting the effectiveness studies.

- In the proposed allocation of costs for Puget Sound, the costs of monitoring that will be conducted once every five years are spread across the last two years of the permit cycle.
- In the proposed allocation of costs for southwest Washington, the costs for small streams status and trends monitoring that is proposed to be conducted in the last year of the permit are spread across the last two years of the permit cycle.
- Total contributions by all western Washington Phase I and Phase II permittees in each of permit years 2 and 3 would be about \$1.9M. Total contributions in each of permit years 4 and 5 would be about \$4.5M.

The three options listed in the tables in S8.C.2 for Phase I and Phase II preliminary draft permit language show the results of cost allocation using three possible approaches:

- Option 1: allocate all RSMP costs by population only.
- Option 2: evenly divide **half** of the total costs of the Puget Sound receiving water monitoring among the permittees located in Puget Sound, and **all** of the southwest Washington receiving water monitoring costs among the permittees in southwest Washington, and then allocate remaining RSMP costs among all western Washington permittees by population. This option results in different base-level contributions by Puget Sound permittees and southwest Washington permittees:
 - For Puget Sound: \$2,198 by each permittee during permit years 2-3 and \$18,784 during permit years 4-5.
 - For southwest Washington: \$2,160 by each permittee during permit years 2-3 and \$15,100 during permit years 4-5.
- Option 3: evenly divide costs for effectiveness studies and the source identification information repository among all permittees and then allocate remaining RSMP costs by population. This option results in a base level contribution of \$17,290 by each permittee, regardless of location, during years 2-5 of the permit cycle.

Ecology's current thinking is that Options 1 and 2 are preferable to Option 3. Because the level of effort determined for effectiveness studies was expanded to southwest Washington based on population, it makes sense to allocate those costs based on population rather than by equally dividing these costs among permittees.

The tables in S8.C.2 for Phase I and Phase II propose to include participation of Phase I ports that are currently required to conduct monitoring. Ecology proposes using an "equivalent population" for each of the Ports of Seattle and Tacoma to determine their respective contributions to the RSMP. The equivalent populations used to develop the tables in S8.C.2 were calculated by adding the populations of the Phase I city and county served by each port and dividing by eight, resulting in approximate populations of 125,000 for the Port of Seattle and 75,000 for the Port of Tacoma. Ecology is accepting comments on the approach to allocating costs to these Phase I ports, whose current permit monitoring requirements represent approximately one third of the level of effort of the primary Phase I permittees.

WSDOT is covered under a separate permit and their contribution to the RSMP is not included in these calculations. An appropriate contribution would be determined as part of the reissuance of the WSDOT Municipal Stormwater NPDES Permit.

At this time, Ecology is not proposing requirements for other secondary permittees or new permittees to participate in the RSMP during this permit cycle. Ecology believes that new permittees need ample time to prepare to implement all of the permit requirements, including monitoring.

Ecology is currently proposing that Phase I permittees contribute to the RSMP in advance of the scheduled Phase II contributions. This is Ecology's interpretation of the specific SWG recommendation that "Existing Phase I permit requirements should evolve into the next permit term and transition from individually-conducted monitoring to regionally-conducted monitoring activities." These funds would be dedicated to preparation for full implementation of the RSMP.

Other monitoring

As in the current permit, the preliminary draft language in S8.A states that permittees are still required to collect samples, where appropriate, to identify illicit discharges and to comply with applicable Total Maximum Daily Load requirements. The RSMP is not designed to address locally-specific monitoring driven by these other needs and priorities. Ecology recognizes that many individual jurisdictions invest a significant level of resources in these other types of monitoring to protect local water bodies. The Department intends that the proposed collective approach to regional monitoring in the permit will minimize the diversion of resources away from local monitoring efforts and provide a benefit to all permittees.