Municipal General Stormwater Permits
Responses received during the Informal Public Comment Period
(Received Online):

Preliminary draft permit language / supporting documentation covering low impact development (LID) and monitoring requirements

May 16, 2011 - June 17, 2011

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Note: Comment received from Lise Tario (lt.giggles@gmailcom) and Walla Walla Public Works department were also submitted by Snail Mail or E-mail and available for viewing with those comments.

Low Impact Development: Phase I

- **Ken W. Crossman P.E., Private Engineer, ken_crossman@msn.com**: I have some serious concerns with the existing full dispersion guidelines in the 2005 DOE Stormwater Manual. There may be multiple discharge points that converge at a point of compliance that happens to be the downstream property line 100 feet away. There is also no treatment of upstream contributing flows and concentrated flow path or channelization of runoff. In many cases the flow may not be spread out over the 65 percent preserved area as seems to be the basic performance standard for this bmp.

  I have been involved in stormwater engineering for 26 years with a strong background in soils. I have a belief that Q in equals Q out unless we pay attention to specific site conditions. Having conducted many percolation tests and soils analysis I feel more attention needs to be paid to the specifics of this concept. Not having specific vertical separation requirements means I have no confidence in dispersion or water quality treatment also in certain instances. Requiring a geotech analysis on full dispersion and permeable pavements for MR 1-9 may be needed.

  Downstream flooding issues should be a primary concern also when considering applicability and effectiveness of this bmp.

  It seems to me single family residential construction which is mostly subject to MR1-5 would be impacted from a financial standpoint from these new requirements in a possibly significant manner is not an advisable outcome in this economic environment.

  Infiltration of stormwater after clearing may also have the resultant impact of raising the local perched or groundwater table. These impacts need to be considered when doing downstream analysis with respect to development and critical areas.

Requiring Public and Private roads to be permeable asphalt or concrete should be based on a benefit/cost analysis based on real time data and consideration for maintenance and groundwater contamination should be considered.

Section 2 Definitions Related to Minimum Requirements

Effective Impervious Surface: Under impervious surfaces on residential development sites that are not considered effective if runoff is dispersed through at least one hundred feet of native vegetation, one should add also full infiltration of impervious surfaces per â€¦..

Impervious Surface: Grassed parking areas used for events could also meet these criteria.

Rain Garden: The Washington State Board of Registration for Engineers considers the control of stormwater as the practice of engineering. The Rain Garden Handbook for Western Washington Homeowners discusses sizing and infiltration tests which appear to be the practice of engineering. It appears to be a possible concentration of stormwater with an overflow going who knows where.

Receiving Waters: This definition needs to be completely reworked so that it makes sense. Surface water systems could include culverts or roadside ditches. When applying the provision in downstream analysis you would only have to go a quarter mile downstream from the roadside feature in front of your development and in some jurisdictions your downstream analysis ends at the roadside ditch. Also there is no clear definition of groundwater. The standard of the industry is to analyze soils for mottling, standing water, root depth, and structure to determine where the seasonal high water table is. Monitoring is also used. References in code include max seasonal high, average annual high groundwater level, and max water table ect. All combined have no meaning to me at all.

There has been some discussion that perched water on top of a till type soil can be ignored as not being groundwater. Groundwater, seasonal high water table, and perched water should not be confused. The result of ignoring saturated soil is rain gardens discharging to the sidewalk such as in Ballard. It should be pointed out that the northern half of western Washington is 60 percent Alderwood or Tokul series soil which results in a restrictive layer at 20 to 40 inches. The entire concept that till is permeable goes against all the soil surveys I have completed and would only add it is permeable but not fast enough to make any difference in water table depths in most cases in western Washington.

Section 4 Minimum Requirements

4.1 Minimum Requirement #1: Preparation of Stormwater Site Plans

The use of site-appropriate development principles to retain native vegetation and minimize impervious surfaces to the extent possible is undefined and serves no purpose as a minimum requirement. An example would be a single family lot could be made to preserve a majority of the vegetation where the plat might choose mass grading and no vegetation retention. Where are the guidelines?

4.5 Minimum Requirement #5: On- site Stormwater Management
Permeable pavement required for MR1-5 is not a reasonable approach in that NPIS and PGIS bmp's already address stormwater management for single family developments. Dispersing driveways thru 25 feet of native vegetation or compost amended lawn is equivalent to infiltration of that water and treating it. The cost to a single family house in this depressed economy for pervious patios, sports/play courts, and driveways has not been considered and with the lack of actual building permits no cost reduction from volume will be realized. Maintenance cost should also be considered with pervious pavements and compared to other lid techniques already required. Also placing pervious driveways upslope of public infrastructure could have some impact. The individual will just gravel everything and come back and pave later.

What are the criteria for a cost analysis to claim infeasibility of a vegetated roof?
The low impact development standard of matching the pre developed and developed durations for discharge rates from 8% of the 2-year peak flow to 50 percent of the 2-year peak flow will result in punishment for those that do not have soils accommodating to lid.

Section 8. Feasibility Criteria for Selected Low Impact Development Best Management Practices
On page 33 there is a discussion that includes the requirement to stay 1 foot above the seasonal high water table. On page 35 it states where seasonal high groundwater creates prolonged saturated condition at the ground surface or within on foot of the bottom of the lowest gravel base course. I have previously discussed the use of differing wording for the same concept I would like to discuss the addition of the word prolonged. First there is no definition of prolonged in that at what frequency or duration would trigger this situation. In addition, in order to gather the data it would take ongoing monitoring and site visits which would incur a financial burden on single family projects which does not currently exist. One site visit to determine maximum seasonal high water table based on mottling would suffice.

- **Cari Simson, Urban Systems Design, (206) 234-5102, crsimson@gmail.com**: I”m writing to comment on the draft proposal for the General Stormwater Permit LID Phase 1. Controlling untreated stormwater into our waterbodies is a huge issue that our State, local governments, businesses, and residential homeowners need to be working on together. Communities and landowners have been dealing with outdated systems that convey untreated runoff through pipes into the nearest creek, river, lake or salt waterbody. The new rules to apply LID approaches where feasible is a new opportunity for people living and working in our built environments to do things better. Often the costs for LID are more affordable than standard “grey infrastructure” systems but need to be more widely used to show feasibility. Developers, homeowners, and communities need to be given the tools and support and incentives to try new approaches. We need the State to continue to improve the LID, working with all parties, but not backing away from innovation, and fostering collaboration between governments, private property owners, and communities who want to improve their urbanized environment.

The term, “where feasible” needs to be better defined and outlined, but not turned into an “offramp” for developers, municipalities and others to disregard opportunity to improve how we manage our stormwater.

I look forward to providing formal comments this fall.

- **Kathy Gwilym, SvR Design Company, kathyg@svrdesign.com**: Here are some initial comments:

  Appendix 1 pages 2 and 3 for definitions. I”d recommend clarity on “native” and how its used for the various definitions. Its not always common to have just “native” plants in developed areas. Is it intended to be original forested condition,2nd growth forested condition, what if its 2nd growth forest but not all “native” plants? There are some non-native plants that are not invasive which could be used in the LID systems. Recommend reviewing native plant issue with several landscape architects.

  Clarify where flexible paving grid systems (such as grass pavers, gravelpave2 would fit in the new categories). If its grass/landscaped permeable interlocking pavers (such as the open celled systems) would this be included as a hard surface? Clarify how the landscape/vegetated permeable pavers/rigid open celled systems would fit into the definitions.

  Page 5 of Appendix 1: Revise first sentence to be: “a non-engineered shallow landscape depression, with compost-amended soils and....” This would allow homeowner to remove some of the native soil and place over-the counter rain garden soil mix in its place. This would allow for more flexibility.

  Appendix I page 33 - How will design infiltration rates be determined for the bioretention and permeable pavement systems? What will be the required minimum testing requirements? Modify the Full Scale PIT test which are more suitable for infiltration ponds vs small bioinfiltration facilities.

  Appendix 1 page 34, Section 8B, Porous Asphalt and Pervious Concrete are listed with different maximum slope conditions. Porous asphalt as a driving surface can be placed on 6% slope. However, for both systems, as the slope of the subbase goes up it becomes more challenging to infiltrate because water can flow between the interface of the subgrade and subbase. This condition is independent of the top layer material. I recommend the slope be the same for all permeable pavement types if the issue is related to slope of subgrade.

  Appendix 1 page 35 - Clarify that even though field testing indicates rates less than 0.15in/hr it can still be feasible if an underdrain/overflow drain is used.

  Appendix 1 page 38 - Competing Needs. Zero lot line developments/redevelopments in urban areas would make any infiltration LID facility infeasible but green roof should then be considered in those cases.

Low Impact Development: Western Washington Phase II

- **Boyd E. Benson, City of Duvall, (425) 788-3434, boyd.benson@duvallwa.gov**: Low Impact Development, Western Washington Phase II, S5.C.4.a.iv.1 (page 4): The City of Duvall generally supports the Low Impact Development (LID) language as summarized in the revised S5.C.4 language. However, LID techniques may not be suitable at all sites. The draft document "Integrating LID into local codes" (June 2011) refers to "feasibility criteria for LID that the Department of Ecology (Ecology) is developing as part of the effort to add LID requirements to the municipal stormwater general permits".

  Some LID techniques may not be suitable in some locations, including a large portion of Duvall, where impermeable soils are located at or near the ground surface. The City of Duvall respectfully requests that language be included in the LID section that addresses LID feasibility and constraints. This comment could easily be addressed by re-inserting the following removed language "Provisions for LID should take into account site conditions, access, and long-term maintenance". This language would allow flexibility at locations where physical site constraints such as topography, soils, and other factors may preclude the use of LID practices. This approach would also allow jurisdictions to consider long term maintenance and access issues when evaluating the feasibility of proposed LID measures.

- **Heungkook Lim, City of Burien/ Stormwater Management Engineer, heungkookl@burienwa.gov**: A ninety day public review process does not allow the majority of Phase II permittees adequate time to review and comment on these complex documents. The public review process for the draft permit language and the technical manuals should be run separa

- **Wayne Matthews, City of Gig Harbor, matthewsw@cityofgigharbor.net**: 3.1 Thresholds, 3rd paragraph; ...The thresholds apply to a common plan of development or sale as defined in the definitions and acronyms section of this permit. ... How would a sale trigger LID reqirements?

- **Michael See, Skagit County Public Works, (360) 336-9400, michaels@co.skagit.wa.us**:
  Appendix 1 Revisions MR 5, Pg 23
  Requiring the LID Performance Standard in the County's UA is inappropriate considering the high level of agriculture located in this area. There are over 4,000 acres of zoned agriculture located in Skagit County's "Urbanized Area".

  Appendix 1 Revisions MR 5, Pg 23, Ecology Question
  Ecology should allow local governments to accept LID performance standard compliance as an option to prescriptive requirements. This would allow the LID practices to respond to on-site conditions.

Appendix 1 Revisions - Definitions and MR 5, Pgs 22-24
The draft language does not address post construction inspection requirements for rain gardens and other treatment and flow control BMPs identified in MR5. Ecology should clearly identify that rain gardens and other treatment and flow control BMPs identified in MR 5 are not facilities and as such do not require annual post construction inspection.

Elimination of One Acre Threshold Appendix 1 revisions
Elimination of the one acre threshold will place an increased economic burden on those "small projects", such as single family construction and small road projects, which are only subject to Minimum Requirements 1-5 in Appendix 1, while offering little environmental benefit. Ecology should retain the one acre threshold within the Phase II Permit or allow greater flexibility for small projects (projects only subject to Minimum Requirements 1-5).

Minimum Requirements-M.R. #1 pg. 6
The use of the term "native vegetation" and the need to retain those items will need to be looked at more closely. Many of the sites that are being developed have already been altered in the last 100 years so that there is no "native vegetation" left on the site except for maybe some type of grass. This also goes into the use of dispersion as a BMP for stormwater management. Site planning to minimize the impacts of new development on a parcel will work when performed in accordance with applicable zoning requirements. However many of the zoning principals that are involved when combined with GMA practices do make it difficult to meet some of the basic ideals in LID site planning. These items in conjuncture with local development codes not yet written that need to be in accordance with are revised LID manual which we have not even seen yet make it difficult to assess what the implications may be.

As an alternative to "native vegetation" one of the things that may be helpful in design and review would be something to the effect of talking more about retaining existing vegetation. This could then also incorporate the planting of native plants which gets you closer to a condition mimicking a natural state.

Section 4: Minimum Requirements-M.R. #5 pg. 7
An issue will arise with telling engineers that they must use "bioretention BMP's" rather than "rain gardens" and leaving it to "the extent feasible". To eliminate the gray area with this matter will require a very concise list of criteria from Ecology as to when the extent of feasibility has been met.

Permit Condition S5.C.4.a.iv pg.11
Ecology should revisit the topic of providing a percent of native vegetation that needs to be retained. The percentage of native vegetation will need to be called out in order to address the criteria for "full dispersion". The amount of area left undisturbed and the BMP of full dispersion are interconnected and will need to say as such.

Preliminary Draft Permit Language and Appendix 1
The revised technical/guidance manuals for stormwater and LID facilities are not available and must contain clear standards for design, inspection and maintenance to be useful and effective. Requiring LID facilities without documented standards is counter-productive and would place too great a burden on permittees. Ecology should consider delaying issuance of technical manuals until clear standards for design, inspection and maintenance are included and said documents have been evaluated for economic impacts.

Feasibility Criteria for Pervious Paving; Appendix 1 Revisions, Pg. 36 item B
There are still many concerns and unanswered questions related to the broad use of pervious paving techniques in public roads and high travel areas, including, but not limited to:

1) Long term durability, especially at intersections;

2) Spill containment and clean up and resulting traffic impacts;

3) Maintenance, repair and tracking of these assets; and

4) Durability and maintenance when subjected to snow and ice treatments (i.e. sand, gravel, salt brine etc.).

Ecology should provide permittees the flexibility they need to limit the use of pervious paving as described in the following sample language: Pervious paving is considered infeasible in the following areas until further studies and pilot programs have resolved questions of durability, maintenance, spill containment and cleanup:

- within travel ways of roads identified as arterials and collectors;
- within intersections and within 50 foot approaches of said intersections;
- within areas with documented history of recurring spills;
- within sport/play courts where it would be unsafe, or the quality of play would be affected, or a standard of development for that type of court set by a recognized organization would not be met
- within areas where attaining structural load requirements make the project cost prohibitive

Watershed-scale Stormwater Planning (S5.C.4 (g)): S5.C.4.g.i (a) (2)
Our NPDES coverage area is non-contiguous; parts of our coverage area fall within numerous watersheds. If we have a land use decision in an NPDES coverage area that triggers the need for a watershed-scale stormwater plan (e.g. a planned land-use action that is projected to increase the total impervious surface area of a watershed by 5% of existing impervious surface), the NPDES requirement would be mandated to include lands outside of the NPDES coverage area. Is it appropriate for Ecology to mandate NPDES requirements within non-coverage areas? Ecology should consider removing this item from the proposed permit language.

S5.C.4.g.i (a) (2)
A systematic methodology also needs to be outlined for determining impervious surface per watershed. The Department of Ecology should define a standard method for determining impervious surface per watershed, e.g. assumptions made by zoning, remote sensing applications, or aerial photography interpretation? The lack of a standardized methodology will lead to inconsistent implementation.

S5.C.4.g
Watershed planning requirements are land use and long range planning requirements, which should be addressed through zoning and comprehensive planning updates. Watershed planning requirements should be eliminated from permit and addressed through planning updates such as GMA comprehensive plan updates.

S5.C.4.g
The proposed language for Watershed-scale Stormwater Planning creates a new and large burden on local Planning Departments that have been severely reduced in the last two years. Ecology should continue to provide pass through grant funding in a non competitive manner.

- **Wayne Matthews, City of Gig Harbor, matthewsw@cityofgigharbor.net**: 4.5 Minimum Requirement #5: On-site Stormwater Management, Should permeable pavements be included in the above list of required on-site management BMP's that apply to projects subject only to requirements #1 - #5? I think that meeting LID performance criteria should be the requirement and that options and methods would be selected from the list that "fit" the project site and conditions by the developer.

  If the project results in less than 10,000 square feet of new and replaced hard surface area, and converts less than ¾ acres of native vegetation; should Ecology allow local governments to accept LID performance standard compliance as an option to the specific BMP requirements as listed below for projects in this size range? Yes.

- **Peter Holte, City of Redmond, (425) 556-2822, pholte@redmond.gov**:
  1) **Permeable Pavement and Rain Garden requirements in Minimum Requirement #5**
     Comment: Pervious pavement and rain gardens are not appropriate at all locations. In some cases, on-site stormwater management may be better provided by means other than the use of pervious pavement and rain gardens.

     Recommendation: The permit should allow greater flexibility and a menu of options as a means to achieve on-site stormwater management.

  2) **Clarification of inspection requirements for Rain Gardens and Permeable Pavement place pursuant to Minimum Requirement #5:**

Comment: The language in Appendix 1 as written does not adequately detail the expectations for the inspection and maintenance of rain gardens and pervious pavement facilities place pursuant to Minimum Requirement #5.

Recommendation: Clarify that rain gardens and other on-site stormwater management BMPs placed pursuant to Minimum Requirement #5 do not require annual post-construction inspection.

3) **Performance of Standards for LID Facilities**

Comment: A flow regime performance of 8% of the 2-year peak flow to 50% of the 2-year peak flow is an unrealistic expectation and will create facilities that cannot be effectively managed. For example, the release rate detailed in the flow regime performance standard would require discharge orifices so small that they would prove extremely difficult **if not impossible** to keep clear of debris and maintain.

We're making this comment because we feel the current language is unclear about when this 8% threshold is required. If this standard is only for use on sites that this is determined to be "feasible", then the standard doesn"t have any teeth, anyway. If the standard applies to all sites, and we are forced to try to meet this flow control standard on a site where infiltration is not feasible, then we can"t meet this standard.

Recommendation: Flow regime performance standards should be set at those detailed in the 2005 Ecology Stormwater Manual for Western Washington (SWMMWW), which states: "Stormwater discharges shall match developed discharge durations to redeveloped durations for the range of redeveloped discharge rates from 50% of the 2-year peak flow up to the full 50-year peak flow." SWMMWW, Volume 1; 2.5.7 Minimum Requirement #7: Flow control, pg. 2-31.)

4) **Feasibility Criteria for Rain Gardens and Bioretention**

Comment: The draft feasibility criteria do not adequately address aquifer protection concerns for municipalities that rely on shallow, unconfined aquifers as a source for drinking water. The feasibility criteria also need to account for areas containing soil contamination or in pollution control areas such as phosphorus control areas.

Recommendations: Bioretention and rain gardens should be considered infeasible if determined by a water purveyor or permittee to be a threat to a critical aquifer recharge area. Bioretention and rain gardens should be considered infeasible in or adjacent to contaminated soil or in other areas where infiltration may exacerbate soil, stormwater, or groundwater contamination.

The threshold of 1 foot vertical separation to the seasonal high water table, bedrock, or other impervious layer should be altered to be consistent with the Washington Department of Ecology' s SWMMWW and the Underground Injection Control (UIC) Guidance. These

sources call for 5 feet of separation from seasonal high groundwater (or 3 feet of separation with a mounding analysis).

5) **Feasibility Criteria for Permeable Pavement**
Comment:
The draft feasibility criteria do not adequately address aquifer protection concerns for municipalities that rely on shallow, unconfined aquifers as a source of drinking water.

The feasibility criteria also do not account for situational and contextual circumstances that make the use of permeable pavement impractical (i.e., locations with documented history of recurring spills or that handle large quantities of hazardous materials).

The note related to soil suitability criteria (pg. 37 of Appendix 1) assumes that permeable concrete provides treatment for stormwater runoff. Until permeable pavement undergoes a Technology Assessment Protocol (TAPE) process for treatment, the permit should not require that pollution generating surfaces infiltrate through permeable pavement.

The note related to the soil suitability criteria also offers the "applicant" the option of placing media meeting the criteria standard or sand filter specification beneath permeable pavement. The final decision on alternative best management practices (BMPs) should not be granted to a development applicant. Discretion on such matters should reside with the permittees and their development review staff.

Recommendations: Permeable pavement should be considered infeasible if determined by a permittee to be a threat to the critical aquifer recharge area.

Permeable pavement should be considered infeasible at locations with a documented history of spills and at locations that handle and transfer hazardous materials (e.g. gas stations).

Permeable pavement should not be considered as a treatment BMP, even with the addition of a thin media or sand filter layer beneath it unless its ability to meet treatment standards has been demonstrated through the TAPE process.

With regard to the note on soil suitability criteria: the language here should specify that permittees' and not the development applicants--have the discretion to allow or dis-allow the options put forth in this note (pg. 37 of the Appendix 1).

- **Shawn Gilbertson, City of Kent, (253) 856-5560, smgilbertson@ci.kent.wa.us**: The revised technical/guidance manuals for stormwater and LID facilities should contain clear standards for design, inspection, and maintenance of LID Best Management Practices.

The economic impacts of the LID technical manuals should be thoroughly evaluated before they are adopted in order to fully understand the financial impact to the public and private sectors in both the short and long-term.

- **Aaron Halverson, City of Lake Forest Park, (206) 957-2836, ahalverson@ci.lake-forest-park.wa.us**: The City of Lake Forest Park is largely interested in promoting low impact development, especially the retention of native vegetation. We also recognize that adopting regulations that mandate the use of LID is the relatively easy part considering the numerous jurisdictions that will be drafting this language. The challenge will be to implement the program including the following:

    1. Training review and inspection staff while maintaining current duties
    2. Educating the public/developers regarding the benefit of using LID and the long-term cost savings it can afford
    3. Ensuring the LID measures are installed correctly by experienced contractors
    4. Eliminating barriers to LID. One of the main problems that LFP struggles with is the requirement of a geotechnical report to ensure that infiltration related to LID can be effective. These reports can be cost prohibitive and are an unnecessary burden for developers and residents.

  Reducing the threshold for drainage development review and inspection will not impact Lake Forest Park significantly. LFP already has a reduced threshold of 1000 sq.ft. so most developments and additions have a drainage review/site inspection process that meets the requirements.

  The final concern is the LID code update this requires conflicts with the GMA Comprehensive Plan update for many jurisdictions. This is especially burdensome for a small jurisdiction with limited staff resources. In LFP, between the comp plan update and this LID update, our planning staff will be occupied implementing state mandated planning work while local priorities will become secondary. This is unfortunate and we suggest that guidance, similar to that provided during the first permit cycle, be provided for this cycle.

  The maintenance requirements section is unlikely to impact LFP because there are no areas around the city that are available for annexation and the city is built out to the point that is very unlikely that a 5% increase in impervious surface could occur.

- **William M. Reilly, SSWU Manager, City of Bellingham, 360-778-7955, wreilly@cob.org**: The City of Bellingham adopted LID standards in 2006 and are progressive in the application of those standards. Nonetheless, the availability of infiltratable soil is not common in our area. We, by necessity, must rely on other aspects of LID development to attempt to attain the same goals. Cluster development, rainwater harvesting, water dispersion, etc are non infiltrating stategies that can lower the effects of development. It would appear though that the requirements and criteria for low impact development are heavily weighted

towards requiring infiltration solutions even where they may not be the most cost effective or best performance based solution.

Permit Language

In discussion with Ecology, the question was asked if prior process and adoption of the LID standards through the use of the Puget Sound Partnership contract would put is in good stead for compliance with the LID standards. The answer to that question seemed to be yes. In looking at the proposed LID requirements within the main body of the permit and within Appendix 1, I have come to understand that the Puget Sound Partnership process does not come close to meeting the standards proposed.

The Watershed Scale Stormwater Planning process is laudable and would do some good in terms of more consistency between municipalities and counties under NPDES. Unfortunately, for cities within counties that are not fully within the NPDES program these requirements will only exacerbate existing problems.

While Bellingham agrees that such planning efforts are good, unless stormwater regulations are consistent within a geographic region, we are simply pushing growth into adjacent small towns or rural county areas. One only needs to look casually at the growth around Bellingham to see that the intent of Growth Management has been and continues to be circumvented outside of our limits. While not the only determining factor our adoption of the 2005 Manual standards is up near the top.

The watershed planning process element is difficult to support under these conditions. As has been indicated by Bellingham at other times, we would strongly advocate for stormwater regulations that created parity throughout the region and that result in meeting the intent if not the specific requirements of Growth Management.

Appendix 1

Page 12. It is indicated in the New and Redevelopment sections that all new development regardless of size must apply erosion controls. This standard is too inclusive. It makes NPDES permittee's liable for any project that occurs whether it meets a threshold for permitting or not. Only through permit processes can proactive requirements for erosion controls be made. In our instance, we have a minimum threshold on land disturbance (excluding certain maintenance activities) of 500 sf to require implementation of erosion controls. Creating liability without a bright line for compliance is problematic.

Page 13. Section 3.4. There should be additional allowances for comparable methods of meeting redevelopment storm water goals. The standards imposed are overly restrictive for redevelopment of existing developed core areas, creating an economic advantage toward new development sprawl. The default standard that is promoted by the Permit creates a situation that seems to conflict with Growth Management goals.

Rather than razing and redeveloping downtown areas and invoking full stormwater requirements in a confined area, it is cheaper and easier for developers to develop new land. Bellingham's stormwater redevelopment standards differ from what is in the Permit to attempt to partially alleviate that issue. Our standards impose a lesser detention standard on replaced surfaces than new surfaces. This is done with the caveat that all projects exceeding 5,000 sf of new or replaced imp. surface, regardless of value assessment, must provide water quality mitigation for those surfaces. These projects must also provide water quantity control for the new impervious surface and 50% of replaced surfaces. The 2005 DOE manual allowed such a modified standard and Ecology determined that it met or exceeded the redevelopment standards associated with the manual. We believe a standard like this should be considered for adoption and/or inclusion under the NPDES Permit.

Page 14 and throughout. Prior to formal comment on the NPDES permit later this year the 2012 Ecology Stormwater Manual needs to be available for comment and/or approved.

Page 22. Minimum Requirement #5,On-site Stormwater Management BMP's . The permit appears to be requiring that multiple BMP's be used for a single site. This is overly onerous for single family lot development and does not allow for a determination of adequacy outside of the regulatory standard. For instance all water is infiltrated in an infiltration trench, are all other BMPs required? Requests for variances to these standards may become the norm.

It appears to be the intention that this standard apply to all single family properties. What is DOE's thoughts on vesting for single family lots? Those lots created under previous standards are to be exempt? Lots platted prior to stormwater regulation exempt? Project proponents have not pushed into this issue to date but we are concerned that these requirements will bring forward legal challenges.

The standards for single family development are well covered in this section but there is little thought about small multifamily, commercial, etc development standards with less than 10,000 sf of impervious surface.

The requirements for LID seem to be applied regardless of the receiving body. As with Flow Control the need for LID BMPs that substantially only provide flow control should be exempted when directly connecting to an exempt water body.

Requirement for the provision of permeable pavement is predicated on an assumption that the industry is positioned to provide the products in the quantities that may be necessary. Cities, counties and DOT are not ready to make that jump with most claiming problems with product consistency, unknown durability, and installation/maintenance costs. It would seem very problematic to require the use of permeable pavements when public agencies are not themselves using them to any large extent.

Regarding the question of permeable pavements being included to the BMP list, for the reason above and the concern for pavement failure without engineering guidance in design and construction Bellingham believes the requirement is premature.

Page 23. Perfomance standard compliance should be allowed for LID BMP's but adequate safety factors should be incorporated to assure long term performance. Bellingham is concerned with quality control and longevity of LID BMPs. If LID is going to be successful LID BMP's need to meet design requirements that will elongate their lifespan. This is most important since no local agency has the ability to deal with inspection and maintenance of hundreds or thousands of microscale storm facilities. Presently the designs for LID are working to minimize design requirements when in fact there may be a need to oversize them to assume capacity loss over time.

Pages 23 and 24. It is mandatory in all development that permeable pavement and/or collection and redistribution of water occur below pavements including roadways. This would seem to require the installation of pervious pavements within public ROW's. Operation and maintenance considerations for this BMP are very substantial and would modify public cost and maintenance considerations substantially. The requirement for permeable pavement usage is premature and has not been analyzed for long term feasibility. Failure of pavements that do not have redundant runoff considerations could be catastrophic. It is feared that private development would use permeable pavement in lieu of traditional systems as "mandated" as a cost savings, with public agencies having liability for ultimate or premature failure of systems.

Page 24. The inclusion of green roofing as a mandatory LID requirement is over reaching. The cost/benefit of green roofs for stormwater purposes is not well established. We would be concerned with mandatory requirements for this BMP that would create liability issues in the event of failure. The alternate for mitigating the roof below pavement may not be possible given the requirements for permeable paving.

Pages 35 and 36. Rather than traditional requirements that disallow the use of certain BMP's if criteria cannot be met, the new standard requires the use of BMP's except if the criteria dictates otherwise. This is a dangerous proposed change. The feasibility criteria is too simplistic to take the place of professional engineering design and judgment. Mandating specific BMP's is a dangerous proposition. Professional engineers are being removed from the process of determining proper BMP's based on a multitude of factors including safety, reliability and performance. In doing so, professional liability is shifted from them to agencies. This is an error that cannot be supported.

- **Dan Smith, City of Tumwater, desmith@ci.tumwater.wa.us**:
  1. S5.C.4.a indicates that compliance deadlines for the review, revision and adoption of an ordinance or other enforceable mechanism shall be effective no later than December 31, 2015, based on a permit re-issuance date of July 1, 2012. Will this date be revised to extend the compliance period an additional year once the revised permit conditions become effective? Ensuring sufficient time to review, revise and complete appropriate public reviews of these

revisions prior to adoption is critical, especially in light of limited staffing levels for many jurisdictions across the area.

2. S5.C.4.b.v provides for maintaining the current inspection compliance rate of 80% for developing sites. We appreciate the flexibility to maintain this level, and suggest that any increases to this compliance rate be tied to economic growth. As the economy improves, more development occurs. As more development occurs, jurisdictions will be able to hire additional staff to handle an increased work load. As it is today, more development equals more inspections, but this is not necessarily commensurate with an increase of inspectors.

3. Maintenance standards for LID: the City currently provides guidance for private system maintenance, a responsibility of the property owner. Updating these maintenance standards will be necessary for private property owners to comply with new maintenance requirements for their site. Providing a staggered time line for compliance will be helpful so that

1) the City can review and update the maintenance standards, and

2) ensure sufficient time is provided for outreach to private property owners that may be impacted.

4. S5.C.4.d indicates that the Permittee "shall keep records of all projects of any size that are part of a common plan of development or sale that is greater than one acre that are approved after the effective date of this permit." The City does not track property sales, only projects and other activities that are required to obtain a permit. I support the need to track project-related activities, but I am unclear how (or why) the record-keeping process is required to include the sale of a property **of any size**. Perhaps revising this section (and others with the same thread) to read, "all projects of any size where an onsite stormwater facility has been required as part of the development approval (or a maintenance agreement is in place)", as that is what appears to be the intention.

5. Watershed-Scale Stormwater Planning - Stormwater planning on the watershed scale is an excellent approach to determine and address impacts to receiving waters. I am pleased to see this element gaining support. However, I have a few concerns about the language used in this permit as it relates to Cities:

a. I am unclear what Section g.i.b.1: "A cumulative expansion of the incorporated area" refers to in terms of requiring the watershed analysis. It appears that the baseline starts at the effective date of the permit, so with each annexation we tabulate, but do not run, the analysis until the 80-acre threshold is met, then with every annexation thereafter the model is re-run? Even for smaller annexations that do not meet the 80-acre threshold? Or is the intention here simply to require those annexations greater than 80 acres to conduct an analysis?

b. How does this Section g.i.b.1. apply to annexation of County islands, where the properties are already surrounded by the Permittee's MS4 and in many cases, part of it. If the City were to annex one or more of these areas, there would be little to no change

in the development scheme, zoning, etc., but may be larger than 80 acres, especially larger residential communities that may already be fully developed. Does the "cumulative expansion" threshold apply to these cases?

c. Re: increases of incorporated area into the Urban Growth Area, the Growth Management Act played a large role in defining the zoning and other land use applications to concentrate development in the areas identified to serve projected growth. A "cumulative expansion of the incorporated area" should simply apply to expansions of the UGA and not individual petitions for annexation. As you know, a UGA is the blueprint for future annexations and the UGA boundary is established through a joint legislative process between the County and City. Per our agreement with the County, our zoning and urban development standards are already being applied to the UGA. Should the UGA boundaries developed through this process change, refining our understanding of watershed-scale impacts is a necessary element.

d. Watershed-level hydrologic and water quality analyses can very quickly create a large financial impact to public general funds relative to land use actions. Is Ecology aware of grant or loan funds that may be available to support this work? Another suggestion could be to streamline a reporting process that ensures data essential to completing this type of analysis is submitted to Ecology consistently while minimizing costs to jurisdictions.

- **Greg Vigoren, City of Lakewood, gvigoren@cityoflakewood.us**: Regarding permeable pavement, we do not recommend it be the new standard for paving. We do not recommend it for public streets or highways, which often receive sand and salt brine during winter months. This could lead to reduced integrity of the pavement and fouling the base below the pavement. Maintenance is another concern. Pavement would need to be swept (possibly more often) with vacuum-type sweepers which are more expensive than other sweepers. How is permeable pavement restored after a spill? We assume the spill area would have to be dug out to remove all contaminated material. This again reduces the integrity of the pavement and is cost prohibitive. A spill on a standard pavement is easier to contain, clean up, and less expensive as it normally ends up on the shoulder or in the storm drain system. Utility work often occurs within the road right of way. How is patching dealt with in permeable pavements? Current pavement design allows for a percentage of (sustainable) reuse of existing crushed pavements as a base layer. The assumption is this reuse would not be allowed with permeable pavements since runoff would pass through the base layers and potentially contaminate the water below. Cost is another concern. Permeable asphalt and concrete are more expensive than standard mixes. Government agencies are struggling to maintain their existing infrastructure without adding additional costs associated with permeable pavement. We suggest letting the permittees decide where or if to use permeable pavement based on their unique circumstances. We also suggest additional pilot paving projects to answer some of the questions noted above.

Low Impact Development: Eastern Washington Phase II

- **Cheryl Sonnen, Asotin County, (509) 243-2074, csonnen@co.asotin.wa.us**: We support Ecology's efforts to implement LID where it is beneficial and also appreciate that they understand that it is not well understood in Eastern WA. We support the opportunity to participate in a panel discussion to develop the guidelines for upcoming permit requirements. We support the idea of WSU and other entities conducting research into LID applications in E WA and hope that Ecology will provide technical and financial support. We recommend that new requirements for LID be postponed until the third permit cycle and allow permittees to develop local program based on recommendations provided by the panel. By allowing the planning and development to occur over a five-year period will be less burdensome to small entities.

Monitoring: Western Washington Phase II

- **Boyd E. Benson, City of Duvall, (425) 788-3434, boyd.benson@duvallwa.gov**: Monitoring, Western Washington Phase II, S8.C.1 (page 15): The City of Duvall generally supports collective monitoring as summarized in the revised S8 language. However, the City believes that collective monitoring costs should be distributed on a POPULATION basis (Option #1, S8.C.1). The City of Duvall is very concerned that any other method would disproportionally burden smaller jurisdictions because of the following:
    a. Stormwater management issues to be monitored generally reflect population density and development as stormwater issues are generally more complex in more populous jurisdictions.
    b. The 2007-2012 permit required all municipalities to prepare for participation in a long-term monitoring program (S8.C.1). However, outfall monitoring was only required for cities with populations of at least 10,000 and counties with populations of at least 25,000 (S8.C.1.a). This language prevented undue fiscal and staffing hardship on smaller jurisdictions.
    c. Stormwater fees for most, if not all, jurisdictions including Duvall are collected monthly on a per household or per Equivalent Residential Unit (ERU) basis. This fee burden is evenly shared among the population of each jurisdiction.
    d. Option #1 provides fair use of funds on a per capita basis for the entire population served by monitoring. This rational can be justified to citizens as their fair-share portion to improve monitor and improve stormwater quality.
    e. Options #2 and #3, which places more fiscal hardship on less-populous municipalities, would cost each Duvall household an additional $10/year, and represents approximately 5% of residential stormwater fees collected. Options #2 and #3 would cost households in larger municipalities an additional $2 to $3/year which represents a much smaller proportion of collected stormwater fees. Options #2 and #3 do not represent an equitable solution for a regional monitoring approach and cannot be justified to citizens as their fair-share portion to monitor and improve regional stormwater quality.

f. If options #2 or #3 are selected, the additional financial hardship to the City of Duvall will result in an inequitable increase in household stormwater fees or loss of the 0.5 FTE staff from a 5.5 FTE stormwater department. Any loss in staff would result in decreased stormwater services, decreased work provided by the stormwater utility, and additional hardship to meet the NPDES regulatory requirements.

g. If options #2 or #3 are selected, the City of Duvall requests that there be an option be included to "Opt out" of the program and satisfy the individual requirements at a jurisdictional level.

- **Andy Loch, City of Bothell, 425-486-2768, andy.loch@ci.bothell.wa.us**: I think there should be an option to decline participation in status and trends, source identification data repository, and effectiveness studies.

  The sharing of costs should be shared by all since we all will use the results to one degree or another. However, fully having to fund such monitoring poises a significant risks to those jurisdictions that are or have planned to conduct their own monitoring. It would be difficult to justify funding both efforts. Yet, the local effort may provide stronger evidence of permit effectiveness than a regional effort. While the regional effort may apply to more participants each jurisdiction has uniqueness to how they have implemented the permit. We have small cities that are barely getting by while larger better funded cities have robust active programs. This makes broad use of regional studies constrained in their applicability to all. I believe the regional approach is a sound approach to assess the effectiveness at a regional, state, level but less astute to how individual jurisdictions measure up.

  The costs for pay-in to regional effort are close or slightly more than what it is currently costing the city to conduct their own monitoring. So, the savings by joining in a regional effort seem not to be as significant as assumed. For the City of Bothell our current status and trends monitoring (7-sites for Bioassessment with B-IBI and 17-sites for ambient monitoring) is about $12,000/year. The projected effectiveness monitoring of two sites is estimated at initial start up cost of $100,000 (flow and WQ monitoring) with annual O&M costs of about $8000. Hence, City's costs to meet permit water quality monitoring requirements are annual O&M costs of $20,000. This is less than the projected amount for the city to purchase the regional effort during the 3rd and subsequent payments.

  My preference is that we all pay but for those already or have planned to conduct their own monitoring they receive discounts, fee reduction.

  If that is not viable I prefer option 1,for payment allotments.

- **Heungkook Lim, City of Burien/ Stormwater Management Engineer, heungkookl@burienwa.gov**: The monitoring is a new requirement for Phase II jurisdictions and there should be consideration of having it paid for by the state or else, not cities. It is a financial burden to the city.

- **Michael See, Skagit County Public Works, (360) 336-9400, michaels@co.skagit.wa.us**:
  S8.A Skagit County is supportive of the regional stormwater monitoring program that would pool resources for stormwater monitoring. The anticipated cost of the regional stormwater monitoring program is expected to be significantly lower than the cost of developing an individual monitoring program similar to what Phase I Permittees have been required to provide. In addition, the information gathered by the regional program would allow for more successful adaptive management.

  Draft Funding Agreement for Regional Monitoring Program, Pg. 8 Skagit County is pleased by Ecology's efforts to use the Stormwater Monitoring Workgroup's recommendation when preparing the draft permit language. However, Ecology should more clearly identify how they intend to use the collected data in the future.

  S8.A This is a new requirement for Phase II Permittees and there should be consideration of providing continued pass through grant funding that will assist small jurisdictions in meeting their permit requirements.

- **Aaron Halverson, City of Lake Forest Park, 2069572836, ahalverson@ci.lake-forest-park.wa.us**: LFP operates on a biannual budget with a full budget update in 2013. Nevertheless, LFP reviews its budget each year beginning in August through the middle of December. It is best for LFP to have the fees established by August 2012 to ensure that the funding is available in the 2013-14 budget. A good payment date is the after June of each year because this allows property taxes to be on the books and the funding to be available.

  The best option for RSMP funding is option 1 because it reduces the funding obligation of the smaller jurisdictions that have been most heavily impacted during the recession. The entire NPDES permit is based on reducing human impacts and it seems appropriate that monitoring fees be based on this principle. The fees should not be based on water bodies or the region impacted (option 2) because the NPDES permit addresses the MS4 not the water body or the region and is largely a local program requirement. The fees should also not be evenly divided (option 3) among jurisdictions for the obvious reason that smaller jurisdictions would be unduly burdened by this inequitable cost sharing scheme.

  Lake Forest Park would participate in the RSMP because it will provide consistency in the data and reduce the liability of the City.

- **William M. Reilly, SSWU Manager, City of Bellingham, 360-778-7955, wreilly@cob.org**: Bellingham is supportive in concept of the planned regional monitoring project. That being said we have some concerns as well.

  The City of Bellingham has for the last 30 years engaged in proactive water quality monitoring for our jurisdiction. As a result we are blessed with every stream in our City being listed under

303(d) with TMDL's following behind. We anticipate as a part of those TMDL's that we will be augmenting our already existing stormwater monitoring efforts as a result.

Unless the City of Bellingham and its State accredited lab are included in the monitoring proposal and our area is included in the study, we are wondering what our additional 60 to 70 thousand dollar annual cost will be providing. Given our long period of record, we would be reluctant to curtail our existing program in favor of using data equated from basins within the Seattle, Tri-County area.

We would ask that the proposal be pared to only those tasks that will clearly provide relevant data for all participants in the monitoring program. It should not be used disproportionately to answer questions specific to Central Puget Sound and it should not be used where TMDL monitoring may result in duplication of effort.

- **Dan Smith, City of Tumwater, desmith@ci.tumwater.wa.us**:

1. The City of Tumwater has participated in a regional ambient water quality monitoring program in coordination with Thurston County, City of Olympia and the City of Lacey since the mid-1990's. This program is renewed annually through a regional interlocal agreement. The partners have dedicated many hundreds of staff hours, contributed extensive funding and developed a solid, comprehensive network of monitoring infrastructure. Since the regional monitoring effort has been underway, a significant amount of scientifically valid data has been collected to serve the partners planning needs and is available to any agency upon request (in fact is also publicly available on the web).
    a. A suggestion would be to offer a new option for those communities that have had a credible program in place to continue ambient monitoring and provide the data to the regional monitoring effort. Should a fee still be required of the participating agencies, then a financial credit would offered to each in offset of the ongoing costs to conduct the established monitoring program.
    b. If a revised monitoring option will not be available, despite the challenges that our local water quality monitoring programs will ultimately face, the only option that appears to make sense is to base a RSMP fee on population only â€“ Option 1. Financial resources to fund such a new fee will have to come at the expense of the regional monitoring program that we have been regionally building and contributing to for about the last twenty years. Raising stormwater fees to cover a new monitoring program on a populace that is already struggling with a rough economy does not appear to be an option at this time.
    c. I agree with the SWG that there should be an option to opt out of a regional stormwater monitoring program, provided that there is an operational force capable of taking on that role and that all data collected could be shared with the respective agencies. This could be similar to the role that the WA Department of Health (DOH) plays with drinking water utilities. DOH mandates various parameters to protect public health. The water system collects the samples using methodologies prescribed by DOH and requires a certified lab complete the analysis. The results of the analysis are then transferred automatically

from the lab to the regulatory agency for tracking and data storage. Assurances of compliance would come in the form of reporting violations and standard exceedance, possibly prompting notices of violation or other regulatory action. This is a standardized approach that many utilities have been working under for many years.

Monitoring: Eastern Washington Phase II

- **Cheryl Sonnen, Asotin County, (509) 243-2074, csonnen@co.asotin.wa.us:** We agree with the idea of a panel of E WA permittees developing a recommendation on monitoring to Ecology similar to what has occurred in the Puget Sound. However, because of the lower rainfall in our area, the lack of consistent rain and intermittent discharges from our outfalls, we feel that ambient monitoring will be difficult and expensive to perform in E WA. Additionally, the data collected may not provide valuable information because of the lack of rainfall and intermittent discharges. The first flush effect of any discharges from our system will skew the results. The higher concentrations of pollutants that have been collecting in our systems during the dry seasons will provide inaccurate and difficult to interpret results. We support the idea of developing a monitoring program based on the effectiveness of our activities and measuring the reductions in potential pollutant loads. We feel that effectiveness monitoring of our SWMP will provide better information to Ecology.

General Comments

- **Richard R. Rogers, Respect Asotin County, rrogers@clearwire.net: I** understand that there is not a topic box for this, but here's the comment anyway, and I expect it to be taken seriously: The Eastern Washington Phase II Permit has a major flaw (other than its existence), and that is this: The Permit area includes ALL of Eastern Washington, from the crest of the Cascade Mountains to the Idaho Border on the East, then to the Oregon Border on the South, and then to the Canadian Border on the North. This Permitting methodology simply demonstrates sloppiness and laziness on the part of Ecology. This Permit area is ludicrously, almost criminally, overbroad, in that in covers areas with five inches of annual rainfall and lumps them in with areas that have twenty-five inches annually. It assumes that the potential stormwater issues of Spokane, with a population of nearly two hundred thousand people, with much potentially polluting industry, equate with the city of Clarkston, with less than SEVEN thousand people and virtually no industrial pollution potential. The current Permit, and the one proposed, does not take into consideration ANY actual hydrological data. It places the communities and taxpayers in the untenable position of needing to spend outrageous sums to combat pollution that has not been shown to exist, in the form of an unfunded mandate. If the Federal government and Wahington State governments do not have the funds to support this activity, it is certain that the individual communities do not have these funds. Without money, under potential pemalty of outrageous fines from Ecology or EPA, and under threat of third-party lawsuits potentiated by the very existence of the Phase II Permit, communities are unable to actually accomplish any meaningful improvement in surface water quality. More importantly, they are unable to demonstrate the success or failure of the stormwater program under the Permit, since there is no empirical data to determine the condition of the surface waters in

question prior to the implementation of any Permit-required activities. AT THE MINIMUM, the permitting process needs to break down the Eastern Washington Permit into multiple permits, based on the very different area characteristics mentioned above, including competent hydrological investigation undertaken by the permitting authority. To have any credibility at all, or any realistic hope of actually affecting the quality of the surface waters of Eastern Washington, the Permit should define MEASURABLE outcome criteria, and the measurement methodology to be used.

- **Andy Loch, City of Bothell, (425) 486-2768, andy.loch@ci.bothell.wa.us:** I support the concept watershed scale stormwater planning proposal. The watershed scale analysis should include incentives for watersheds that have multiple jurisdictions. The incentives should attempt to promote across jurisdiction collaborations to develop sound prescriptions for providing adequate storm water controls. The issue over how to prioritize watersheds will remain problematic. One watershed will be picked first and logically it follows that it will be selected based on some type of prioritization scheme. Possibly, WDOE could provide grant funds to jurisdictions to help initiate the process.

  Our watersheds would benefit from a cumulative analysis rather than the individual permit level review.

- **Heungkook Lim, City of Burien/ Stormwater Management Engineer, heungkookl@burienwa.gov:** Currently, pertmittees have budgetary and staffing issues in implemting NPDES requirements. The state shall consider this for scheduling and requiring NPDES tasks.

- **Shawn Gilbertson, City of Kent, (253) 856-5560, smgilbertson@ci.kent.wa.us:** Given the difficult economic times, it is not possible to increase the amount of funding directed towards implementation of the NPDES Municipal permit. Proposed new permit requirements that increase the financial burden on permittees should be accompanied by a dedicated funding source.

- **Laurie Smith, Georgetown Neighborhood Orcas St., (206) 683-3223, lauriefsmith@gmail.com:** I'm writing to comment on the draft proposal for the General Stormwater Permit LID Phase 1. Controlling untreated stormwater into our waterbodies is a huge issue that our State, local governments, businesses, and residential homeowners need to be working on together. Communities and landowners have been dealing with outdated systems that convey untreated runoff through pipes into the nearest creek, river, lake or salt waterbody. The new rules to apply LID approaches where feasible is a new opportunity for people, like me, living and working in our built environments to do things better. Often the costs for LID are more affordable than standard "grey infrastructure" systems but need to be more widely used to show feasibility. Developers, homeowners, and communities need to be given the tools and support and incentives to try new approaches. We need the State to continue to improve the LID, working with all parties, but not backing away from innovation, and fostering

collaboration between governments, private property owners, and communities who want to improve their urbanized environment.

The term, “where feasible” needs to be better defined and outlined, but not turned into an “offramp” for developers, municipalities and others to disregard opportunity to improve how we manage our stormwater.

- **Dan Smith, City of Tumwater, desmith@ci.tumwater.wa.us:** Thank you for providing an advanced look at the potential permit conditions for the issuance of the 2012/2013 NPDES permit. I appreciate the opportunity to consider these modified requirements as you proceed with reissuance of the permit. Stormwater is an area in need of continued oversight, especially considering degraded water quality in our surface and ground waters, reduced recharge to groundwater, and reductions in critical habitat and wetlands. While I support many of the suggested revisions, I am concerned that some may present challenges for a moderately-sized jurisdiction, such as Tumwater, that may adversely impact our ability to meet the expectations of the permit during tough economic times, without providing sufficient resources from federal and state sources to aid compliance. Regardless, we remain committed to ensuring our stormwater program strives to remain protective of our public and environmental resources, and again thank you for considering these comments.