February 2, 2012

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

Subject: 5-Year Phase I Municipal Stormwater Permit and Western Washington Phase II Municipal Stormwater Permit: Comments on Appendix 1 – Technical Requirements for New and Redevelopment

Dear Permit Coordinators,

Thank you for providing the opportunity to comment on the Phase I/II Municipal Stormwater Permits. This comment letter is limited to Appendix 1 of the Phase I/II Municipal Stormwater Permits. My background is in civil engineering with a focus on drainage system design. I regularly utilize the DOE Stormwater Management Manual for Western Washington both for design of projects and review of clearing, grading, and drainage plans on behalf of local municipalities. I have also assisted several municipalities in revising their stormwater codes, including incorporation of Low Impact Development requirements and practices. I have had the opportunity to design and review several projects incorporating LID techniques, which have provided me with insight into this review of the draft permit changes.

I fully support the strengthening of this region's stormwater management practices through the timely adoption of science based best practices such as Low Impact Development. Upon review of Appendix 1 – Minimum Technical Requirements for New and Redevelopment, I offer the following items for consideration in the upcoming permit re-issuance.

Section 1. Exemptions

1. Title 222 WAC concerning forest practices does not appear to have equivalent protections in place for erosion control and stormwater management as the minimum technical requirements. Timber production is a large-scale contributor to watershed degradation. This industry should be held to equivalent standards including the use of erosion control BMPs and Low Impact Development strategies for management of stormwater runoff from disturbed areas. It appears this may be handled through required watershed analyses, but it is not clear whether Low Impact Development strategies are required to be implemented under Title 222.

2. With regards to the exemption for commercial agriculture, again it is not clear if there are equivalent protective statues in place for farm management. Stormwater runoff from commercial agriculture contains high concentrations of compounds that can lead to toxicity in local watersheds. Soil erosion from wind as well as stormwater and irrigation runoff can also lead to watershed degradation. If an exemption is to be provided there should be other rules in place to protect watersheds from commercial agricultural activities.

3. The exemption provided for Oil and Gas Field Activities or Operations makes the least sense of the exemptions, especially since the permit language simply "encourages" operators to implement BMPs. These activities should be regulated the same as other land disturbing activities and subject to the rules of Appendix 1 or equivalent.

4. Under the Road Maintenance exemption it would appear prudent to provide a limit or definition to the phrase "reshaping/regrading drainage systems".

Section 2. Definitions Related to Minimum Requirements

5. The definition of LID Best Management Practices shown on pages 3-4 of Appendix 1 should be modified to include the following:
    - preservation of native and/or existing vegetation
    - limiting the overall footprint of disturbance
    - limiting the amount of effective impervious surface

6. It is recommended that a definition be provided for "replaced hard surface". This could be important when determining the minimum requirements. What if 2,500 SF of pervious pavement were being replaced? It seems this should trigger the same minimum requirements as replacing 2,500 square feet of impervious surface.

7. In the redevelopment definition on page 5 it appears the term "impervious" should be replaced with "hard".

8. It is recommended that a definition of MS4 be provided.

Section 3. Applicability of the Minimum Requirements

9. Figure 3.1 appears leave a major loophole in determining when a permittee must regulate a project. At issue is projects which propose a direct discharge to a major receiving water body. It appears based on this flow chart that if an applicnt were proposing to discharge direct to a major receiving body (instead of an MS4) that there would be no requirement for the permittee to regulate that action. This appears contrary to the intention of the regulations, and would leave the potential for unregulated discharges to receiving bodies such as lakes, rivers, and the Puget Sound which are not part of the MS4.

10. Figure 3.3 appears to need the word “to” inserted in the following sentence, “Convert ¾ acres or more of vegetation **to** lawn or landscaped areas?”

11. Is there an explanation behind the 2.5 acre limit for regulating the conversion of vegetation to pasture? This limit seems very high. Converting 2.4 acres of forest to pasture will have an increase in stormwater runoff that should be mitigated for to protect downstream habitat.

12. Would it make sense to include converted pervious surfaces in the second paragraph of Section 3.4? I suggest the following revision,

    “Other types of redevelopment projects shall comply with Minimum Requirements #1 through #9 for the new and replaced hard surfaces **and converted pervious** surfaces if the total of …”.

Section 4. Minimum Requirements

13. The term “extent feasible” in Section 4.1 is vague and should be defined clearly. What would preclude an applicant from choosing to develop in a way that limits the use of LID techniques? For example, say there is limited space for a bioretention system. What is to preclude the owner/applicant from increasing site parking or other hardscapes in a way that uses up the available space for bioretention. The owner/applicant could then claim that bioretention is not feasible due to space limitations. In essence, the unintended consequence of requiring LID where feasible could be a take of additional space with impervious surfacing. It is recommended that “extent feasible” have clearly defined limits and safeguards that would limit this type of unintended consequence.

14. The descriptions in Section 4.5 under “Project Thresholds” appear contradictory. First it states that Projects triggering only Minimum Requirements #1 through #5 **shall** use On-site Stormwater BMPs from Mandatory List #1. Then the following paragraph says those same projects may **choose** to demonstrate compliance with the LID Performance Standard. It is recommended that Ecology clean up the language so it is clear that a project may choose to either use Mandatory List # 1 or meet the LID Performance Standard.

15. It is recommended that the following paragraph from Section 4.5 be amended as shown to provide greater explanation of additional LID options or strategies available to those that choose to demonstrate compliance with the LID Performance Standard. For example, vegetated roofs, minimum excavation foundations and stormwater harvest and re-use are all viable alternative measures that could be used. Also, a reference to where (in the DOE Manual) the applicant can find information on those strategies would be helpful.

"Projects triggering only Minimum Requirements #1 through #5 may choose to demonstrate compliance with the LID Performance Standard in lieu of using Mandatory List #1. Projects selecting that option may use a combination of LID techniques including bioretention, stormwater harvest and re-use, vegetated roofs, preservation of native vegetation, minimum excavation foundations, as well as infiltration and dispersion BMPs as described in the *Stormwater Management Manual for Western Washington (2012)* to achieve the LID Performance Standard." Note: prescriptive rain garden sizing cannot be used in combination with the LID Performance Standard. Bioretention sizing shall be used instead.

16. The table in Section 4.5 which lists the stormwater management requirements for projects that trigger Minimum Requirements #1 through #9 has acreage limits that appear arbitrary. Why is there a 5 acre threshold placed on new and redevelopment outside of the UGA that determines whether projects should meet the LID Performance Standard or use a Mandatory List? It seems that a much smaller threshold would be appropriate in drawing the line between projects that are allowed to use a Mandatory List versus those projects that must use the LID Performance Standard. Also, what difference does the UGA boundary make with regards to stormwater management? Overall development and characteristics within a watershed and other site specific characteristics would make a much larger difference than a political boundary in determining an appropriate stormwater management approach. The simplest way to correct this issue would be to eliminate the table altogether and allow projects that do not trigger thresholds for flow control and water quality treatment to utilize the Mandatory List as an alternative to the LID Performance Standard.

17. What if an applicant wanted to voluntarily harvest rainwater for re-use ahead of other BMPs. Would they be allowed to utilize the Mandatory List, or would they be forced to utilize the LID Performance Standard? It is recommended that rainwater re-use be allowed when utilizing the Mandatory Lists.

18. What if an applicant wants to use permeable pavement, even though flow dispersion is feasible? Would this require that the project utilize the LID Performance Standard? What if overflow from the sub-pavement reservoir course could be directed to the same flow dispersion area? It is recommended that pervious pavement be allowed with overflow to full dispersion, without triggering the LID Performance Standard on small projects. Small projects in this case should be limited to those that do not trigger thresholds for flow control.

19. In both Mandatory List #1 and #2, some BMPs trump others, in that they come first in the order of preference and must be used if feasible ahead of other methods. This rigidity does not allow for design that is adaptable to the site conditions. For example, in some cases infiltration and dispersion are both feasible, and it may be preferable to

allow either based on actual site conditions. Placing dispersion ahead of infiltration in the list will likely lead to collection of runoff and dispersion to an adjacent natural area, when the more appropriate stormwater approach (to mimic the natural site hydrology) would be to allow infiltration under a pervious pavement section. It is recommended that Ecology reconsider the list in terms of preferences, and allow full dispersion and permeable pavement to have "equal" weight in the decision matrix based on actual site conditions. Or, modify these lists to allow greater flexibility on the part of the design team in the application of LID techniques that are site appropriate rather than just "feasible".

20. Mandatory Lists #1 and #2 do not include several proven LID strategies for mimicking the existing site hydrology. Vegetated roofs and minimum excavation foundations are both excellent strategies for reducing impacts of runoff due to development. It is assumed that a vegetated roof could be used as part of an alternate approach meeting the LID Performance Standard. However, the way the regulations are written, it does not seem to encourage use of a vegetated roof.

21. In Section 4.5, Mandatory List #2 it appears that it is allowable to take roof water to permeable pavement. It is recommended that Ecology also allow roof water to be discharged under impervious pavements that employ stormwater collection and redistribution below the pavement.

22. Section 4.6 requires additional clarification. Permeable pavements are considered hard surfaces under the definitions section. Permeable pavements subject to vehicular traffic are also considered Pollution Generating Pervious Surfaces (PGPS) under the definitions. The first two bullets under project thresholds lay out different standards for hard surfaces and PGPS. Pervious pavement appears to fall under both categories. The bullets should be revised for clarity. It is suggested that the second bullet be revised as follows:

    "Projects in which the total of pollution-generating pervious surfaces (PSPS) **- with the exception of permeable pavements which have a 5,000 square foot threshold** – is (3/4) of an acre or more in a threshold discharge area…"

23. The first bullet under project thresholds in Section 4.6 it appears to be missing the term "new and replaced" preceding pollution-generating hard surfacing.

24. The second bullet under project thresholds in Section 4.6 mentions a surface discharge. Is this a predicted discharge via an approved continuous simulation model, or is this an observed discharge? The bullet should be revised for clarity. This bullet is also missing the term "new and replaced".

25. The second bullet under "Thresholds" in Section 4.7 does not agree with Figure 3.2. It is suggested that "native" be deleted prior to vegetation in this bullet point.

Section 8. Feasibility Criteria for Selected Low Impact Development Best Management Practices

26. Section 8.1.A lists infeasibility criteria for Bioretention BMPs and Rain Gardens. For ease of commenting, I have copied and bulleted the criteria and made comments in italicized font.

- Where land for bioretention is within area designated as a Landslide Hazard Area.

  Criterion ok

- Where the site cannot be reasonably designed to locate bioretention facilities on slopes less than 15%, or if bioretention is within the road right-of-way and the right-of-way cannot be feasibly designed to locate bioretention facilities on slopes less than 8%

  Criterion ok

- Within 50 feet from the top of slopes that are > 20%.

  Suggest allowing lined bioretention systems (membrane or concrete liner) with underdrain provided it is approved by site geotechnical engineer.

- Where geotechnical evaluation recommends infiltration not be used anywhere within the project area due to reasonable concerns about erosion, slope failure, or downgradient flooding.

  This sounds ok at first, but has the potential for overuse, especially by applicants who do not want to utilize bioretention and are looking for a way to get out of the requirement. Is there some way to define "reasonable concerns"?

- Within 100 feet of a known hazardous waste site; or an abandoned or active landfill.

  This should not be an issue provided the bioretention facility is lined appropriately and has an underdrain system. Such a bioretention facility would be appropriate for bioretention systems used for water quality benefits, and not detention storage. This particular setback should be based on actual site conditions and the type of bioretention system being proposed. Perhaps it should be re-written to state that unlined bioretention systems cannot be placed within 100-feet of…

- Within 100 feet of a drinking water well, or a spring used for drinking water supply.

  Criterion ok

- Within 10 feet of small on-site sewage systems and greywater reuse systems. For setbacks from a "large onsite sewage disposal system", see Ch 246-272B WAC.

  Per the WAC, greywater systems are for irrigation during the dry season only. As such, allowing a greywater basin to double for bioretention during the wet season would be a good thing and should not be disallowed. It is recommended that this criterion be revised to omit greywater reuse systems.

- Within 10 feet of an underground storage tank.

  Criterion ok

- Within local setbacks from structures.

  This rule should be amended. It is really only appropriate for unlined bioretention systems near buildings. However, there are many cases where a bioretention system will be appropriate directly adjacent to the building (or other structure) foundation provided appropriate site specific design modifications are utilized. One example would be bioretention in a downtown corridor that is highly urbanized. Concrete lined bioretention boxes can be utilized to attenuate and treat a high volume of yearly runoff in a very confined space directly adjacent to a structure. It would be counterproductive to the intention of this permit reissuance for this type of system to be disallowed or discouraged through this feasibility criterion. Consider deleting this criterion and instead providing design guidelines for lined bioretention systems if within a structure setback.

- Where the drainage area is less than 5,000 sq. ft. of pollution-generating impervious surface, or less than 10,000 sq. ft. of impervious surface; or less than ¾ acres of pervious surface, and the minimum vertical separation of 1 foot to the seasonal high water table, bedrock, or other impervious layer is not achieved.

  1) Consider replacing "impervious" with "hard" surface to be consistent with the rest of this Appendix. 2) Depending on site specific bioretention goals, there could be circumstances where it would be beneficial to allow bioretention without 1 foot of vertical separation. As an example, a site may choose to use a lined bioretention cell for water quality benefits prior to discharging to an appropriate downstream location. It is suggested that greater flexibility be allowed with this criterion if infiltration to the native soil below is not a primary design goal and no negative downstream impact will result.

- Where the drainage area is more than any of the above amounts, and cannot reasonably be broken down into amounts smaller than those designated above, and the minimum vertical separation of 3 feet to seasonal high water table, bedrock, or other impervious layer is not achieved.

  1) This criterion is confusing and should be reworded for clarity. 2) Depending on site specific bioretention goals, there could be circumstances where it would be beneficial to allow bioretention without 3 feet of vertical separation. As an example, a site may choose to use a lined bioretention cell for water quality benefits prior to discharging to an appropriate downstream location. It is suggested that greater flexibility be allowed with this criterion if infiltration to the native soil below is not a primary design goal and no negative downstream impact will result.

- Where the field testing indicates potential bioretention/rain garden sites have a short term (a.k.a., initial) native soil saturated hydraulic conductivity less than 0.30 inches per hour. In these instances bioretention/rain gardens serving pollutant-generating surfaces can be built with an underdrain, preferably elevated within the underlying gravel layer, unless other feasibility restrictions apply.

  Consider rewording for clarity. The first sentence seems to indicate that a bioretention/rain garden facility is not feasible, and the next sentence describes how one could be allowed.

- Where they are not compatible with surrounding drainage system as determined by the local government (e.g., project drains to an existing stormwater collection system whose elevation or location precludes connection to a properly functioning bioretention facility).

  A formal process for proving the connection is not feasible is suggested. Otherwise this criterion could be used very liberally as a substitute for creative adaptive design that responds to site specific challenges.

- Where the only area available for siting would threaten the safety or reliability of pre-existing underground utilities, pre-existing underground storage tanks, or pre-existing structures.

  Criterion ok

- Where there is a lack of usable space for rain garden/bioretention facilities at re-development sites.

This criterion is too vague. It would seem to incentivize the installation (or retention) of unnecessary impervious surface to get out of the requirement to install bioretention/rain garden facilities.

27. Section 8.1.B lists infeasibility criteria for Permeable Pavements. For ease of commenting, I have copied the criteria and made comments in-line.

- Where the road type is classified as arterial or collector rather than access. See RCW 35.78.010 and RCW 47.05.021.

  It is not clear why this is disallowed. If a Permittee wanted to allow pervious pavement (or redistribution of runoff below traditional pavement) for an arterial or collector, then it does not make sense that it be restricted here. Can this be written such that it is allowed with jurisdictional approval?

- In the drive aisles of parking lots as long as runoff is directed to pervious pavement parking spaces.

  *The wording of this criterion is confusing. What is the intention? Pervious pavement in drive aisles is perfectly feasible, so it is not clear why this criterion exists. Perhaps the intention is to allow traditional pavement on drive aisles **only** when there is pervious pavement on the parking spaces. It that is the case, then it would be preferable to state so directly.*

- At sites defined as "high use" in Volume V of the SMMWW.

  Criterion ok

- In areas with "industrial activity" as identified in 40 CFR 122.26(b)(14).

  Criterion ok

- Within an area designated as a Landslide Hazard Area.

  Criterion ok

- Where geotechnical engineering evaluation recommends infiltration not be used anywhere in the project area due to reasonable concerns about erosion, slope failure, or flooding.

This sounds ok at first, but has the potential for overuse by applicants that do not want to utilize bioretention and are looking for a way to get out of the requirement. Is there some way to define "reasonable concerns"?

- Within 100 feet of a known contaminated site or abandoned landfill.

  This should be ok provided the bioretention facility is lined appropriately and has an underdrain system. This would be appropriate for bioretention systems used for water quality benefits, and not detention storage. This particular setback should based on actual site conditions and the type of bioretention system being proposed. Perhaps it should be re-written to state that unlined bioretention systems cannot be placed within 100-feet of…

- Within 100 feet of a drinking water well, or a spring used for drinking water supply.

  Criterion ok

- Within 10 feet of a small on-site sewage disposal drainfield. For setbacks from a "large on-site sewage disposal system", see Ch 246-272B WAC.

  Criterion ok

- Where the site cannot reasonably be designed to have a porous asphalt surface at less than 5 percent slope, or a pervious concrete surface at less than 6 percent slope, or a pervious paver surface (where appropriate) at less than 10 percent slope. Portions of pavements that must be laid at greater than 5 percent slope must prevent drainage from upgradient base courses into its base course.

  The intention is ok, but again the term reasonably could be used liberally to excuse a project from the requirement to use pervious pavement. For example, given an existing site grade of 8%, what are the criteria in determining if it would be reasonable conduct earthwork activities sufficient to flatten the finish grade to 5% and install pervious asphalt?

- Excessively steep slopes where water within the aggregate base layer or at the subgrade surface cannot be controlled by detention structures and may cause erosion and structural failure, or where surface runoff velocities may preclude adequate infiltration at the pavement surface.

  Excessively steep slope should be defined. There are techniques available for terracing the subgrade when it is sloped to slow the migration of water below the pavement surface. The intention of this criterion is good, but again could likely be

used liberally to excuse a project from providing pervious pavement unless the terms are better defined.

- Where the native soils below a road or parking lot do not meet the soil suitability criteria for providing treatment. Note: In these instances, the local government has the option of requiring a six-inch layer of media meeting the soil suitability criteria or the sand filter specification as a condition of construction.

  There are some additional cases that should also be considered as an exception from this criterion. For example, there are cases where it is cost effective and feasible to utilize pervious pavement with distributed detention storage below the paved surface even though one cannot infiltrate to the native soils below. This could apply to sites where the infiltration rate of the native soils below are too high and/or the soils do not meet suitability criteria, in other cases the infiltration rate may be too slow. In all of these cases, water can be detained under the pavement surface (lined if needed) and then released to a downstream water quality facility via a control structure. This criterion does not provide adequate room for creativity and problem solving on the part of the design team, and may inadvertently restrict a site from installing a system that may have advantages over traditional pavement. Also, it is recommended that Ecology study the water quality benefit of stormwater passing through the pervious asphalt. The surface area within the pervious asphalt section appears to act initially mainly as a physical filter and with time also performs as a biofilter, providing water quality treatment benefits not yet accounted for in the DOE Stormwater Manual.

- Where the site design cannot avoid putting pavement in areas likely to have long-term excessive sediment deposition after construction (e.g., construction and landscaping material yards).

  Criterion ok

- Down slope of steep, erosion prone areas that are likely to deliver sediment.

  This seems like a reasonable criterion, but there could be legitimate exceptions, such as when a project provides an engineered barrier that would keep sediment deposition away from pavement surface.

- Where the risk of concentrated pollutant spills is more likely such as gas stations, truck stops, and industrial chemical storage sites.

  Criterion ok

- Where seasonal high groundwater creates saturated conditions within one foot of the bottom of the lowest gravel base course.

  Criterion ok

- Where fill soils are used that can become unstable when saturated.

  Is this referring to existing fill soils or new fill soils? There are techniques for stabilizing fill soils so that they will remain stable under saturated conditions. Consider amending this criterion to allow pervious pavement on fill soils with geotechnical engineer approval.

- Where regular, heavy applications of sand occur to maintain traction during winter.

  Consider limiting this to a specific geographic region and/or by use. For example, in the Puget Sound Region many parking lots remain empty during snow events and the owners could commit to plowing or shoveling for the very few days of the year there is snow/ice. What is to keep a project applicant that does not want to install pervious pavement from claiming they cannot install due to the potential need for sanding in the winter?

- Where infiltrating and ponded water below new permeable pavement area would compromise adjacent impervious pavements.

  An engineered solution such as an impermeable liner (membrane or concrete) placed subsurface along the impervious pavement edge could alleviate this concern in some situations. Consider amending this criterion to allow pervious pavement when the edges are lined appropriately and with geotechnical engineer approval.

- Where infiltrating water below new permeable pavement area would threaten existing below grade basements.

  Who will assess this risk and make a determination? It is suggested that this criterion be reviewed by the project geotechnical professional to ensure it is not being used too liberally to exempt a site from pervious pavement.

- Where infiltrating water would threaten shoreline structures such as bulkheads.

  Again, who will assess this risk and make a determination? It is suggested that this criterion be reviewed by the project geotechnical professional to ensure it is not being used too liberally to exempt a site from pervious pavement.

- Where permeable pavements do not provide sufficient strength to support heavy loads at industrial facilities such as ports.

  Criterion ok

- Where installation of permeable pavement would threaten the safety or reliability of pre-existing underground utilities or pre-existing underground storage tanks.

  Again, who will assess this risk and make a determination? It is suggested that this criterion be reviewed by the project geotechnical professional to ensure it is not being used too liberally to exempt a site from pervious pavement.

- Where appropriate field testing indicates soils have a short-term (a.k.a., initial) native soil saturated hydraulic conductivity less than 0.3 inches per hour. In these instances, roads and parking lots can be built with an underdrain, preferably elevated within the base course, unless other feasibility restrictions apply.

  Consider rewording for clarity. The first sentence seems to indicate that pervious pavement is not feasible, and the next sentence describes how this system could be allowed.

This concludes specific comments made on the text within the draft permit. I will wrap up by reinforcing and expanding on some of the major points made within the text-specific comments.

Prescriptive vs. Performance Based Design

The use of prescriptive criteria appears to be a sound practice only for very small projects, where the cost of a customized performance-based design would overshadow the project construction cost. For larger projects, a performance based standard appears more appropriate, especially due to the larger potential for ecosystem impacts due to stormwater runoff. The table in Section 4.5 does not appear sensitive to this point, in that the size threshold for allowing prescriptive standards is quite large (a 5-acre parcel). A more prudent and justifiable standard would be to require performance based LID standards for all projects that trigger Minimum Requirements #1 through #9. A more middle of the road approach that could allow slightly larger (but still small projects) to utilize prescriptive criteria would be to create a threshold based on disturbed area. For example, if a project disturbs greater than 1 acre then performance based criteria would apply. Projects that disturb less than 1 acre could use the Mandatory List to achieve LID performance if they desired. Also, parcel size does not map directly to project size, so it is not understood why parcel size is proposed to determine which requirements to apply.

Feasibility Criteria

Much of the infeasibility criteria is too restrictive and does not allow for creativity and adaptive design based on site conditions. It also appears that many sites that are good candidates for these techniques could get out of the requirement too easily. For this reason, I suggest Ecology take a critical look at the infeasibility criteria and strengthen the language as described in the comments above.

Retention of Vegetation / Site Disturbance

The Minimum Technical Requirements do little to encourage the retention of vegetation and limit the overall site disturbance. Although development by definition results in disturbed area, there are many techniques to lessen the impacts to the ground and surrounding vegetation that are barely mentioned or considered in this document. At a minimum the technical requirements should encourage and incentivize the retention of site vegetation to the extent feasible on a project site. Some techniques to consider include utilization of minimum excavation foundations, restricting the building footprint, minimizing hard surfacing, preserving natural hydrologic features, and minimizing the construction impact limits.

Integrated Design

Stormwater is one piece of an overall integrated water system design approach that encompasses natural and built systems and ultimately can contribute to a restorative built environment. Stormwater permitting should incorporate best practices in stormwater management such as Low Impact Development techniques, and also adapt to integrative water system designs such as greywater management, rainwater harvest and re-use, heating and cooling systems design, and irrigation needs. This list is by no means exhaustive, but is offered as an example of integrative water system components.

Complexity of Minimum Technical Requirements

The increased complexity of the Minimum Technical Requirements could be a significant barrier to effective implementation of LID techniques. Project applicants willing to dig deeply into the requirements will find the exemptions and loopholes needed to excuse them from broad implementation of LID, and permitting jurisdictions will have difficulty enforcing permit requirements due to vague terminology used throughout Appendix 1. Further, it is difficult to imagine that project applicants triggering only minimum requirements #1 through #5 will be able to meet the minimum technical requirements without the help of a stormwater engineering professional. These issues could be partially remedied by finding ways to simplify the requirements through adoption of broader ranging performance based standards with fewer exemptions.

The scheduled re-issuance of the Phase I/II Municipal Stormwater Permits is a significant opportunity to strengthen our region's policies concerning stormwater management. The Department of Ecology appears to be walking a difficult path that attempts to balance our

region's ecological health against economic pressures associated with growth and development. Low Impact Development can help bridge this difficult path, providing for more ecologically appropriate designs and in many cases more economically feasible projects. This letter is intended to support Ecology's efforts in the broad based implementation of Low Impact Development techniques.

Again, thank you for the opportunity to comment on the draft permit re-issuance. Should you have any questions, please do not hesitate to contact me.

Sincerely,

Amie Broadsword, PE, LEED AP, CESCL
Stormwater Engineer