City of Bellevue

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July 7, 2011

Municipal Stormwater Permit Comments
Attn: Mr. Bill Moore
WA State Department of Ecology
Water Quality Program
PO Box 47696
Olympia, WA 98504-7696

Subject: Additional Comments on the NPDES Phase II Municipal Stormwater Permit Preliminary Draft Permit Language for Low Impact Development (LID) and Monitoring

Dear Mr. Moore,

Bellevue submitted comments on Ecology's proposed NPDES[1] permit reissuance schedule and process and preliminary draft permit language for low impact development (LID) and monitoring on June 17, 2011 (the deadline for the informal public comment period). We appreciate Ecology's welcoming additional feedback after June 17. In response to this, please find attached additional Bellevue comments on both LID and monitoring.

Please be aware that these comments are preliminary in nature and that Bellevue does not waive any comments or concerns not otherwise included in this letter.

Thank you for your consideration of these comments. If you would like to discuss these comments, please contact Phyllis Varner, NPDES Permit Coordinator, at 425-452-7683 or pvarner@bellevuewa.gov.

Sincerely,

Nav Otal
Interim Director
Bellevue Utilities

Attachments enclosed
cc: Coalition of Phase II municipalities

[1] NPDES = National Pollutant Discharge Elimination System

Attachment A - City of Bellevue, WA
Comments on Preliminary NPDES Permit Language for LID – Technical Feasibility for the Western Washington Phase II Municipal Stormwater Permit

Bellevue submitted comments June 17, 2011 on Ecology's permit reissuance process and schedule and preliminary draft permit language for low impact development and monitoring (issued May 16, 2011). The letter noted that Bellevue would be providing additional comments on issues of technical feasibility for the proposed LID conditions. Here are the additional comments prepared by an inter-departmental staff committee. This feedback is intended to provide Ecology with information regarding some of the feasibility issues associated with implementing the proposed language, including engineering, work load, process, and code issues.

Major issues are listed first, followed by more detailed comments regarding technical issues and wording of the permit language. Detailed comments are provided first for the preliminary draft permit LID language, then Appendix 1.

General Comments

1. The permit refers to many documents not completed yet and that staff has not reviewed, including:
   - 2012 Stormwater Management Manual for Western Washington
   - Low Impact Development Technical Guidance Manual for Puget Sound
   - Rain Garden Handbook for Homeowners
   - Guidelines for Code/Ordinance Review
   - Western Washington Hydrologic Model (WWHM)

   Until these documents are provided for review, many issues cannot be reviewed for technical feasibility at this time.

2. The permit intends to allow/require stormwater runoff collected from impervious surfaces to be directed to and redistributed below pavements. This is a radical change in pavement design practices that if implemented will require re-training of engineers. Since these are untested, it is unknown how often these under-pavement infiltration facilities will need maintenance and whether the useful life of pavements will be reduced.

3. The need for trained consultants and contractors will be great under these proposed permit conditions and this permit schedule.

4. In general, allowing more flexibility and options in applying Minimum Requirement # 5 (MR5) is preferred. Specifically, rather than a list of required BMPs, staff prefers that a preferred BMP list be accompanied by a list of alternative, equivalent BMPs that are allowed. Both performance standards and a mandatory list of LID BMPs should be an option for the medium-sized projects implementing MR5, similar to the large projects.

5. The acronym LID has been in common usage for decades to refer to Local Improvement Districts, which are areas with additional fees established for transportation, utility and/or other improvements or benefits. The LID acronym for "low impact development" is repeatedly and readily confused with "local improvement district" acronym. Suggest using a different term, such as "Natural Drainage Practices" (used by Bellevue) or "Green Stormwater Infrastructure" (used by Seattle).

Low Impact Development Preliminary Draft Language (pages 1-10)- Review Comments

6. Page 5- Note to Reviewers about S5 C4.b.v. Recommend retaining the 80% compliance level of effort due to increased workload associated with the proposed LID measures (number of LID construction inspections will be much higher than for traditional BMPs; for example, 4 inspections for pervious pavement vs. two inspections for conventional pavement), staffing limitations, significant process and workload issues including inspection process changes, inspection reassignments and training, and uncertainty in the number of facilities that will be built.

7. Page 6- Ecology invites comments on maintenance requirements for LID BMPS. Recommend inspecting LID BMPs every two years rather than annually because of their lower risks if they fail due to small size and small contributing drainage area. It also allows flexibility, for example, more frequent inspections could be conducted if determined necessary.

8. Page 8 – S5.C4.d.: Was the "that is greater than one acre" intentionally left in this paragraph? Appears to be contradictory.

9. Page 8 –S5.C4.f.: Recommend adding language to give Permittees one or two years to train new staff as they are added.

10. Page 9- 10 S5.C4.g.: Refer to comments on this condition (Watershed-scale stormwater planning) in Bellevue's June 17, 2011 comment letter on the preliminary draft LID and monitoring conditions.

Appendix 1 Minimum Technical Requirements for New Development and Redevelopment - Review Comments (38 pages)

Section 2. Definitions

11. Page 6 - Receiving waters – Refer to comments on this definition in Bellevue's June 17, 2011 comment letter on the preliminary draft LID and monitoring conditions.

Section 3. Applicability to the Minimum Requirements

12. Page 10-12 – Figures 3.2 & 3.3. For determining which minimum requirements apply, the word "impervious" has been replaced with the word "hard," and hard surfaces include green roofs and pervious pavement. This change will mean that pervious pavement and green roofs will need to be included in calculations to determine how much area will be managed for stormwater. Also, the threshold for MR1-9 for new development (with less than 35% impervious) is more stringent: both new *and replaced* hard surfaces are considered in the threshold, and MR1-9 will apply to both new *and replaced* hard surfaces. In the last permit, only *new* impervious surfaces were included in the threshold determination and minimum requirement application. These changes are likely to result in more projects that are above the thresholds for MR1-5 and MR6-9. This is likely to cause substantial stormwater construction cost increases for large commercial, multifamily, and Transportation projects, and smaller cost increases for projects near the MR5-6 thresholds. Ecology has not provided justification for the latter change, or an explanation of the expected benefits and cost trade-offs. Recommend Ecology clarify bases, benefits and trade-offs for these changes.

13. Page 13 - Section 3.4 Allowance for severe economic hardship variance/exception process removed. Given the potential significant impacts of the proposed LID changes to development and redevelopment projects, recommend adding this allowance back into Appendix One. The allowance is consistent with MEP (maximum extent practicable) and AKART (all known, available, and reasonable treatment methods) standards.

Section 4. Minimum Requirements

14. Page 14 - MR1 – The wording is vague and references a draft 2012 Manual that is not available for review.

15. Page 20 – MR2 – Construction Stormwater Pollution Prevention Plan (CSWPPP) New Element #12: Protect Low Impact Development BMPs. This is an essential element if LID BMPs are expected to perform as designed. Construction inspection level of effort is expected to be greatly increased. The extent of the increase is unknown. Currently, Clearing & Grading is low on inspection staff. The learning curve will be steep.

Pages 22-24 - Section 4.5 MR 5: On-site Stormwater Management

16. Page 22 – Ecology's intent appears to be similar to Bellevue's tiered approach, except permeable pavement and rain gardens are required to the maximum extent feasible. For projects doing MR1-5 only, it is not clear whether a jurisdiction can allow an applicant to apply only one BMP per surface. Recommend clarifying or encouraging jurisdictions to develop a step-wise process for assessing feasibility and selecting BMPs similar to Bellevue's tiered approach (see Bellevue's 2011 Storm and Surface Water Engineering Standards located at http://www.bellevuewa.gov/utilities_codes_standards_intro.htm).

17. Page 22 – Ecology is requesting input on whether pervious pavement to the maximum extent feasible (MEF) should be required for projects doing MR1-5 only. Yes, except for road projects. For road projects, MR1-5 should be required to the MEF for sidewalks only. See Bellevue's comments in June 17, 2011 comment letter about use of pervious pavement for roadways. In addition would support allowing more alternative BMPs such as reverse-slope sidewalks.

18. Page 22-23 – Ecology is requesting comment on whether small projects that result in less than 10,000 square feet of new and replaced impervious should be able to use LID performance standard compliance as an option to the list of LID BMPs, similar to the larger projects. This would require hydrologic modeling for small projects, so it is likely that very few applicants would choose the performance standard option. It seems that it would be better for applicants to have more options, so would support both the list and LID standard at the applicant's choice. However, please see Bellevue's comments about the proposed LID standard in Comment #20 below.

19. Page 23-24 – For projects that have greater than 10,000 square feet of new and replaced hard surfaces and/or convert ¾ acre or more of native vegetation, the proposal is for a mandatory list or performance standard, at the choice of the applicant. The mandatory list is similar to Bellevue's tiered list of on-site BMPs, except that they have not defined a stepwise approach to assessing feasibility or selecting BMPs. Bellevue recommends a stepwise approach. For impermeable pavement one must infiltrate the runoff below the pavement into stone storage reservoirs. Design methods or

specifications for this practice are not contained in the 2005 state stormwater manual but presumably would be in the new 2012 Stormwater Management Manual Western Washington (Manual). Also it would be mandatory for commercial projects to use a vegetated roof or an impervious roof with runoff routed below pavement unless a cost analysis shows it infeasible (not defined).

Recommend that the cost analysis be better defined, and the threshold above which it would mean that a vegetated roof is required. Cost analysis should include life cycle costs, and should take into account other savings, such as energy costs. Cost analysis will be an added expense for developers. Long-term performance and maintenance for routing water underneath impervious pavement is unknown. *Failure of either the vegetated roof or water under pavement could be very expensive. There is limited room under most roadways for storing water, but parking lots and sidewalks may be feasible.* Bellevue is noting these concerns and withholding final judgment until after the 2012 Manual is available and public review comment period is provided.

20. Page 24 –Ecology's proposed LID performance standard is that "stormwater discharges shall match developed discharge durations to pre-developed durations for the range of pre-developed discharge rates from 8% of the 2-year peak flow to 50% the 2-year peak flow" **substantially** increases the required flow control. Ecology admits that it "cannot quantify the relative benefits to the beneficial uses of this more stringent standard." They also state that "more closely matching the natural hydrology will reduce the impact of land development on the physical aspects of surface water habitat, and will reduce pollutant loading to surface waters through trapping of pollutants in the soils. The 10% exceedance level was selected because matching flows up to that level is achievable with LID BMPs that Ecology considers to be consistent with all known, available and reasonable methods of prevention, control, and treatment (AKART)."

    Recommend that Ecology develop an LID performance standard that has a science-based, sound rationale.

Section 7. Basin Planning

21. Page 34 – Recommend supporting change to allow basin planning to adjust MR5 requirements. For example, there have been questions from Development Review about whether MR5 requirements should apply to direct discharge lots. There is currently no exemption from MR5 for direct discharge areas.

Section 8. Feasibility Criteria for Selected LID BMPs

22. General - There are only opt-out criteria for bioretention BMPs, rain gardens, permeable pavements and vegetated roofs. Does this mean there are no opt-out criteria for the other mandatory LID BMPs (roof downspouts, dispersion, soil quality, infiltration below pavement)? When would other LID BMPs be feasible or allowed (e.g., reverse-slope sidewalks, minimal excavation foundations)?

23. Page 36 - Ecology wants comments on the minimum initial hydraulic conductivity (do they mean design hydraulic conductivity?) below which bioretention, rain gardens and pervious pavement would be infeasible: choices include 0.1, 0.15 or 0.25 inches per hour. Bellevue has concerns that the LID modeling approach has a fundamental flaw, see below. Bellevue recommends 0.25 inches per hour because of this modeling issue as well as other barriers that need to be addressed before there is significantly increased or mandated use of LID. These barriers were outlined in the LID

implementation barriers report submitted by Bellevue with the 2010 NPDES Annual Compliance Report and attached to the June 11, 2011 comment letter on these preliminary draft conditions.

"Modeling approach – Ecology's modeling approach has a fundamental flaw. For individual practices, the Western Washington Hydrologic Model (WWHM) assumes that water that is infiltrated does not return as surface flow or interflow. In the City's experience, interflow (and surface runoff) is a natural occurrence and can result in drainage problems and flooding. To ignore interflow (and surface runoff) in an area with a high percentage of glacial till is a prescription for disaster. Ecology should use the results of the LID research on interflow currently being conducted by Washington State University extension before it considers developing a LID hydrologic performance standard based on this modeling approach."

24. Page 36 - Ecology wants comments on the basis for an infeasibility decision concerning any particular road category. Bellevue made the following comments in response to this question in its June 17, 2011 comment letter;

> "There is a lack of research and information on pervious and permeable pavement roadways and many questions remain regarding construction, structural, life safety, operation and maintenance and life cycle issues.
>
> Bellevue recommends that pervious or permeable pavement **not be considered feasible for widespread or mandated use in roadways until studies and pilot programs have been completed to address these questions.** Bellevue recommends that permeable or pervious pavement continue to be primarily used or required, as feasible, for parking lots, sidewalks, driveways, parking areas outside of travel paths, and separated bike lanes."

A lack of research and information on permeable and impervious pavement use on roadways remains, including:

- Operational and maintenance requirements and costs for roadways with moderate to heavy daily vehicular traffic volumes;
- Structural integrity of permeable pavement designs and *associated life safety concerns*;
- Density of underground utilities issues (existing or proposed);
- Potential impacts from spills and clean-up on pavement performance and life cycle;
- Technical information about how to handle spills;
- Options for repairing utility cuts, including whether grind-overlay is an option for repair and maintenance;
- Materials for trench backfilling that would be compatible with pervious pavement (e.g., that don't prevent infiltration or capture water in trenches and convey it horizontally to another location with unintended consequences);
- Adequate structural support for fire vehicles and other heavy vehicular traffic;
- Need for sanding or salting during very cold weather and impacts this has on pavement performance, maintenance needs and potential life safety issues;
- Inspection and maintenance standards;
- Methods to track locations of pervious pavements to ensure inspection, maintenance and repairs are done in accordance with roadway standards, once developed; and
- Pavement life cycle costs.

25. Page 38 – Ecology is requesting comments regarding the types of competing needs that can be used to forego use of on-site stormwater management BMPs. Recommend:
    - Critical area mitigation opportunities – if a site is of a limited size, and wetland mitigation is required as well as bioretention (or other LID BMPs), it should be acceptable to forego LID in favor of mitigation on-site.
    - Conflicts with other regulatory requirements such as Growth Management Act, Model Toxics Control Act, etc.
    - Infrastructure requirements such as utilities, etc.
    - See infeasibility comments for pervious and permeable pavements use in roadways in Comment #24.

Technical Comments on Minor Issues in Appendix 1

Section 2. Definitions

26. Page 2 – Bioretention BMPs – definition should include plants - at end of 1st sentence, add "with adapted plants."Rick to review...and discuss.

27. Page 3 – Effective Impervious Surface – 2nd paragraph says "...not considered effective if continuous runoff modeling indicates that ***all*** stormwater is infiltrated" [emphasis added]. Clarify what is meant by "all stormwater" or make the definition more general.

28. Page 4 – LID Best Management Practices – Include the word "structural" to define these distributed stormwater practices to distinguish them from LID principles.

29. Page 5 – Pollution-generating Impervious Surfaces – not clear whether this phrase will still be needed. Suggest changing "Impervious" to "Hard" and acronym to "PGHS".

Section 4. Minimum Requirements

30. Page 20 – Number 12.b. – Add prevent compaction of permeable pavement soils below the facility.

31. Page 24 – Commercial building requirement to have a vegetated roof or route runoff below pavement - Last sentence regarding the cost analysis needs to be clarified. The current wording seems to say that if they do not route runoff under pavement but do a vegetated roof, they must do a cost analysis.

32. Page 25 – Section 4.6 – Minimum Requirement #6 – Project Thresholds – delete reference to deleted table 4.1 in first sentence.

33. First bullet - Change term "PGIS" to "PGHS" since "impervious" is replaced by "hard".

34. Page 28 – Unable to comment on Treatment Facility Selection, Design, and Maintenance, or Additional Requirements sections until we are able to review the 2012 SWMMWW.

Section 8. Feasibility Criteria for Selected LID BMPs

35. Page 35 – Bioretention feasibility

    Bioretention and rain garden setbacks – Recommend specifying that these are measured from the bottom edge (bottom of the bioretention soil mix) of the facility, rather than the top edge, which may be influenced by slopes.

    Geotechnical evaluation should also determine reasonable concern for downstream flooding. Who determines reasonable concerns for the geotechnical evaluation to determine where they are not feasible? (This comment also applies to page 36.)

    Within local setbacks from structures – recommend adding "and property lines." This would eliminate the need for the "Competing Needs" language regarding distance from right-of-way.

    The criteria regarding initial native soil saturated hydraulic conductivity is inconsistent with the statement that "any listed condition triggers an infeasibility decision." Perhaps say that it will not be feasible for meeting flow control, and that installing one with an underdrain is an option, or allow other BMPs to be considered instead. Also, clarify the meaning of the term "initial." Recommend using terms consistent with those used in the infiltration section of the SWMMWW manual (short-term, long-term, design infiltration rate, etc.).

36. Page 36-37 – Pervious pavement on slopes – recommend limiting pervious pavers to 10 percent slopes or less. Second sentence should be worded so that it is clear that check dams or other methods spaced appropriately can be used for detaining water in underground cells. Recommend addressing sanding and salting issues and recommending BMPs in the updated *Low Impact Development Technical Guidance Manual for Puget Sound*.

37. Page 37 – Infiltrating water would threaten basements – add "or other lived-in structures or businesses."

38. Page 37 – Add infeasibility criteria for vegetated roofs related to the cost analysis using a percentage above a conventional roof. Get concurrence or recommendations from the LID Advisory Committee(s).

Attachment B - City of Bellevue, WA
Comments on Preliminary NPDES Monitoring Funding Agreement for the Western Washington Phase II Municipal Stormwater Permit

Bellevue submitted comments June 17, 2011 on Ecology's permit reissuance process and schedule and preliminary draft permit language for low impact development and monitoring (issued May 16, 2011). The letter noted that Bellevue would be providing additional comments on the S8 Monitoring requirements, specifically the proposed S8.C funding agreement.

General Comments – Funding Agreement for NPDES S8.C Monitoring Condition

1. Ecology must review and refine the monitoring cost estimates. The cost estimates appear to be based on the Stormwater Work Group (SWG) November 2010 regional stormwater monitoring proposal and, since then, work has occurred to better define the scope of the monitoring proposal. Further, Ecology is proposing to add a 10% contingency fund but the cost estimates for each component of the monitoring proposal already includes some level of contingency funds.

2. Bellevue supports the need for a shared resources approach to program effectiveness monitoring, especially for Phase II jurisdictions and for studies that are best conducted by multiple jurisdictions. However, Bellevue also supports a "local needs" option whereby permittees are allowed to meet their NPDES permit obligations for program effectiveness monitoring by conducting Ecology-approved effectiveness studies outside of the RSMP. Jurisdictions approved for conducting these programs should receive a "credit" for the effort and contribution of their program. With respect to the Bellevue's support for a "local needs" option – Bellevue concurs with the comments provided by the City of Seattle and City of Tacoma with respect to S8.C.1 and S8.C.2 permit conditions.

3. The funding agreement should also address the following issues:

    - Annual Performance Evaluations – the agreement needs to be more clearly drafted to articulate the administration process and work required by the agreement.

    - The agreement must expressly provide that after a permittee has paid the specified jurisdiction funds for the S8.C Regional Stormwater Monitoring Program (RSMP) permit condition, that doing so constitutes full compliance with the monitoring condition. If work required by the agreement is or is not successfully or fully accomplished (for whatever reasons), the agreement must provide that permittees are not liable to third party lawsuits under the NPDES municipal stormwater permit or subject to additional costs for S8 Monitoring. This indemnification needs to also be directly stated in the permit monitoring language.

    - Modifications – any modifications to the funding agreement before or after implementation must be cost neutral and approved by the Stormwater Work Group Oversight Committee.

    - Defined deliverables – the agreement needs to include specific language about deliverables for completion of the work required in Attachment A.

    - The agreement needs a more clearly defined termination provision; stating under what circumstances termination may occur.

- The agreement needs to address the potential of latecomer signatories.

- The agreement should be revised to allow execution by counterparts.

- The "transparent process to rank applications" under the Statement of Work section must be more clearly defined and should provide some level of local control and comment.

- The agreement must define a venue and jurisdiction for resolving disputes as well as include a defined type of agreeable dispute resolution between the parties.

- For clarity, the agreement should contain an appropriate definition section that addresses eligible jurisdictions and other terms of art.