

## **Attachment A**

City of Bellevue February 3, 2012 Comment Letter for the  
Draft NPDES (2013-2018) Western Washington Phase II Municipal Stormwater Permit

### **Current and Planned LID Activities under the Current NPDES Permit (Originally submitted to Ecology in 2010 to meet current permit requirements)**

#### **PERMIT REQUIREMENT**

The Phase II Western Washington NPDES Municipal Stormwater Permit requires municipalities, including Bellevue, to provide a Low Impact Development (LID) report written individually or in cooperation with other permittees (Permit condition S9.E.4.b). This report is solely for the City. The permit requires the report to address four parts, but does not require the responses to constitute commitments or requirements. The four parts include:

- LID practices currently available and reasonable to implement soon;
- Potential or planned non-structural actions and LID techniques;
- Goals and metrics to identify, promote, and measure LID use; and
- Potential or planned schedules to require or implement the non-structural and LID techniques on a broader scale in the future.

#### **INTRODUCTION**

Bellevue supports the appropriate use of LID in stormwater management programs. There is limited experience nationally and locally with implementation of LID facilities on a large scale over an extended time period. Steps to increase the use of structural LID facilities should proceed in conjunction with additional understanding and knowledge of the long-term implications.

#### **LID PRACTICES CURRENTLY AVAILABLE AND REASONABLE TO IMPLEMENT SOON**

LID practices defined by the permit include non-structural actions and structural LID techniques<sup>1</sup>. The following is a list of “LID practices” currently allowed or required by Bellevue city codes and engineering standards. The following LID practices are applicable as long as they are not constrained due to engineering limitations or other site limitations as noted in the applicable standards and/or codes (in other word...where feasible).

##### Non-structural actions

The following non-structural practices are required on all sites per Bellevue City Codes:

- Limitations on the amount of impervious area allowed (Land Use Code 20.20.460);
- Steep slope, floodplain, stream, and wetland buffers and Native Growth Protection Areas per the Critical Areas Overlay (LUC 20.25H and related codes);
- Significant tree retention and replacement (LUC 20.20.900);
- Shoreline requirements per the Shoreline Master Program (LUC 20.25E); and

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<sup>1</sup> Low Impact Development is defined In the Permit’s definitions and acronyms section as “a stormwater management and land development strategy applied at the parcel and subdivision scale that emphasizes conservation and use of on-site natural features integrated with engineered, small-scale hydrologic controls to more closely mimic pre-development hydrologic functions.”

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- Construction per Clearing and Grading Code and Development Standards (BCC 23.76)

The following non-structural practice is required under the conservation subdivision code (LUC 20.45B.055):

- Cluster redevelopment (minimizes impervious areas and preserves vegetation).

The following documents and procedures have been put in place to assist in the implementation of LID practices:

- Transportation Maintenance and Capital Improvement Project Stormwater Management Guidelines (latest draft December 2010) – provides guidance for implementing LID and other storm requirements for roads projects.
- Storm and Surface Water Maintenance Standards, published February 2010, includes detailed maintenance procedures and schedules for Natural Drainage Practices (LID practices).
- 2010 Storm Requirements Worksheet – informal worksheet for developers and builders to determine which minimum requirements apply to their project.
- Natural Drainage Practices (LID) Guidelines for Single Family Residential Construction (latest draft February 2011) – provides guidance for implementing amended soil, post construction soil management and pervious pavement for single family residential applications.
- Natural Drainage Practices (LID) Development Services handouts out on rain gardens, pervious pavement, vegetated roofs, rain recycling and amended soils, published April 2010, includes information on each technique including benefits, best uses, limitations, design features and maintenance.
- City Comprehensive Plan – contains a policy-level discussion of LID and specific policies promoting use of LID (EN-27, EN-32, and EN-32).

The following “non-structural” actions are required when projects trigger equal to or greater than 2,000 square feet of new, replaced, or new plus replaced impervious surface per the storm and surface water engineering standards:

1. Smart site design
2. Site analysis process
3. Preserve native vegetation to the maximum extent practicable

#### Structural LID techniques

Information on the design, applicability and limitations of the structural LID techniques listed below are contained in the Bellevue storm and surface water engineering standards. The following LID techniques are required where feasible in Bellevue:

1. Amended soils
2. Sheet flow dispersion
3. Concentrated flow dispersion

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4. Roof downspout dispersion
  - a. Splash blocks
5. Roof downspout infiltration
  - a. Infiltration trench
  - b. Infiltration drywell
  - c. Perforated stub-out connection

The following LID techniques are allowed and encouraged where feasible in Bellevue:

1. Pop-up emitters for roof downspout dispersion
2. Rain recycling
3. Minimal excavation foundations
4. Reverse slope sidewalks
5. Bioretention (e.g., rain gardens)
6. Pervious pavement
7. Vegetated roofs
8. Runoff control credit for trees retained or planted

#### **POTENTIAL OR PLANNED NON-STRUCTURAL ACTIONS AND LID TECHNIQUES**

Non-structural actions can be referred to as development principles. These are measures authorized by development codes or reflected in comprehensive plans or other land use policies that advance LID implementation. LID techniques are small-scale engineered facilities and devices or installations that are built for the purpose of mimicking pre-development hydrologic functions. This section is subdivided into planned actions and potential actions.

##### Planned non-structural actions

The following planned actions are dependent on Washington State Department of Ecology actions:

1. Bellevue will review and comment on Ecology's revised Stormwater Management Manual.
2. Staff training on new LID requirements resulting from the new Ecology stormwater management manual and NPDES municipal stormwater permit and related updates to City codes, standards, and guidelines.
3. Update the Storm and Surface Water Utility and Clearing and Grading Codes - it is expected that the codes will need to be updated to meet the requirements of the new NPDES permit.
4. Update the Storm and Surface Water Engineering and Clearing and Grading Development Standards – the storm standards are updated every year in January, if necessary. It is expected that both standards will need revisions to comply with new Ecology stormwater management manual and NPDES permit requirements.

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The following planned action depends on available city resources.

5. GIS Analysis- Feasibility of infiltration in Bellevue. Using updated soils information from Geomapping Northwest, an analysis of feasible areas conforming to the engineering standards will be made.

Implementation of the following planned action depends on economic conditions and redevelopment activities:

6. Implementing LID practices, where feasible, in redevelopment that occurs in the Bel-Red corridor. The City recently changed zoning in an area known as the Bel-Red corridor to encourage and incentivize the use of LID practices where feasible with redevelopment.

#### Planned structural LID techniques

1. Annual review of Ecology approved proprietary structural LID techniques for use in public capital improvement projects.

#### Potential non-structural actions

The following non-structural actions are potentially applicable in Bellevue in the future but would require thorough analysis before adoption by the City.:

1. Cluster redevelopment including smaller lot sizes, larger open space reserves, reduced impervious surface allowances outside of critical overlay district;
2. Shared driveways or shared and reduced parking requirements- could reduce impervious surface area;
3. Roadway geometric changes – would require considerable input from the transportation, planning and public safety departments; and
4. Traffic calming through the use of chicanes or curb extensions- would require extensive public awareness campaign to alleviate neighborhood concerns

#### Potential structural LID techniques

The following LID techniques are potentially applicable in Bellevue in the future but would require thorough analysis before adoption by the City as required standards:

1. Lot stub disconnection
2. Analyze the performance of structural LID techniques over time using data from operations and maintenance inspections of private and public storm drainage systems and make changes to standards based on the results. The structural LID techniques targeted for study would be those used to meet flow control and water quality treatment development stormwater requirements.

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#### **GOALS AND METRICS TO IDENTIFY, PROMOTE, AND MEASURE LID USE**

This section of the report is intended to provide indicators of progress by Bellevue in implementing the LID techniques, practices, and actions identified in the previous sections. Until Bellevue and the region gain more experience, Bellevue proposes to track the number of each LID technique installed to meet flow control and water quality treatment development stormwater requirements (e.g. minimum requirements #6 and #7 of the 2005 Ecology Stormwater Management Manual) on city-owned properties and, if resources allow, analyze the performance of the structural LID techniques over time. Procedures for tracking structural LID techniques installed on City property are in the process of being developed. Procedures and resources for analyzing data in Bellevue have not been developed nor have resources been available to do so at this time. If resources allow, the monitoring will be extended to include LID techniques installed on private property.

#### **POTENTIAL OR PLANNED SCHEDULES TO REQUIRE OR IMPLEMENT THE NON-STRUCTURAL AND STRUCTURAL LID TECHNIQUES ON A BROADER SCALE IN THE FUTURE**

This section of the report is intended to describe a schedule for implementing potential or planned actions identified in previous sections, dependent on available City resources. The following theoretical and potential schedule is intended to describe a sequence of actions based upon Bellevue's current organizational structure and existing processes to implement code and/or standards revisions. This schedule is purely theoretical at this time and subject to future modifications based on available resources.

All potential non-structural and structural LID technique actions would begin after the next NPDES permit is issued. For each action, the City would determine feasibility. For actions determined feasible, the City would then analyze the impacts to various departments (planning and community development, transportation, parks, police, fire, utilities, city manager, design and development department); modify codes (land use, utilities, transportation); conduct citizen hearings; and complete an environmental review. Each action will take a different level of effort and length of time, as follows:

##### Potential non-structural actions

1. Cluster redevelopment- This technique will require a minimum of three to five years to implement.
2. Shared driveways and parking lots- If authorized, the study would take six months to 1 year to complete. In the past as part of transportation review of development proposals, the city has had limited success in reducing driveway curb cuts.
3. Roadway geometric changes- This technique would require a minimum of five years to implement.
4. Curb extensions or chicanes for traffic calming- This technique will require a minimum of three years to implement.

##### Potential structural LID technique actions

1. Lot stub disconnection- This technique will require a minimum of three years to implement.
2. Analyze the performance of structural LID techniques over time as part of ongoing operations and maintenance inspections. This potential action would require a minimum of 10 years to implement due to the need for long-term performance information on structural LID techniques.

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#### Planned non-structural actions

The following actions will likely begin after the next NPDES permit is issued, or as indicated, depending on available city resources:

1. Bellevue will review and comment on the updated Ecology stormwater management manual when Ecology issues the manual for the public review process.
2. Staff training on updated LID requirements based on the next permit, updated LID technical guidance manual, and related changes to codes, standards and guidelines.
3. Storm and surface water utility and clearing and grading codes update – the codes will be updated according to the next NPDES permit requirements and schedule.
4. Storm and surface water engineering and clearing and grading development standards update - every year in January, if necessary, the storm standards are updated. It can be expected that both standards will need revisions for the new NPDES permit and LID technical guidance manual, and these are planned to be updated according to the new NPDES permit requirements and schedule.
5. GIS Analysis - feasibility of infiltration in Bellevue. Using updated soils information from Geomapping Northwest, an analysis of feasible areas conforming to the engineering standards will be made in 2012-2013.

#### Planned LID techniques

1. Review of Ecology approved proprietary structural LID techniques for use in public capital improvement projects will be completed annually or as approved BMPs are brought to the attention of the Utilities Department.