

# Low Impact Development Feasibility Analysis

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**Prepared for:**

City of Redmond  
15670 NE 85th Street  
Redmond, WA 98052  
(425) 556-2900

**Prepared by:**

Jeremy Febus, PE  
Kristin Ramey, EIT  
KPFF Consulting Engineers  
1601 Fifth Avenue, Suite 1600  
Seattle, WA 98101  
(206) 622-5822  
KPFF Project No. 1800077

**Developer:**

Lennar Multifamily Communities  
1325 4th Avenue, Suite 1300  
Seattle, WA 98101



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## Low Impact Development Features

### Site Assessment

Per Section 8.7.5 of the Stormwater Technical Notebook, all projects that trigger Minimum Requirement 1 are required to include a LID Site Assessment as a part of the stormwater site plan. The following documents, required for the LID Site Assessment, are included with this report or under separate cover:

- Survey meeting all the requirements of Volume 1, Chapter 3.1 of SWMMWW (included as a base in the exhibits in Appendix A and in the plan set included with this submittal).
- Geotechnical reports (refer to the Special Report and Studies discussion in Section 7 of this report)

The following documents are not included in this report:

- Critical Areas Report: The project is located in Wellhead Protection Zone 3.
- Flood Hazard Report: This site is not located in a flood plain.

### LID Requirements

The process for determining minimum LID requirements is outlined in SWMMWW Volume 1, Chapter 2, Figure 1-2.5.1. This figure is annotated below, indicating that this project is required to evaluate BMPs for proposed surfaces using the BMP hierarchy outlined in List #2. Refer to Table 3 for the BMP list.

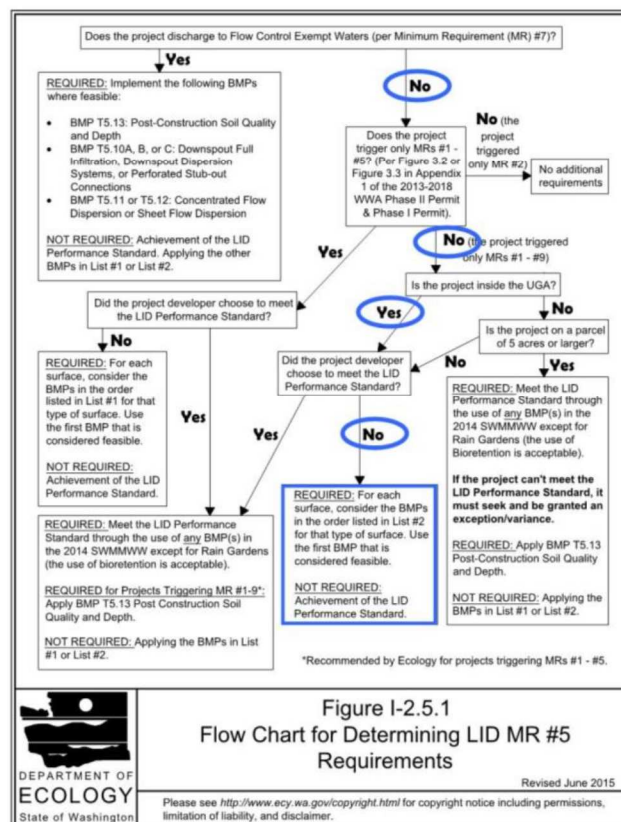


Figure 3: SWMMWW Figure 1-2.5.1, Annotated

**Table 3:** SWMMWW LID List 2

<b><i>LIST #2: ON-SITE STORMWATER MANAGEMENT BMPs</i></b>	
<b>List Order Hierarchy</b>	<b>Required BMP</b>
<i>Lawn and Landscape Areas</i>	
1	Post-Construction Soil Quality and Depth
<i>Roofs</i>	
1	Full Dispersion or Downspout Full Infiltration
2	Bioretention
3	Downspout Dispersion
4	Perforated Stub-out Connections
<i>Other Hard Surfaces</i>	
1	Full Dispersion
2	Permeable Pavement
3	Bioretention
4	Sheet Flow Dispersion or Concentrated Flow Dispersion

### ***Feasibility and Implementation***

The feasibility study of List #2 BMPs included added considerations to account for the full infiltration requirements outlined in Section 2.5.5.2 and Appendix B of the Stormwater Technical Notebook. The project evaluated horizontal setbacks from buildings, structures, storage tanks, and property lines. In addition, the project considered vertical setbacks from seasonal high water and any highly variable or hydraulically restrictive soil zones that may impact infiltration capabilities described in the project Geotechnical Report.

According to the Geotechnical Report, the site soils have a measured infiltration capacity of 85 inches per hour. This value exceeds the maximum allowable design infiltration rate of 20 inches per hour indicated in Section 2.9.3.9 of the Stormwater Technical Notebook, therefore a long term design infiltrations rate of 20 inches per hour was used in calculations. The Geotechnical Report also includes updated information on groundwater elevations, recommending a design seasonal high groundwater elevation of 37.6 feet. All infiltrating facilities are required to maintain at least three feet of separation from the seasonal high groundwater level. In addition, mounding analyses are required for all facilities situated less than 5 feet above the seasonal high groundwater elevation.

The additional infiltration criteria narrowed the feasible BMPs in List #2 down to infiltrating BMPs only. From this limited list, the project proposes to implement soil amendments for the restoration of all off-structure landscape areas to meet the requirements for post-construction soil quality and depth. In addition, the project proposes to manage all roof surfaces onsite using infiltrating BMPs to meet requirement for downspout full infiltration. The project also proposes to employ bioretention in conjunction with other infiltrating BMPs to manage other hard surfaces onsite and in the ROW

### ***On-Site Stormwater Management***

Onsite stormwater will be managed through the use of downspout full infiltration. The stormwater will be routed to infiltration chambers at the southeast corner of the property. Preliminary modeling results indicate that an estimated infiltration chamber system volume of 8,504 cubic feet would be required to infiltrate 100% of onsite stormwater. Refer to the Proposed Conditions Exhibit in Appendix A for onsite basins and to Appendix C for preliminary modeling results.

The project is currently proposing an infiltration chamber system that provides approximately 9,000 cubic feet of storage, covering approximately 4,500 square feet. The bottom of the facility is situated five feet above the seasonally high groundwater elevation as documented in the project Geotechnical Report, rendering a mounding analysis unnecessary at this time. As the onsite stormwater design progresses, the facility configuration and elevations may change. If the groundwater separation decreases as the design develops, a mounding analysis will be performed on the infiltration chambers to confirm that the system will have no adverse impacts to the groundwater table or adjacent structures. Refer to the Civil Utility Sheets in Appendix B for the preliminary facility location, as well as documentation of horizontal and vertical setbacks.

### ***Right of Way Stormwater Management***

ROW stormwater will be managed through the use of infiltrating bioretention, drywells, and infiltration chambers. Stormwater will be routed to bioretention facilities and water quality treatment structures (Filterterra or similar) situated in the ROW. Bioretention facilities will be used for both water quality treatment and infiltration of stormwater, while water quality structures will only be used for treatment. Underdrains and overflows from bioretention facilities and outlets from water quality treatment structures will be routed to drywells and infiltration chambers. The bottom of these infiltrating facilities will be situated at least three feet above the seasonal high groundwater level.

The project is currently proposing a ROW drainage system comprised of seven dedicated infiltrating facilities served by separate stormwater basins. These facilities and their basins may be reconfigured, combined, or divided as the stormwater design progresses. Refer to the Proposed Conditions Exhibit in Appendix A for ROW basins, to the Civil Utility Sheets in Appendix B for preliminary facility locations, and to Appendix C for preliminary modeling results.