

# NPDES Overview of Minimum Requirements (MR) and Washington State Best Management Practices (BMPs)

There are 9 minimum requirements (MRs) in the Stormwater Management Manual for Western Washington (SWMMWW). MRs are important for site design as they dictate stormwater requirements that ensure that sites do not degrade the surrounding water quality (see below for all 9 minimum requirements). Several LID best management practices (BMPs) address MRs, especially MR#6 run-off treatment and MR#7 flow control, but also MR#5 on-site stormwater management. MRs are met using a system of stormwater credits to provide a quantitative method for tracking. LID BMPs provide two different types of stormwater credit – flow control and treatment – allowing for many different strategies to incorporate both credits. Stormwater credits are tied directly to volume requirements and translate into cost savings by the developer by reducing the size of stormwater storage and conveyance systems.

## NPDES Permit Requirements: Minimum Requirements (MRs)

1. Preparation of Stormwater Site Plans
2. **Construction of a Stormwater Pollution Prevention Plan (SWPPP)**
  - *LID application—Element #13 is required by Construction Stormwater General Permit (CSWGP): Protect LID BMPs from sediment and compaction*
3. Source Control
4. Preserve Natural Drainage
5. **On-Site Stormwater Management**
  - *LID application--Infiltrate, disperse, and retain runoff on-site to the extent feasible*
6. **Run-off Treatment**
  - *LID application--Water quality treatment for pollution-generating areas*
7. **Flow Control**
  - *LID application--Control of flow peaks and flow durations*
8. Wetlands Protection

## Thresholds

The size of the project will determine what Minimum Requirements need to be addressed and how to address them. The 2014 Stormwater Manual for Western Washington - [Volume I, Chapter 1-2](#) - covers these thresholds.

MRs #1-5 are triggered when:

- $\geq 2,000$  sq. ft. new and replaced hard surface area, or
- $\geq 7,000$  sq. ft. land disturbance

MRs #1-9 are triggered when:

- $\geq 5,000$  sq. ft. new and replaced hard surface area (note: additional thresholds for replaced hard surfaces apply to the application of Minimum Requirements #6 and #7), or
- $\geq \frac{3}{4}$  acre vegetation to lawn/landscape, or

- ≥ 2.5 acres native vegetation to pasture

### LID Performance Standard

In order to meet the LID Performance Standard, stormwater discharges must match the developed discharge durations to a range of predeveloped discharge rates from 8% to 50% of the 2-year peak flow. If a site must meet MR #7 it must also match flow durations between 8% of the 2-year flow through the full 50-year flow.

### Mandatory Lists 1 and 2

If meeting the LID Performance Standard is not desired or feasible, projects may meet LID requirements using either Mandatory List 1 or Mandatory List 2. Smaller projects that *only* trigger MRs #1-5 may choose from meeting the LID Performance Standard OR utilizing required BMPs as described in List 1. Larger projects triggering MRs #1-9 have varying LID requirements based on location relative to the Urban Growth Area (UGA) and the size of the parcel. If the project is within the UGA, or outside of it but on a parcel less than 5 acres, meeting the LID Performance Standard OR choosing BMPs as described in List 2 may be chosen. If the project is outside of the UGA on a parcel larger than 5 acres then the LID Performance Standard must be met.

Surface Types	List #1 BMPs	List #2 BMPs
Lawn & Landscaped Areas	Post-Construction Soil Quality & Depth (T5.13)	Post-Construction Soil Quality & Depth (T5.13)
Roofs	1. Full Dispersion (T5.30) or Downspout Full Infiltration (T5.10A)	1. Full Dispersion (T5.30) or Downspout Full Infiltration (T5.10A)
	<b>2. Rain Gardens (T5.14A) or Bioretention (T7.30)</b>	<b>2. Bioretention (T7.30)</b>
	3. Downspout Dispersion (T5.10B)	3. Downspout Dispersion (T5.10B)
	4. Perforated Stub-out Connections (T.5.10C)	4. Perforated Stub-out Connections (T.5.10C)
Other Hard Surfaces	1. Full Dispersion (T5.30)	1. Full Dispersion (T5.30)
	<b>2. Permeable Pavement (T5.15), or Rain Gardens (T5.14A), or Bioretention (T7.30)</b>	<b>2. Permeable Pavement (T5.15)</b>
	3. Sheet Flow Dispersion (T5.12) or Concentrated Flow Dispersion (T5.11)	<b>3. Bioretention (T7.30)</b>
		4. Sheet Flow Dispersion (T5.12) or Concentrated Flow Dispersion (T5.11)

*Table depicting BMPs for Lists 1 and 2 with major differences bolded (note: rain gardens and bioretention facilities must have a minimum horizontally projected surface area below the overflow that is at least 5% of the total surface area draining to it)*

All projects MUST implement [BMP T5.13: Post-Construction Soil Quality and Depth](#) for lawn and landscaped areas that are disturbed as a result of the project, whether utilizing the LID Performance Standard or one of the mandatory lists.

## On-site Stormwater Management BMPs

All LID BMPs are also known as On-site Stormwater Management BMPs and may be used to meet MR #5 —onsite stormwater management. The complete Western Washington list includes:

- Downspout Full Infiltration (BMP T5.10A)
- Downspout Dispersion Systems (BMP T5.10B)
- Perforated Stub-out Connections (BMP T5.10C)
- Concentrated Flow Dispersion (BMP T5.11)
- Sheet Flow Dispersion (BMP T5.12)
- Post-Construction Soil Quality and Depth (BMP T5.13)
- Rain Gardens (BMP T5.14A)
- Bioretention (BMP T5.14B)
- Permeable Pavements (BMP T5.15)
- Tree Retention and Tree Planting (BMP T5.16)
- Vegetated Roofs (BMP T5.17)
- Reverse Slope Sidewalks (BMP T5.18)
- Minimal Excavation Foundations (BMP T5.19)
- Rainwater Harvesting (BMP T5.20)
- Full Dispersion (BMP T5.30)

See the [2014 Stormwater Management Manual for Western Washington](#) for greater detail of Low Impact Development Best Management Practices (LID BMPs).

Information relevant to Eastern Washington BMPs can be found in the “[Eastern Washington Low Impact Guidance Manual](#).” LID BMPs covered in the guidance manual include:

- Amending Construction Site Soils (4.2)
- Dispersion (4.3)
- Bioretention (4.4)
- Trees (4.5)
- Permeable Pavement (4.6)
- Vegetated Roofs (4.7)
- Minimal Excavation Foundations (4.8)
- Rainwater Harvesting (4.9)

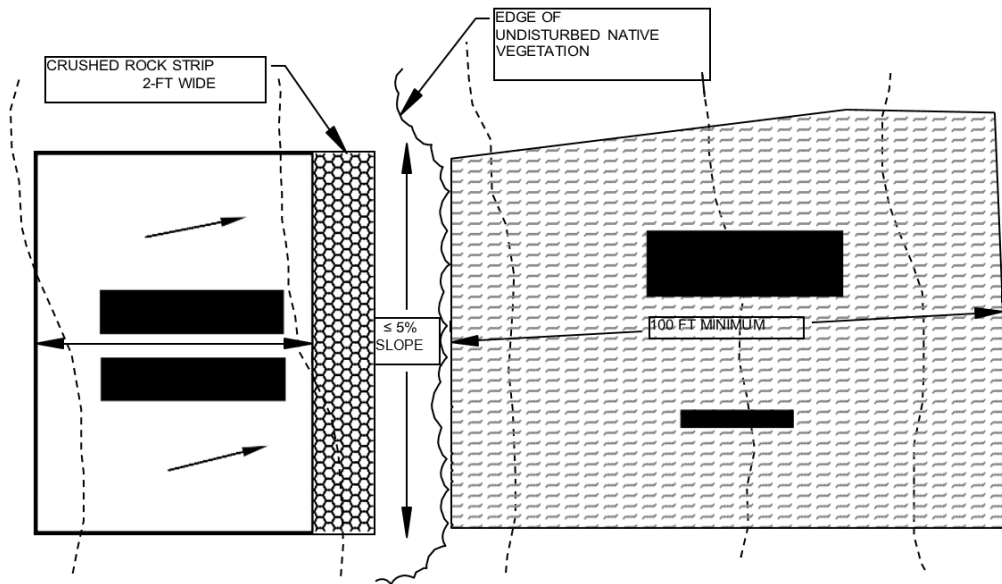


**Concentrated Flow Dispersion (BMP T5.11):** Dispersion of concentrated flows from driveways or other pavement through a vegetated pervious area attenuates peak flows by slowing entry of the runoff into the conveyance system, allowing for some infiltration, and providing some water quality benefits.



*Water from the sloped driveway empties to a bioretention area*

**Sheet Flow Dispersion (BMP T5.12):** The simplest method of runoff control. This BMP can be used for any impervious or pervious surface that is graded to avoid concentrating flows.



*Sheet Flow Dispersion (Not to Scale)*  
(King County Surface Water Design Manual Figure C.2.1.E)

**Compost-amended Soils (BMP T5.13):** Post-Construction Soil Quality and Depth: Regain greater stormwater functions post development, providing increased treatment of pollutants that result from development and habitation, and minimizing the need for some landscaping chemicals, thus reducing pollution through prevention.



*Creation of bioretention soil media/mix (BSM) composed of 60% compost and 40% sand*

**Rain Gardens (BMP T5.14A):** Rain gardens are non-engineered, shallow landscaped depressions with compost-amended soils and adapted plants.



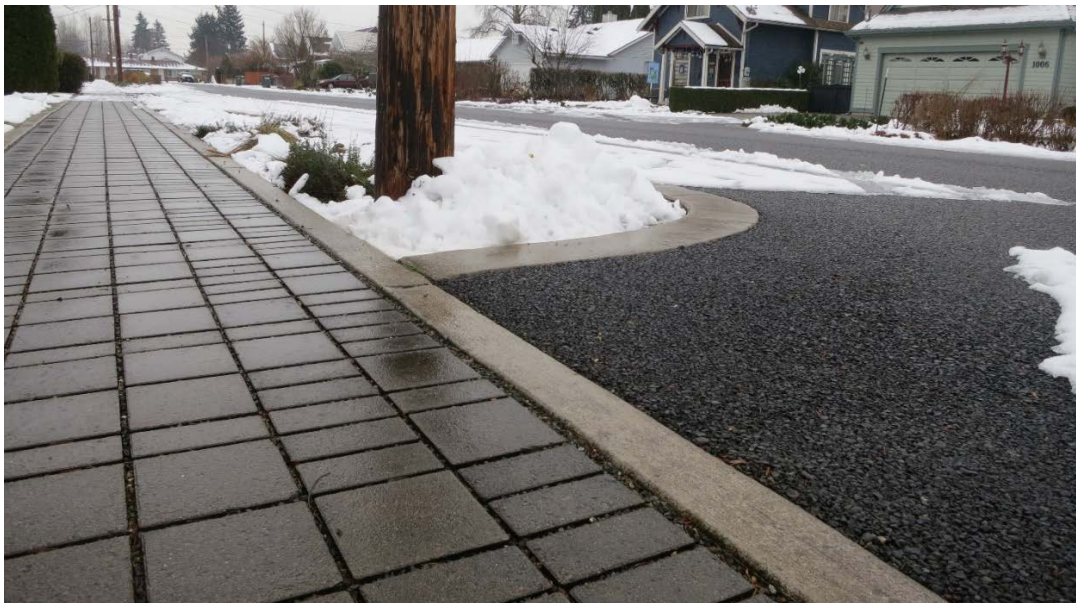
*Raingarden planted with large shrubs and small trees*

**Bioretention (BMP T5.14B):** Bioretention areas are engineered, shallow landscaped depressions with a designed soil mix and plants adapted to the local climate and soil moisture conditions which receive stormwater from a contributing area.



*Large bioretention facility in Western Washington*

**Permeable Pavement (BMP T5.15):** Pervious concrete, porous asphalt, permeable pavers or other forms of pervious or porous paving material intended to allow passage of water through an aggregate base that provides structural support and acts as a stormwater reservoir.



*Permeable sidewalk made of pavers and roadway made of porous asphalt*

**Tree Retention and Tree Planting (BMP T5.16):** Retained and newly planted trees will help with interception, transpiration, and infiltration of stormwater.



*The function of trees as LID BMPs ("Urban Tree Storage\_IL" by [Center for Neighborhood Technology](#) is licensed under [CC BY 2.0](#) / Labeling added to original)*

**Vegetated Roofs (BMP T5.17):** Vegetated roofs (sometimes known as ecoroofs or green roofs) are thin layers of engineered soil and vegetation constructed on top of conventional flat or sloped roofs.



*Vegetated roof planted with sedums*



**Minimal Excavation Foundations (BMP T5.19):** Foundations that do not disturb, or minimally disturb, the natural soil profile within the footprint of the structure. This preserves most of the hydrologic properties of the native soil.



*Home built with a PIN foundation system.*

**Rainwater Harvesting (BMP T5.20):** The capture and storage of rainwater for beneficial use.



*Rainwater cistern*

*Photo provided by Chris Webb & Associates, Inc.*

**Full Dispersion (BMP T5.30):** Release of surface and stormwater runoff such that the flow spreads over a wide area and is located so as not to allow flow to concentrate anywhere upstream of a drainage channel with erodible underlying granular soils. This BMP allows for “fully dispersing” runoff from impervious surfaces and cleared areas that protect at least 65% of the site (or a threshold discharge area on the site) in a forest or native condition.



*Site plan minimizing developed areas, allowing for nearly complete dispersion of stormwater onsite  
Provided by AHBL, Pierce County, and WSU-Extension*