



# Small Project Stormwater Requirements

## Introduction

Construction projects that:

Create more than 2,000 square feet but less than 5,000 square feet of new plus replaced hard surface

or

Disturb more than 7,000 square feet but less than 1 acre of land

are required to meet Minimum Requirements (MRs) #1-5. Projects of this scale are generally less impactful in nature and straightforward to manage with regards to stormwater -- which, is why applicants are provided the option to use the City's pre-engineered templates to meet the minimum requirements.

- MR#1** - Stormwater Site Plans (Worksheet A1 & A2)
- MR#2** - Construction Stormwater Pollution Prevention Plan (Worksheet B1 & B2)
- MR#3** - Source Control (Worksheet A)
- MR#4** - Preservation of Natural Drainage Systems and Outfalls (Worksheet A)
- MR#5** - On-site Stormwater Management (Worksheet A/C/D/E)

## What is On-site Stormwater Management? (MR #5)

On-site stormwater management is a stormwater and land use management strategy that mimics how water at a site would naturally react prior to development, and uses design techniques for infiltration, filtration, storage, evaporation and transpiration. Instead of conveying and managing / treating stormwater in large facilities located at the bottom of drainage areas, LID addresses stormwater through small, distributed features located at the lot level.



Rain garden

The City offers LID rebates that apply to both new construction and reconstruction projects. For more information, visit the City of Port Angeles website at [www.cityofpa.us](http://www.cityofpa.us)

## What are the benefits of LID?

Low Impact Development (LID) provides many benefits to communities on a large and small-scale. Not only can it make city streets and sidewalks a greener and more aesthetically pleasing place to be, it simultaneously reduces flooding, improves water quality, and improves groundwater recharge. LID can enhance the local environment, protect public health, and improve community livability.



Permeable pavement





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## What are Best Management Practices (BMPs)?

A best management practice (or BMP) is a structural or management practice designed to prevent or reduce the release of pollutants.

Stormwater management BMPs are control measures taken to mitigate changes to both quantity and quality of urban runoff caused through changes to land use. Generally BMPs focus on water quality problems caused by increased impervious surfaces from land development.

BMPs are designed to reduce stormwater volume, peak flows, and/or non-point source pollution through infiltration, filtration, storage, evaporation, and transpiration.

### Types of LID BMPs:

- o Bioretention
- o Rain gardens
- o Permeable pavement
- o Roof downspout controls
- o Dispersion
- o Soil quality and depth
- o Vegetated roofs
- o Rainwater harvesting



Permeable pavement



Rain garden



Bioretention swale

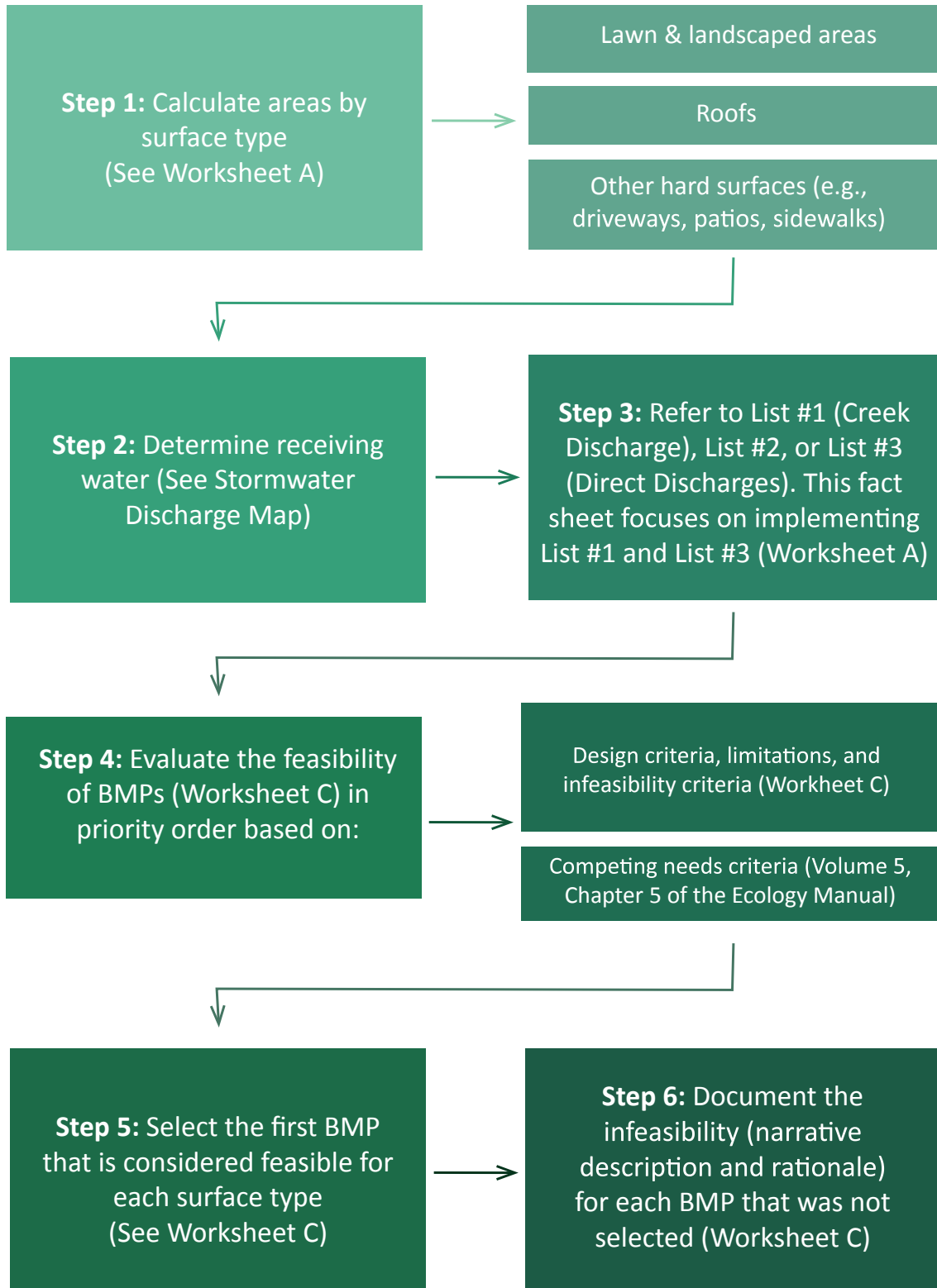


Bioretention



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## How to Implement Minimum Requirement #5 (On-Site Stormwater Management)





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## How to Implement MR #5: Expansion of STEP 3

How stormwater runoff should be permanently managed on your site is dependent on the physical location of your project and your project site characteristics. Projects located in a drainage basin that drain to a creek are required to use LIST 1. Projects located in drainage basins that drain to the Strait are required to use LIST 3. A map of the City that graphically describes which list to use based on the location of your project is attached to Worksheet A1. Once the appropriate List is determined, the BMPs under each category shall be considered for use in priority order. The first feasible BMP must be employed under each category. If a BMP is determined to be infeasible, move down to the next BMP on the list and document your justification via Worksheet C.

### List #1 - Discharges to a Creek

For each category, select the first feasible item on the list:

#### Category A: Lawn and landscaped areas

1. Post-construction soil quality and depth

#### Category B: Roofs

1. Full dispersion or downspout full infiltration systems
2. Rain gardens or bioretention
3. Downspout dispersion systems
4. Perforated stub-out connections

#### Category C: Other hard surfaces

1. Full dispersion
2. Permeable pavement, rain gardens, or bioretention
3. Sheet flow dispersion or concentrated flow dispersion

### List #3 - Discharges to Saltwater

For each category, select the first feasible item on the list:

#### Category A: Lawn and landscaped areas

1. Post-construction soil quality and depth

#### Category B: Roofs

1. Downspout full infiltration systems
2. Downspout dispersion systems
3. Perforated stub-out connections

#### Category C: Other hard surfaces

1. Sheet flow dispersion
2. Concentrated flow dispersion

Consider and Apply BMPs in each category in the order they are listed



\*More technical information about the BMPs listed above is provided in Worksheet A1.

**SIDE NOTE: In case you're wondering how we jumped from List #1 to List #3, List #2 also exists. It applies to projects with new or replaced hard surfaces greater Than 5000 sq-ft. These Small Project templates are not applicable for use on projects of that scale - which is why they are not discussed in greater detail.**



# Small Project Stormwater Requirements

## Applicable Definitions

Selected from Ecology's 2012 Stormwater Management Manual for Western Washington (SWMMWW) and the City's 2017 Urban Services and Standards Guideline (USSG). Some definitions have been condensed or modified from their original form.

<b>Best management practice (BMP)</b>	The schedules of activities, prohibitions of practices, maintenance procedures, and structural and/or managerial practices, that when used singly or in combination, prevent or reduce the release of pollutants and other adverse impacts to waters of Washington State.
<b>Common Plan of Development or Sale</b>	A site where multiple separate and distinct construction activities may be taking place at different times on different schedules and/or by different contractors, but still under a single plan. If the project is part of a common plan of development or sale, the disturbed area of the entire plan must be used in determine permit requirements.
<b>Compaction</b>	The densification, settlement, or packing of soil in such a way that permeability of the soil is reduced.
<b>Compost</b>	Organic material that has undergone biological degradation and transformation under controlled conditions designed to promote aerobic decomposition at a solid waste facility in compliance with the requirements of Chapter 173-350 WAC, or biosolids composted in compliance with Chapter 173-308 WAC. Composting is a form of organic material recycling.
<b>Construction Stormwater Pollution Prevention Plan (SWPPP)</b>	A document that describes the potential for pollution problems on a construction project and explains and illustrates the measures to be taken on the construction site to control those problems. Also known as Minimum Requirement #2.
<b>Critical Areas</b>	At a minimum, areas which include wetlands, areas with a critical recharging effect on aquifers used for potable water, fish and wildlife habitat conservation areas, frequently flooded areas, geologically hazardous areas, including unstable slopes, and associated areas and ecosystems.
<b>Detention facility</b>	An above or below ground facility, such as a pond or tank, that temporarily stores stormwater runoff and subsequently releases it at a slower rate than it is collected by the drainage facility system. There is little or no infiltration of stored stormwater.
<b>Dispersion</b>	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.
<b>Erosion and sedimentation control</b>	Any temporary or permanent measures taken to reduce erosion; control siltation and sedimentation; and ensure that sediment-laden water does not leave the site.
<b>Filter fabric</b>	A woven or nonwoven, water-permeable material generally made of synthetic products such as polypropylene and used in stormwater management and erosion and sediment control applications to trap sediment or prevent the clogging of aggregates by fine soil particles. Often called a "silt fence."
<b>Filter fabric fence</b>	A temporary sediment barrier consisting of a filter fabric stretched across and attached to supporting posts and entrenched. The filter fence is constructed of stakes and synthetic filter fabric with a rigid wire fence backing where necessary for support.
<b>Filter strip</b>	A grassy area with gentle slopes that treats stormwater runoff from adjacent paved areas before it concentrates into a discrete channel.
<b>Hard Surface</b>	An impervious surface, a permeable pavement, or a vegetated roof.
<b>Hydraulic Conductivity coefficient</b>	The quality of saturated soil that enables water or air to move through it. Also known as permeability coefficient.



# Small Project Stormwater Requirements

## Applicable Definitions (continued)

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<b>Hydrologic Soil Groups (USDA Soil Type)</b>	<p>A soil characteristic classification system defined by the U.S. Soil Conservation Service (SCS) in which a soil may be categorized into one of four soil groups (A, B, C, or D) based upon infiltration rate and other properties.</p> <p><b>Type A:</b> Low runoff potential. Soils having high infiltration rates, even when thoroughly wetted, and consisting chiefly of deep, well drained to excessively drained sands or gravels. These soils have a high rate of water transmission.</p> <p><b>Type B:</b> Moderately low runoff potential. Soils having moderate infiltration rates when thoroughly wetted, and consisting chiefly of moderately fine to moderately coarse textures. These soils have a moderate rate of water transmission.</p> <p><b>Type C:</b> Moderately high runoff potential. Soils having slow infiltration rates when thoroughly wetted, and consisting chiefly of soils with a layer that impedes downward movement of water, or soils with moderately fine to fine textures. These soils have a slow rate of water transmission.</p> <p><b>Type D:</b> High runoff potential. Soils having very slow infiltration rates when thoroughly wetted, and consisting chiefly of clay soils with a high swelling potential, soils with a permanent high water table, soils with a hardpan, till, or clay layer at or near the surface, soils with a compacted subgrade at or near the surface, and shallow soils or nearly impervious material. These soils have a very slow rate of water transmission.</p>
<b>Impaired capacity system</b>	<p>A condition where the flow volume or rate is greater than what a facility (e.g., pipe, pond, vault, swale, ditch, drywell, etc.) is designed to safely contain, receive, convey, reduce pollutants from, or infiltrate to meet a specific performance standard. System capacity shall be evaluated using a qualitative analysis and/or a quantitative analysis which shall include continuous runoff modeling of the 25-year recurrence interval flow. A system is considered to be impaired when it is not able to convey the 25-year recurrence interval flow without surcharging.</p>
<b>Impervious surface</b>	<p>A non-vegetated surface area which either prevents or retards the entry of water into the soil mantle as under natural conditions prior to development. A non-vegetated surface area which causes water to run off the surface in greater quantities or at an increased rate of flow from the flow present under natural conditions prior to development. Common impervious surfaces include, but are not limited to, roof tops, walkways, patios, driveways, parking lots or storage areas, concrete or asphalt paving, gravel roads, packed earthen materials, and oiled, macadam or other surfaces which similarly impede the natural infiltration of stormwater.</p>
<b>Infiltration facility (or system)</b>	<p>A drainage facility designed to use the hydrologic process of surface and stormwater runoff soaking into the ground, commonly referred to as a percolation, to dispose of surface and stormwater runoff.</p>
<b>Infiltration rate</b>	<p>The rate, usually expressed in inches/hour, at which water moves downward (percolates) through the soil profile.</p>
<b>Land disturbing activity</b>	<p>Any activity that results in a change in the existing soil cover (both vegetative and nonvegetative) and/or the existing soil topography. Land disturbing activities include, but are not limited to clearing, grading, filling, and excavation. Compaction that is associated with stabilization of structures and road construction shall also be considered a land disturbing activity.</p>
<b>Low Impact Development (LID)</b>	<p>A stormwater and land use management strategy that strives to mimic pre-disturbance hydrologic processes of infiltration, filtration, storage, evaporation and transpiration by emphasizing conservation, use of on-site natural features, site planning, and distributed stormwater management practices that are integrated into a project design.</p>
<b>Native vegetation</b>	<p>Vegetation comprised of plant species, other than noxious weeds, that are indigenous to the coastal region of the Pacific Northwest and which reasonably could have been expected to naturally occur on the site.</p>
<b>Organic matter</b>	<p>Organic matter as decomposed animal or vegetable matter. It is measured by ASTM D 2974. Organic matter is an important reservoir of carbon and a dynamic component of soil and the carbon cycle. It improves soil and plant efficiency by improving soil physical properties including drainage, aeration, and other structural characteristics. It contains the nutrients, microbes, and higher-form soil food web organisms necessary for plant growth.</p>



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## Applicable Definitions (continued)

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<b>Outwash soils</b>	Soils formed from highly permeable sands and gravels.
<b>Permeable Pavement</b>	Pervious concrete, porous asphalt, permeable pavers or other forms of pervious or porous paving material intended to allow passage of water through the pavement section. It often includes an aggregate base that provides structural support and acts as a stormwater reservoir.
<b>Permeable soils</b>	Soil materials with a sufficiently rapid infiltration rate so as to greatly reduce or eliminate surface and stormwater runoff. These soils are generally classified as SCS hydrologic soil types A and B.
<b>Pervious Surface</b>	A surface material that allows stormwater to infiltrate into the ground. Examples include lawn, landscape, pasture, native vegetation areas, and permeable pavements.
<b>Project site</b>	That portion of a property, properties, or right of way subject to land disturbing activities, new hard surfaces, or replaced hard surfaces.
<b>Replaced hard surface</b>	For structures, the removal and replacement of hard surfaces down to the foundation. For other hard surfaces, the removal down to bare soil or base course and replacement.
<b>Sheet flow</b>	Runoff that flows over the ground surface as a thin, even layer, not concentrated in a channel.
<b>Stormwater</b>	That portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, pipes and other features of a stormwater drainage system into a defined surface waterbody, or a constructed infiltration facility.
<b>Stormwater facility</b>	A constructed component of a stormwater drainage system, designed or constructed to perform a particular function, or multiple functions. Stormwater facilities include, but are not limited to, pipes, swales, ditches, culverts, street gutters, detention ponds, retention ponds, constructed wetlands, infiltration devices, catch basins, oil/water separators, and biofiltration swales.
<b>Stormwater Site Plan</b>	The comprehensive report containing all of the technical information and analysis necessary for regulatory agencies to evaluate a proposed new development or redevelopment project for compliance with stormwater requirements. Contents of the Stormwater Site Plan will vary with the type and size of the project, and individual site characteristics. It includes a Construction Stormwater Pollution Prevention Plan (Construction SWPPP) and a Permanent Stormwater Control Plan (PSC Plan).
<b>Tightline</b>	A continuous length of pipe that conveys water from one point to another (typically down a steep slope) with no inlets or collection points in between.
<b>Till</b>	A layer of poorly sorted soil deposited by glacial action that generally has very low infiltration rates.
<b>Topsoil</b>	The upper portion of a soil, usually dark colored and rich in organic material.
<b>Wetlands</b>	Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas. Wetlands do not include those artificial wetlands intentionally created from nonwetland sites, including, but not limited to, irrigation and drainage ditches, grass-lined swales, canals, detention facilities, wastewater treatment facilities, farm ponds, and landscape amenities, or those wetlands created after July 1, 1990, that were unintentionally created as a result of the construction of a road, street, or highway. Wetlands may include those artificial wetlands intentionally created from nonwetland areas to mitigate the conversion of wetlands.