

PC-14 BIORETENTION

Reference: Maryland Stormwater Design Manual.

**BMP Objectives**

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|-------------------------------------|------------------------------|
| <input checked="" type="checkbox"/> | Perimeter Control |
| <input type="checkbox"/> | Slope Protection |
| <input type="checkbox"/> | Borrow and Stockpiles |
| <input checked="" type="checkbox"/> | Drainage Areas |
| <input checked="" type="checkbox"/> | Sediment Trapping |
| <input checked="" type="checkbox"/> | Stream Protection |
| <input type="checkbox"/> | Temporary Stabilizing |
| <input type="checkbox"/> | Permanent Stabilizing |

Definition and Purpose

Bioretention is used to capture and treat a volume of stormwater runoff. The bioretention area is an excavated pit filled with planting soil or a sand/planting soil mix. Runoff ponds in the depression on top of the bioretention area and percolates through the sand/soil later. Flows are then conveyed by an underdrain system connected to a storm sewer, open channel, or stream.

Appropriate Applications

- Upstream grass channels or grass filter strips can be used to help protect the integrity of the basin.
- Excavated area is lined with layers of filter fabric.
- Runoff sources can be overland flow from impervious areas or discharges from drainage pipes.
- Bioretention:
 - Can be used to enhance stormwater quality, reduce peak runoff, and recharge groundwater.
 - Can be used in residential and non-residential development areas.
 - Is efficient for removing a wide variety of pollutants including suspended solids and nutrients.
 - Can be off-line, receiving runoff from overland flow or other structures in a traditional drainage system, or on-line, where structures are located in grass

swales or other conveyance systems that have been modified to enhance pollutant removal.

- Is generally suited for drainage areas of 10 acres or less.
- Is most effective if the retention area can be located as close as possible to the runoff source.

Design Parameters

- Generally, basins are designed to infiltrate retained runoff within a 40-hour period.
- A dense vegetative cover needs to be established over all contributing pervious areas before runoff can be conveyed to the filter.
- Screens/grated inlets should be considered in design to keep debris out of filter chambers.
- Filter bed typically has a depth of approximately 2.5 to 4 feet.
- The top of the bioretention area is depressed to allow for 6 to 12 inches of stormwater ponding.

Maintenance and Inspection

- Conduct inspections as required by the NPDES permit or contract specifications during construction.
- Periodic inspection and maintenance will be required based on post-construction site conditions.
- Make any repairs necessary to ensure the measure is operating properly.
- Regular maintenance is necessary to remove surface sediment, trash, debris, and leaf litter, and dead or diseased plant material.