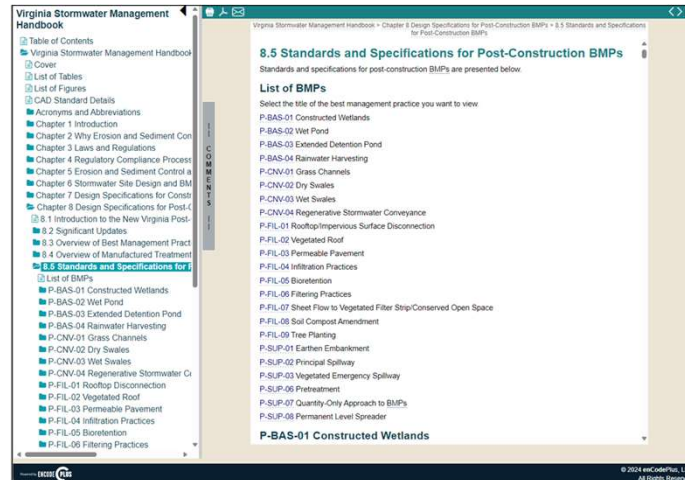


Module 4 - Post-Construction Best Management Practices (P-BMPs)



Module 4

1

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4a. Stormwater Management Program

4b. 17 Non-Proprietary Post-Construction BMPs

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Module 4a

Stormwater Management Program



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Changes in Landcover

Increase in population, impervious cover, and the loss of tree cover has resulted in **excessive amounts of stormwater runoff.**



4a. | STORMWATER MANAGEMENT PLAN



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Changes in Landcover

Stormwater runoff harms streams in two ways:

1. Stormwater runoff picks up pollutants like sediment, trash, oil, and fertilizer and carries them to streams **affecting water quality**
2. With less infiltration, volume and velocity increase. **Increases in water quantity** can result in channel erosion and flooding as well as pose risks to downstream properties

4a. | STORMWATER MANAGEMENT PLAN



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Changes in Landcover

What's the solution?

- Stormwater regulations include **technical criteria** that must be met in the SWM plan
- Primary objective of technical criteria is to **protect against the impacts** that result from development and the associated **increases in stormwater runoff**

4a. | STORMWATER MANAGEMENT PLAN



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Water Quantity Criteria



7

Flood and Erosion Control

Reduce
runoff

- Rainwater harvesting, permeable pavement, infiltration

Detain water
and slowly
release

- Extended detention basins, wet ponds, constructed wetlands

4a. | STORMWATER MANAGEMENT PLAN



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Water Quality Criteria P-BMPs

Most reduce phosphorus loads (water quality)

- **All remove pollutants** from stormwater runoff - Quality
- Calculated from the Virginia Runoff Reduction Spreadsheet
- **Some** also provide runoff reduction - Quantity
- Multiple P-BMPs can work together to form a treatment train

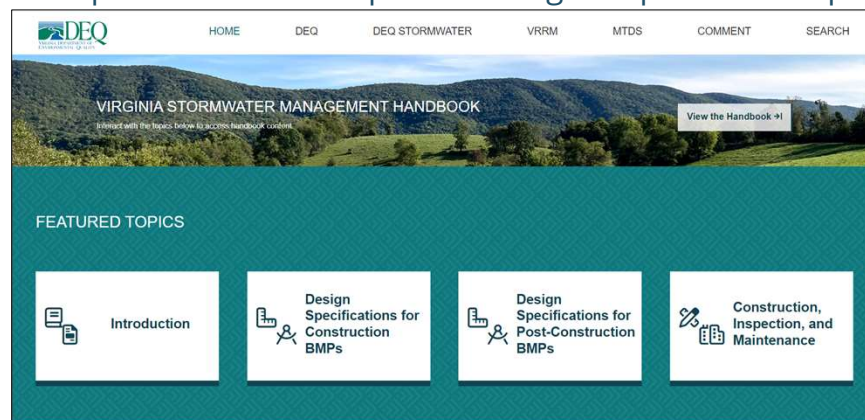
4a. | STORMWATER MANAGEMENT PLAN



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Virginia Stormwater Management Handbook

<https://online.encodeplus.com/regs/deq-vi/index.aspx>



4a. | STORMWATER MANAGEMENT PLAN

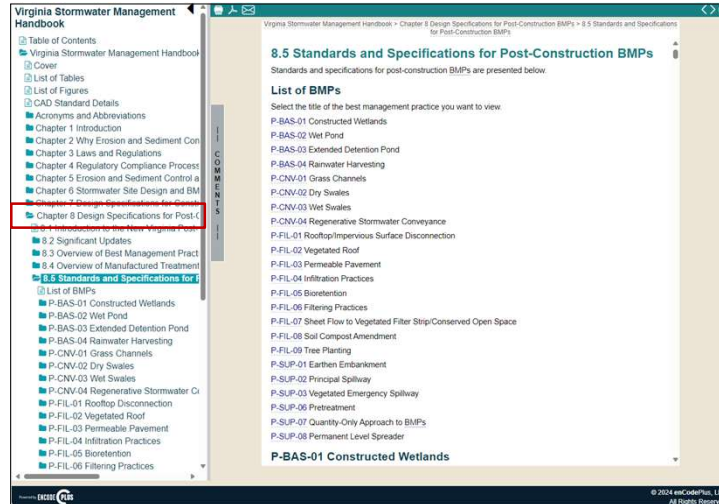


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P-BMPs

VSWHB

Ch. 8



4a. | STORMWATER MANAGEMENT PLAN



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Numbering and Nomenclature

First letter represents the type of BMP:

- Post-Construction (P)

Number represents the specific BMP per grouping

P-BAS-02

Three letters represent the primary function of the BMP:

- Basins (BAS)
- Conveyance (CNV)
- Filtration and Infiltration (FIL)
- Support Components (SUP)

4a. | STORMWATER MANAGEMENT PLAN



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P-BMPs – Pollution Control

3 primary mechanisms to control pollution



Infiltration



Settling



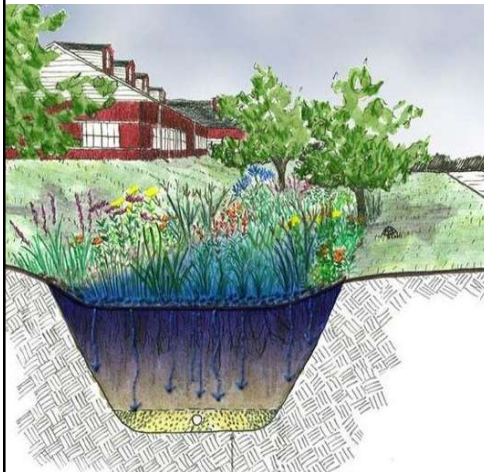
Vegetative uptake or filtering

4a. | STORMWATER MANAGEMENT PLAN



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Infiltration



- Water soaks through the basin into subsoil
- Sediment and pollutants stay in basin

4a. | STORMWATER MANAGEMENT PLAN



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Settling



- Runoff collects in a basin
- Heavy solids and pollutants settle
- Cleaner runoff is discharged

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Vegetative Uptake or Filtering



- Pollutants filtered by contact with plants, root uptake, or consumption by microbes

4a. | STORMWATER MANAGEMENT PLAN



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Module 4b

17 Non-Proprietary Post-Construction BMPs (P-BMPs)



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P-BAS-01: Constructed Wetlands



4b. | P-BMPs



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P-BAS-02: Wet Pond



4b. | P-BMPs



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P-BAS-03: Extended Detention Pond



4b. | P-BMPs



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P-BAS-04: Rainwater Harvesting



- Intercept, divert, store and release rainfall for future re-use

4b. | P-BMPs



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P-CNV-01: Grass Channels



4b. | P-BMPs



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P-CNV-02: Dry Swales



4b. | P-BMPs



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P-CNV-03: Wet Swales



4b. | P-BMPs



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P-CNV-04: Regenerative Conveyance Channels



4b. | P-BMPs



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P-FIL-01: Rooftop (Impervious Area) Disconnection

1. Simple disconnection
2. Disconnection leading to another P-BMP



4b. | P-BMPs



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P-FIL-02: Vegetated Roofs



4b. | P-BMPs



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P-FIL-03: Permeable Pavement

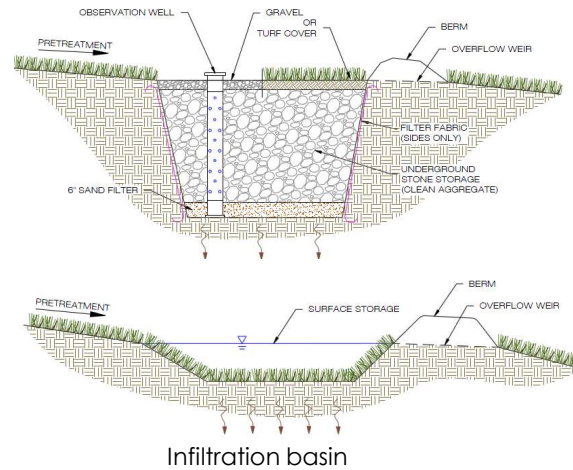


4b. | P-BMPs



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P-FIL-04: Infiltration



4b. | P-BMPs



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P-FIL-05: Bioretention Basins



4b. | P-BMPs



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P-FIL-06: Filtering Practices

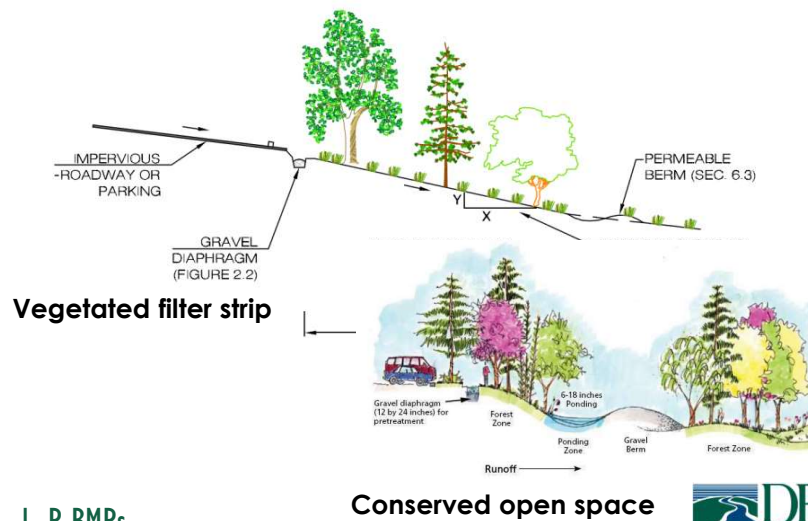


4b. | P-BMPs



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P-FIL-07: Sheet Flow to Vegetated Filter Strip or Conserved Open Space



4b. | P-BMPs

Conserved open space



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P-FIL-08: Soil Compost Amendments



4b. | P-BMPs



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P-FIL-09: Tree Planting



4b. | P-BMPs



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Q&A



4a. SWM program



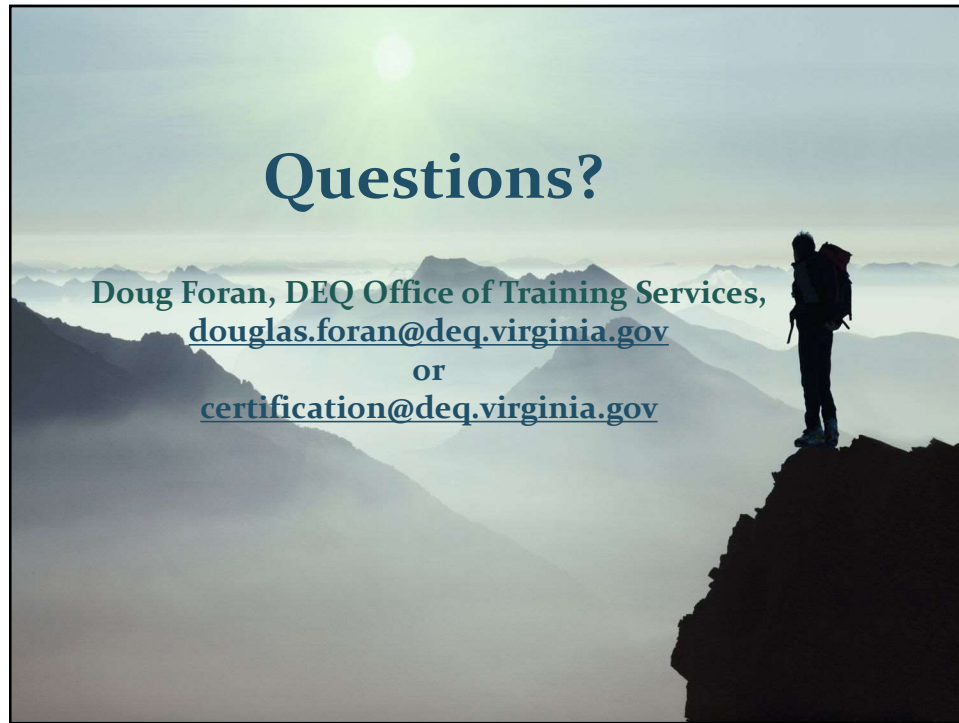
4b. P-BMPs



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