

**Note:** Processed steel fiber and crushed calcitic limestone are the only sand filter amendments for which Ecology has data that documents increased dissolved metals removal. Though Ecology is interested in obtaining additional data on the effectiveness of these amendments, local governments may exercise their judgment on the extent to which to allow their use.

- **Large Wetpond** – See Chapter 10
- **Media Filter targeted for phosphorus removal** – See Chapter 12

**Note:** The use of a Stormfilter™ with iron-infused media is approved for use in limited circumstances, provided a monitoring program consistent with adopted protocols is implemented.

- **Two-Facility Treatment Trains** – See Table 3.1

<b>Table 3.1 – Treatment Trains for Phosphorus Removal</b>	
<b>First Basic Treatment Facility</b>	<b>Second Treatment Facility</b>
Biofiltration Swale	Basic Sand Filter or Sand Filter Vault
Filter Strip	Linear Sand Filter (no presettling needed)
Linear Sand Filter	Filter Strip
Basic Wetpond	Basic Sand Filter or Sand Filter Vault
Wetvault	Basic Sand Filter or Sand Filter Vault
Stormwater Treatment Wetland	Basic Sand Filter or Sand Filter Vault
Basic Combined Detention and Wetpool	Basic Sand Filter or Sand Filter Vault

### 3.4 Enhanced Treatment Menu

**Where Applied:** Enhanced treatment is required for:

Industrial project sites,  
 Commercial project sites,  
 Multi-family project sites, and  
 Arterials and highways

that discharge to fish-bearing streams, lakes, or to waters or conveyance systems tributary to fish-bearing streams or lakes. Areas of multifamily, industrial and commercial project sites that are identified as subject to Basic Treatment requirements are not subject to Enhanced Treatment requirements. For developments with a mix of land use types, the Enhanced Treatment requirement shall apply when the runoff from the areas subject to the Enhanced Treatment requirement comprise 50% or more of the total runoff within a threshold discharge area.

**Performance Goal:** The Enhanced Menu facility choices are intended to provide a higher rate of removal of dissolved metals than Basic Treatment

facilities. Due to the sparse data available concerning dissolved metals removal in stormwater treatment facilities, a specific numeric removal efficiency goal could not be established at the time of publication. Instead, Ecology relied on available nationwide and local data, and knowledge of the pollutant removal mechanisms of treatment facilities to develop the list of options below. In addition, the choices are intended to achieve the Basic Treatment performance goal. The performance goal assumes that the facility is treating stormwater with dissolved Copper typically ranging from 0.003 to 0.02 mg/l, and dissolved Zinc ranging from 0.02 to 0.3 mg/l.

The performance goal applies to the water quality design storm volume or flow rate, whichever is applicable, and on an annual average basis. The incremental portion of runoff in excess of the water quality design flow rate or volume can be routed around the facility (off-line treatment facilities), or can be passed through the facility (on-line treatment facilities) provided a net pollutant reduction is maintained. Ecology encourages the design and operation of treatment facilities that engage a bypass at flow rates higher than the water quality design flow rate as long as the reduction in dissolved metals loading exceeds that achieved with initiating bypass at the water quality design flow rate.

**Options:** Any one of the following options may be chosen to satisfy the enhanced treatment requirement:

- **Infiltration with appropriate pretreatment** – See Chapter 7
  - **Infiltration treatment**

If infiltration is through soils meeting the minimum site suitability criteria for infiltration treatment (See Chapter 7), a presettling basin or a basic treatment facility can serve for pretreatment.
  - **Infiltration preceded by Basic Treatment**

If infiltration is through soils that do not meet the soil suitability criteria for infiltration treatment, treatment must be provided by a basic treatment facility unless the soil and site fit the description in the next option below.
  - **Infiltration preceded by Enhanced Treatment**

If the soils do not meet the soil suitability criteria **and** the infiltration site is within ¼ mile of a fish-bearing stream, a tributary to a fish-bearing stream, or a lake, treatment must be provided by one of the other treatment facility options listed below.
- **Large Sand Filter** – See Chapter 8

- **Amended Sand Filter** – See Chapter 12

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- **Stormwater Treatment Wetland** – See Chapter 10
- **Two Facility Treatment Trains** – See Table 3.2

<b>First Basic Treatment Facility</b>	<b>Second Treatment Facility</b>
Biofiltration Swale	Basic Sand Filter or Sand Filter Vault or Media Filter <sup>(1)</sup>
Filter Strip	Linear Sand Filter with no pre-settling cell needed
Linear Sand Filter	Filter Strip
Basic Wetpond	Basic Sand Filter or Sand Filter Vault or Media Filter <sup>(1)</sup>
Wetvault	Basic Sand Filter or Sand Filter Vault or Media Filter <sup>(1)</sup>
Basic Combined Detention/Wetpool	Basic Sand Filter or Sand Filter Vault or Media Filter <sup>(1)</sup>
Basic Sand Filter or Sand Filter Vault with a presettling cell if the filter isn't preceded by a detention facility	Media Filter <sup>(1)</sup>
Footnote: (1) The media must be of a nature that has the capability to remove dissolved metals effectively based on at least limited data. Ecology includes Stormfilter's™ leaf compost and zeolite media in this category.	

### 3.5 Basic Treatment Menu

**Where Applied:** The Basic Treatment Menu is generally applied to:

- Project sites that discharge to the ground (see Step 3), UNLESS:
  - The soil suitability criteria for infiltration treatment are met (see Chapter 7), or
  - The project uses infiltration strictly for flow control – not treatment - and the discharge is within ¼-mile of a phosphorus sensitive lake (use the Phosphorus Treatment Menu), or within ¼ mile of a fish-bearing stream, or a lake (use the Enhanced Treatment Menu).
- Residential projects not otherwise needing phosphorus control in Step 4 (See Chapter 2) as designated by USEPA, the Department of Ecology, or a local government; and