

Media Filters Factsheet

1.0 GENERAL DESCRIPTION



Figure 1. Media filter (City of Portland OR)

Potential Treatment Mechanisms									
S	I	ET	FA	B	RH	S	F	P	T
			✓						✓
Legend: I = Infiltration					S = Sedimentation				
ET = Evapotranspiration					F = Flootation				
FA = Filtration and/or Adsorption					P = Plant Uptake				
B = Biochemical Transformation					T = Trash Capture				
RH = Rainfall and Runoff Harvest									

Media filters are usually in open bed or vault arrangements. Open bed filters generally have a settling area followed by the filter bed. The filter area typically has one or multiple perforated underdrains. Media filters can be made with one or multiple filtering media including, but not limited to, some mixture of two or more of the following: limestone, activated alumina, perlite, zeolites, sand, peat, biochar, and granular activated carbon. A schematic of a basic open bed, surface media filter is shown in Figure 2 and a schematic of a subsurface media filter is shown in Figure 3.

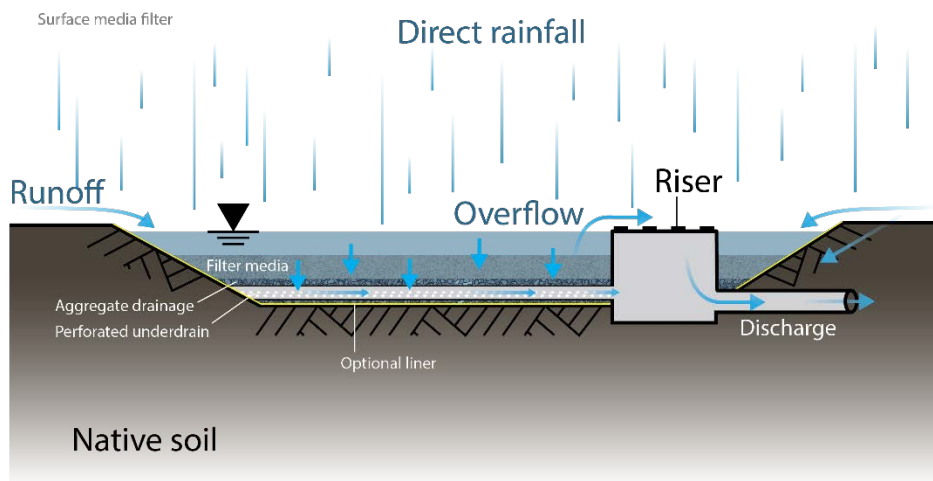


Figure 2. General schematic of a surface media filter

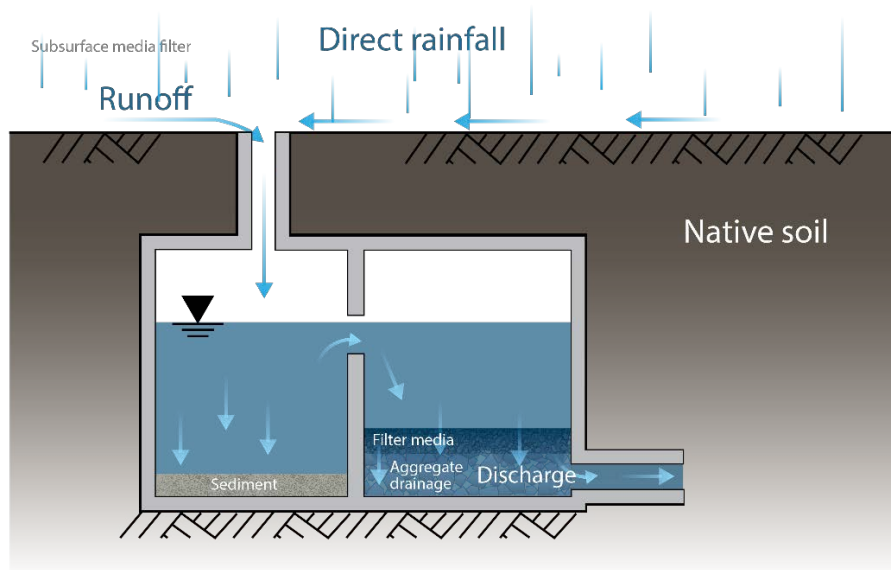


Figure 3. Schematic of a basic subsurface media filter

Media Filters Factsheet

1.1 Variations and Alternative Names

- Sand filters
- Austin sand filters
- Delaware sand filters
- DC sand filters
- Canister filters
- Alternative media filters

2.0 ADVANTAGES & LIMITATIONS

2.1 Advantages

- ✓ Typically provide high solids removal
- ✓ Can be used where space is limited
- ✓ Can be used where the water table is high
- ✓ Does not require vegetation management/irrigation
- ✓ Can be augmented with absorptive media to increase pollutant removal

2.2 Limitations

- ✗ If the design includes a constant pool of water (e.g., Delaware sand filter), vector issues may arise.

3.0 SITING

Media filters require maintenance access and an elevation change from drainage surface to storm drainage systems.

4.0 DESIGN CONSIDERATIONS

When designing a media filter, the following parameters should be considered:

- Contributing drainage area (CDA)
- Filter media
- Filter bed size
- Hydraulic residence time (for sorptive media)
- Unlined underdrain (optional, to allow infiltration)

5.0 CONSTRUCTION CONSIDERATIONS

- Stabilization of the CDA or diversion of flows during construction to prevent sediment loading

6.0 MAINTENANCE

- Inspections for adequate drainage to avoid vector breeding
- Removal of sediment and debris

7.0 REFERENCES

California Stormwater Quality Association (CASQA 2003). *Stormwater Best Management Practice Handbook: New Development and Redevelopment*. January 2003.

California Stormwater Quality Association (CASQA 2017). *Stormwater Best Management Practice Handbook: New Development and Redevelopment*. April 2017.

Sacramento Stormwater Quality Partnership (SSQP 2018). *Stormwater Quality Design Manual*. July 2018.

County of Placer, City of Roseville, City of Auburn, City of Lincoln, and Town of Loomis (County of Placer et al. 2016). *West Placer Storm Water Quality Design Manual*. April 2016.