



Facts About: Sand Filters

Stormwater Best Management Practices (BMPs)

Stormwater filtering practices capture and temporarily store runoff. The water passes through a filter bed of sand, gravel, organic matter, soil or other media to remove pollutants such as total suspended solids (TSS), total phosphorus (TP) and dissolved metals. The cleaned water is then returned to the conveyance system or allowed to infiltrate into underlying soils and recharge groundwater.

Sand Filter

A **sand filter** is a filtering device that is designed to filter rainwater through sand or gravel to remove pollutants such as TSS, TP, dissolved metals, microbiological elements, and litter. There are five different types of sand filters that can be implemented above and below ground.

Surface sand filters treat the largest drainage area of all the sand filters. The surface may either consist of sand or a grass turf cover. They have a filter lining and an underdrain system that then flows into either the storm drain system or another BMP. The **organic filter** is similar to a surface sand filter, but it uses an organic material mix instead of sand to achieve maximum nutrient or trace metal removal. The **pocket sand filter** is a smaller-scale surface sand filter usually found on smaller sites with lower sediment loads. An **underground sand filter** is a series of concrete chambers that filter debris. It can be a good option to provide filtering when there is limited space, like in ultra-urban areas. **Perimeter sand filters** use a sedimentation chamber and a filter bed to filter trash and debris. They are often found on the edge of parking lots in small sites with either flat terrain or a high water table.



Surface sand filter with grass turf cover



Surface sand filter



Underground Filter



Perimeter Sand Filter

Design Variants

- Surface sand filter
- Organic filter
- Pocket sand filter
- Underground sand filter
- Perimeter sand filter

Pollutant Removal Efficiencies

- Sediments 90%
- Phosphorus 60%
- Nitrogen 50% (as part of a system of environmental site design practices)

More Information

For information on specific design criteria, go to Maryland's Stormwater Design Manual:
mde.maryland.gov/programs/water/StormwaterManagementProgram/Pages/stormwater_design.aspx