



Michael Macnoskey

Filter for Less

Decreasing long-term maintenance costs without sacrificing performance

Filtering storm water is an effective way to remove the most challenging pollutants from urban runoff, including fine solids, soluble heavy metals and total nutrients. Though the physics of filtration are the same, there are many variables to consider when designing a storm water filtration system. It is important when designing a filter treatment system to consider a balanced approach that incorporates performance, hydraulics, longevity and life-cycle costs.

Longevity is a function of applying existing filtration physics to the maximum extent possible in order to facilitate maintenance activity frequency without sacrificing performance. Maintenance is an integral part of ensuring the long-term effectiveness of a filter system. The quality of treatment can be guaranteed only by a well maintained structure, whether it is proprietary or nonproprietary. The notion that some best management practices, including low-impact development structures, have no maintenance cost burden is a misconception.

It is critical, therefore, that the full costs of maintenance be considered when selecting and designing filtration systems. The primary factor controlling timing of maintenance of filtration systems is sediment loading. A properly functioning system will remove solids from water by trapping particulates in the porous structure of the filter media inside the cartridges. The flow through the system will decrease naturally as more particulates are trapped. Eventually the flow through the cartridges will be low enough to require replacement. As pollutant load characteristics can vary from site to site, it is an important factor to consider when designing the system.

To ensure effectiveness, filter products need to be designed for regular maintenance intervals. Length of time between maintenance cycles impacts life-cycle cost. The best way to look at total expense for maintenance is to remove initial purchase price,

which is part of the construction loan in most cases. The owner will not notice the difference in cost between systems, but will notice an additional \$15,000 to budget over a 10-year period for maintenance. The bottom line is that maintenance of filtration systems can be a large, unseen and long-term cost for developers.

Typically, maintenance more frequent than once a year greatly increases cost over the project life cycle. By designing a system that maximizes time between maintenance events, one can reduce life-cycle costs without compromising performance. Some systems can be designed with up to a two-year maintenance interval. Additionally, cartridges that utilize a self-cleaning mechanism can significantly stretch maintenance cycles. By stating a maintenance interval in specification, one can ensure that the site developer or owner will not be surprised by high long-term maintenance costs.

Ease of maintenance is also an important factor to consider. Structures will need to be accessed for inspection, media replacement and washing of structure, so easy access is critical. Cartridge systems with a removable hood over the cartridge is a preferred option by maintenance staff compared to a sealed system that requires cutting the cartridge hood to gain access to spent media. Easily removed and installed cartridges are also preferable.

Not all filtration systems are the same. Work with filter manufacturers to ensure that you are maximizing filter system effectiveness while decreasing long-term maintenance costs. Developers and owners will thank you for it. **SWS**

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