Table 4.2 Relative Treatment Performance Ratings of Biotreatment BMPs

Unit Operations and Process	Assumed Principal Unit Operations and Processes Provided	Suspended solids / sediment/ turbidity	Nitrogen compounds	Phosphorus	Heavy metals	Microbial / viral pathogens	Oils and grease	Dissolved toxic organic compounds	Trash and debris
Bioretention system	• Particulate Settling • Size Exclusion • Inert Media Filtration • Sorption/Ion Exchange • Microbial Competition/Predation • Biological Uptake • Volume loss (via infiltration, ET)	H	L	L	H	M	H	M	H
Bioretention system with internal water storage zone and nutrient sensitive media design	Bioretention UOPs, plus: • Microbially Mediated Transformations (if designed with internal water storage zone)	H	M	M	H	M	H	M	H
Dry extended detention basin	• Particulate Settling • Size Exclusion • Floatable Capture • Vegetative Filtration (with low-flow channel) • Volume loss (via infiltration, ET)	M	L	M	M	L	M	L	H
Dry extended detention basin with vegetated sand filter outlet structure	Dry extended detention basin UOPs, plus: • Inert Media Filtration	H	L	M	M	M	M	L	H
Vegetated Swale	• Vegetative Filtration • Sorption/Ion Exchange • Volume loss (via infiltration, ET)	M	L	L	M	L	M	M	M
Vegetated Filter Strip	• Vegetative Filtration • Sorption/Ion Exchange • Volume loss (via infiltration, ET)	M	L	L	M	L	M	M	L

Table 4.2 Relative Treatment Performance Ratings of Biotreatment BMPs

Unit Operations and Process	Assumed Principal Unit Operations and Processes Provided	Suspended solids / sediment/ turbidity	Nitrogen compounds	Phosphorus	Heavy metals	Microbial / viral pathogens	Oils and grease	Dissolved toxic organic compounds	Trash and debris
Wet detention basins and constructed stormwater wetlands	• Particulate Settling • Size Exclusion • Floatable Capture • Sorption/Ion Exchange • Microbially Mediated Transformations • Microbial Competition/Predation • Biological Uptake • Solar Irradiation • Volume loss (via infiltration, ET)	H	M	M	M	M	H	M	H
Proprietary Biotreatment and Treatment Control	• Varies by product.	Expected performance should be based on evaluation of unit processes provided by BMP and available testing data. Testing data should be evaluated based primarily on the effluent quality achieved by the BMP and the ability of the BMP to provide statistically significant removal under average conditions. Percent removal alone should not be used to evaluate the performance of proprietary BMPs (See Wright Water Engineers and Geosyntec Consultants, 2007). The basis for determining the rating of proposed proprietary BMPs must be documented in the Project WQMP. Approval is based on the discretion of the reviewing agency. Product-specific rankings may be published in the Technical Guidance Document at a later date.							

Sources

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International Stormwater Best Management Practices (BMP) Database Pollutant Category Summary: Bacteria.
http://www.bmpdatabase.org/Docs/BMP%20Database%20Bacteria%20Paper%20Dec%202010.pdf

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International Stormwater Best Management Practices (BMP) Database Pollutant Category Summary: Sediment (Pre-publication).

Overview of Performance by BMP Category and Common Pollutant Type, International Stormwater Best Management Practices (BMP) Database [1998-2008]
http://www.bmpdatabase.org/Docs/Performance%20Summary%20Cut%20Sheet%20June%202008.pdf

Oil and grease, Organics, and Trash and Debris based on review of unit operations and processes; comprehensive dataset not generally available. BMP must include design elements to address pollutants of concern.

Wright Water Engineers and Geosyntec Consultants, 2007. *Frequently Asked Questions Fact Sheet for the International Stormwater BMP Database: Why does the International Stormwater BMP Database Project omit percent removal as a measure of BMP performance?* (as posted on **www.bmpdatabase.org**)]