



CITY OF PORTLAND ENVIRONMENTAL SERVICES



1120 SW Fifth Avenue, Room 1000, Portland, Oregon 97204 ■ Nick Fish, Commissioner ■ Michael Jordan, Director

July 2015

Stormwater Management Manual Approved Manufactured Stormwater Treatment Technology

Filtterra® Bioretention Systems

Approval: July 9, 2015 through July 9, 2018

City of Portland Decision:

The Filtterra® Bioretention Systems meet the City of Portland pollution reduction requirements as per the 2014 Stormwater Management Manual (SWMM) under the criteria laid out in Appendix B: Submission Guidelines for Manufactured Stormwater Treatment Technologies.

Background:

As part of the application process, Contech Engineered Solutions, LLC (Contech) submitted the Washington State Department of Ecology (DOE) Technology Assessment Protocol (TAPE) Technology Evaluation Report, including all appendices and performance monitoring data, to demonstrate that the Filtterra® Bioretention Systems meet the City of Portland's pollution reduction requirements.

Contech gave a technical presentation to City staff, Portland State University students and faculty, and the public on February 26, 2015. The presentation was followed by a technical interview with the City of Portland review committee to discuss water quality performance, maintenance and overall use in the public right-of-way.

The City of Portland contracted with Portland State University's Department of Civil and Environmental Engineering (PSU) to provide third-party review of the submitted water quality performance data. PSU analyzed the provided data and found that the Filtterra® Bioretention Systems meet the pollution reduction requirements of the [2014 Stormwater Management Manual](#).

Additional information is available online for this system, including:

- [Contech Filtterra product website](#)
- DOE General Use Level Designation (GULD) for Basic (TSS), Enhanced, Phosphorous, and Oil Treatment for the [Filtterra®](#) Bioretention Systems.

Conditions of Use:

1. All configuration options for the Filterra® Bioretention Systems are approved for pollution reduction. Selection of a specific configuration is the responsibility of the project designer.
2. Use of Filterra® Bioretention Systems does not exempt a project or site from required flow control requirements, operations and maintenance requirements, or other applicable requirements of the SWMM.
3. For use in the public right-of-way, the following conditions must be met:
 - Units must meet City of Portland street design requirements, including but not limited to H-20 vehicle load rating, non-slip surface, and American with Disabilities Act tolerances specific to surface grates or vault lids.
 - The Operations and Maintenance Plan for the two-year establishment period must address irrigation or watering, plant replacement, and inspection frequencies.
 - The following Zone 8 or Northwest region plants are allowed:
 - Big -Pod Ceanothus - *Ceanothus megacarpus*
 - Buttonbush - *Cephalanthus occidentalis*
 - Cherry, Purpleleaf Sand - *Prunus x cisterna*
 - Coyote Bush - *Baccharis pilularis* ssp. *Consanguinea*
 - Euonymus, Chollipo - *Euonymus japonicus* 'Chollipo'
 - Euonymus, Winged (Burning Bush)- *Alatus* 'compactus'
 - Fringe Tree, White - *Chionanthus virginicus*
 - Hawthorn, Yedda 'Majestic Beauty' - *Raphiolepis umbellata*
 - Heavenly Bamboo - *Nandina domestica* (non-fruiting varieties)
 - Holly, Inkberry - *Ilex glabra*
 - Holly, Meserve - *Ilex meservae*
 - Holly, Winterberry - *Ilex verticillata*
 - Lilac, Dwarf - *Syringa meyeri*
 - Magnolia Star - *Magnolia stellate*
 - Willow, Japanese tree form - *Salix integra* 'Hakuro Nisjiki'
4. Contech-certified providers must be utilized for activation, inspection and maintenance of the system.

Project Designer Responsibilities:

1. Ensuring that the conditions of use are met.
2. Ensuring that the project meets all applicable requirements of the Stormwater Management Manual, such as the Stormwater Infiltration and Discharge Hierarchy, in order to use Filterra® Bioretention Systems.
3. Ensuring that the design and installation of the units are appropriate for the project goals, site conditions, long-term maintenance requirements, and any other site-specific design requirements on private property or for use in the public right-of-way.
4. Sizing units to meet the current Stormwater Management Manual presumptive design approach and pollution reduction requirements. The pollution reduction capacity is flow-based and assumes a treatment flow intensity of 0.19 inches per hour and a 0.90 runoff coefficient

using the Rational Method with a treatment rate of 100 inches per hour. The treatment capacity for Filterra® units are provided in Table 1.

Table 1. Filterra® Sizing to Meet City of Portland Pollution Reduction Requirements		
Unit size (ft)	Treatment Capacity (cfs)	Maximum Drainage Area (acres)
4 x 4	0.037	0.21
4 x 6	0.056	0.33
4 x 8	0.074	0.43
6 x 6	0.083	0.48
6 x 8	0.111	0.64
6 x 10	0.139	0.81
6 x 12	0.167	0.97

5. Each site plan must undergo Contech review before the City of Portland can approve the unit(s) for site installation. A letter that certifies that the project has been designed to manufacturer’s specification must be submitted to BES prior to the appropriate design milestone. For public improvements, including public works permits, the letter must be submitted to BES prior to 60% plan review. For installation on private property, the letter must be submitted prior to building permit plan approval. The project designer is highly encouraged to work with Contech prior to the appropriate review milestone in order to maximize placement and performance of the unit(s).
6. If the project designer wants to use plants in public facilities not approved under the Conditions of Use, the project designer is required to get written approval from the City of Portland Environmental Services Revegetation Program and Contech prior to 90% plan review.
7. If the project designer wishes to vary from these conditions of approval, the project designer must use the Performance Design Approach.

Approval Conditions:

1. BES may at any time suspend or revoke approval if the performance of the technology does not meet performance criteria, or if the performance criteria change due to the local, state, or federal pollution reduction standards.
2. This approval expires on July 9, 2018, three years from the approval date. If no changes to the Filterra® Bioretention Systems have occurred (such as, but not limited to, dimensional changes to the physical device, changes to the filtration media, changes to maintenance requirements, or changes in expected performance or device design criteria), the approval can be renewed as per the guidelines in effect at the time of renewal. If any changes, updates, or revisions have occurred to the Filterra® Bioretention Systems, the applicant must obtain DOE TAPE GULD certification and re-apply following submission guidelines in effect at the time of application.