

BIO-7: Proprietary Biotreatment

Proprietary biotreatment devices are devices that are manufactured to mimic natural systems such as bioretention areas by incorporating plants, soil, and microbes engineered to provide treatment at higher flow rates or volumes and with smaller footprints than their natural counterparts. Incoming flows are typically filtered through a planting media (mulch, compost, soil, plants, microbes, etc.) and either infiltrated or collected by an underdrain and delivered to the storm water conveyance system. Tree box filters are an increasingly common type of proprietary biotreatment device that are installed at curb level and filled with a bioretention type soil. For low to moderate flows they operate similarly to bioretention systems and are bypassed during high flows. Tree box filters are highly adaptable solutions that can be used in all types of development and in all types of soils but are especially applicable to dense urban parking lots, street, and roadways.

<p><i>Also known as:</i></p> <ul style="list-style-type: none"> <li>➤ <i>Catch basin planter box</i></li> <li>➤ <i>Bioretention vault</i></li> <li>➤ <i>Tree box filter</i></li> </ul>

<p>Proprietary biotreatment  <i>Source:</i>  <a href="http://www.americastusa.com/index.php/filterra/">http://www.americastusa.com/index.php/filterra/</a></p>

**Feasibility Screening Considerations**

- Proprietary biotreatment devices that are unlined may cause incidental infiltration. Therefore, an evaluation of site conditions should be conducted to evaluate whether the BMP should include an impermeable liner to avoid infiltration into the subsurface.

**Opportunity Criteria**

- Drainage areas of 0.25 to 1.0 acres.
- Land use may include commercial, residential, mixed use, institutional, and subdivisions. Proprietary biotreatment facilities may also be applied in parking lot islands, traffic circles, road shoulders, and road medians.
- Must not adversely affect the level of flood protection provided by the drainage system.

**OC-Specific Design Criteria and Considerations**

- Frequent maintenance and the use of screens and grates to keep trash out may decrease the likelihood of clogging and prevent obstruction and bypass of incoming flows.
- Consult proprietors for specific criteria concerning the design and performance.
- Proprietary biotreatment may include specific media to address pollutants of concern. However, for proprietary device to be considered a biotreatment device the media must be capable of supporting rigorous growth of vegetation.
- Proprietary systems must be acceptable to the reviewing agency. Reviewing agencies shall have the discretion to request performance information. Reviewing agencies shall have the discretion to deny the use of a proprietary BMP on the grounds of performance, maintenance considerations, or other relevant factors.

- In right of way areas, plant selection should not impair traffic lines of site. Local jurisdictions may also limit plant selection in keeping with landscaping themes.

### **Computing Sizing Criteria for Proprietary Biotreatment Device**

- Proprietary biotreatment devices can be volume based or flow-based BMPs.
- Volume-based proprietary devices should be sized using the Simple Design Capture Volume Sizing Method described in [Appendix III.3.1](#) or the Capture Efficiency Method for Volume-Based, Constant Drawdown BMPs described in [Appendix III.3.2](#).
- The required design flowrate for flow-based proprietary devices should be computed using the Capture Efficiency Method for Flow-based BMPs described in [Appendix III.3.3](#).

### **Additional References for Design Guidance**

- Los Angeles Unified School District (LAUSD) Stormwater Technical Manual, Chapter 4:  
[http://www.laschools.org/employee/design/fs-studies-and-reports/download/white\\_paper\\_report\\_material/Storm\\_Water\\_Technical\\_Manual\\_2009-opt-red.pdf?version\\_id=76975850](http://www.laschools.org/employee/design/fs-studies-and-reports/download/white_paper_report_material/Storm_Water_Technical_Manual_2009-opt-red.pdf?version_id=76975850)
- Los Angeles County Stormwater BMP Design and Maintenance Manual, Chapter 9:  
[http://dpw.lacounty.gov/DES/design\\_manuals/StormwaterBMPDesignandMaintenance.pdf](http://dpw.lacounty.gov/DES/design_manuals/StormwaterBMPDesignandMaintenance.pdf)
- Santa Barbara BMP Guidance Manual, Chapter 6:  
[http://www.santabarbaraca.gov/NR/rdonlyres/91D1FA75-C185-491E-A882-49EE17789DF8/0/Manual\\_071008\\_Final.pdf](http://www.santabarbaraca.gov/NR/rdonlyres/91D1FA75-C185-491E-A882-49EE17789DF8/0/Manual_071008_Final.pdf)