



## Urban Bio Garden System



**The Urban Bio Garden System treatment train design captures a broad spectrum of pollutants carried by urban stormwater runoff.**

**The Urban Bio Garden System combines hydrology, nanotechnology, and biological processes to enhance the removal and capture pollutants in a low cost, long life cycle design.**

**The Urban Bio Garden System can be an on line component of a total stormwater drain system; or a separate stand-alone device. It can be placed in a sump position.**

**Terre Hill Stormwater Systems**

**800 242 1509**

**717 445 3100**

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**[www.terrestorm.com](http://www.terrestorm.com)**

**Urban Bio Garden System**

**Urban Protector**

**The Urban Protector is a pretreatment device that captures oil, grease, trash, debris and sediment before the stormwater runoff carries these pollutants into the bioretention facility.**



**New York City Parks Department Urban Protector Installation**



**Prevents trash, debris, oil, grease and sediment entering rain garden.  
Urban Protected NYC Parks Department Rain Garden  
Victory Boulevard, Staten Island, NY**



The

**Urban Protector** pretreatment structure removes trash, debris, hydrocarbons, sediment and the heavy metals and particulate phosphate attached to the sediment before it enters the bioretention facility.

**Pretreatment** protects the bioretention facility from the captured pollutants.

**Pretreatment** facilitates vegetative growth and bio mass increase by removal of pollutants before they enter the bioretention area.

**Pretreatment** increases evapotranspiration through increased vegetative growth.

**Pretreatment** reduces maintenance costs.

**Pretreatment** reduces life cycle costs.

**Pretreatment** prevents trash and debris carried by runoff from entering the bioretention facility, protecting the aesthetic value of the bioretention facility.

**Urban Insert and Urban Insert + Plus**

The **Urban Insert** is a pretreatment structure located inside an inlet that captures gross pollutants such as trash, debris and vegetative matter before it enters the downstream bioretention facility or before it enters the storm sewer system.

The **Urban Insert +Plus** is upgraded to include “**BioMix-Osorb**” manufactured by ABSMaterials, Inc. to treat hydrocarbons, pesticides, herbicides, household pharmaceuticals and cleaning agents, chlorinated solvents, aromatic compounds and metals found in urban stormwater runoff.

“**BioMix-Osorb**” has a high flow-through rate and requires little contact time to remove oil, biocides, household chemicals, and volatile organic compounds (VOCs) common to stormwater runoff and impacted urban soils. “**Bio-Mix-Osorb**” removes atrazine, triclosan, malathion, 2, 4-D, chlorinated solvents and road and vehicular oil and grease.



The **Urban Protector**, the **Urban Insert** and the **Urban Insert + Plus** will prevent trash, debris, leaves, oil, grease and sediment from polluting the **Urban Bio Garden**.

**Urban Bio Garden**

The **Urban Bio Garden** is a modular precast concrete container that houses vegetation, designed to flourish in an engineered growing mixture of: organic soils, other soils and “**BioMix-Osorb**”. This scientifically engineered soil amendment captures and destroys a broad spectrum of pollutants such as hydrocarbons, pesticides, herbicides, household pharmaceuticals and cleaning agents, chlorinated solvents, aromatic compounds and metals common in stormwater runoff.

The **Urban Bio Garden** is not limited in size or by any type of vegetative matter, provided that it is indigenous to the project location. The **Urban Bio Garden** can accommodate small or large trees, plants, shrubs or ornamental grasses to create or enhance an urban landscape.

The **Urban Bio Garden** can be part of a street or road project in any jurisdiction. Its modular design allows The **Urban Bio Garden** to match any state or local DOT requirements for inlet or catch basin design. DOT conformance eliminates delays required by special designs or permit approvals.



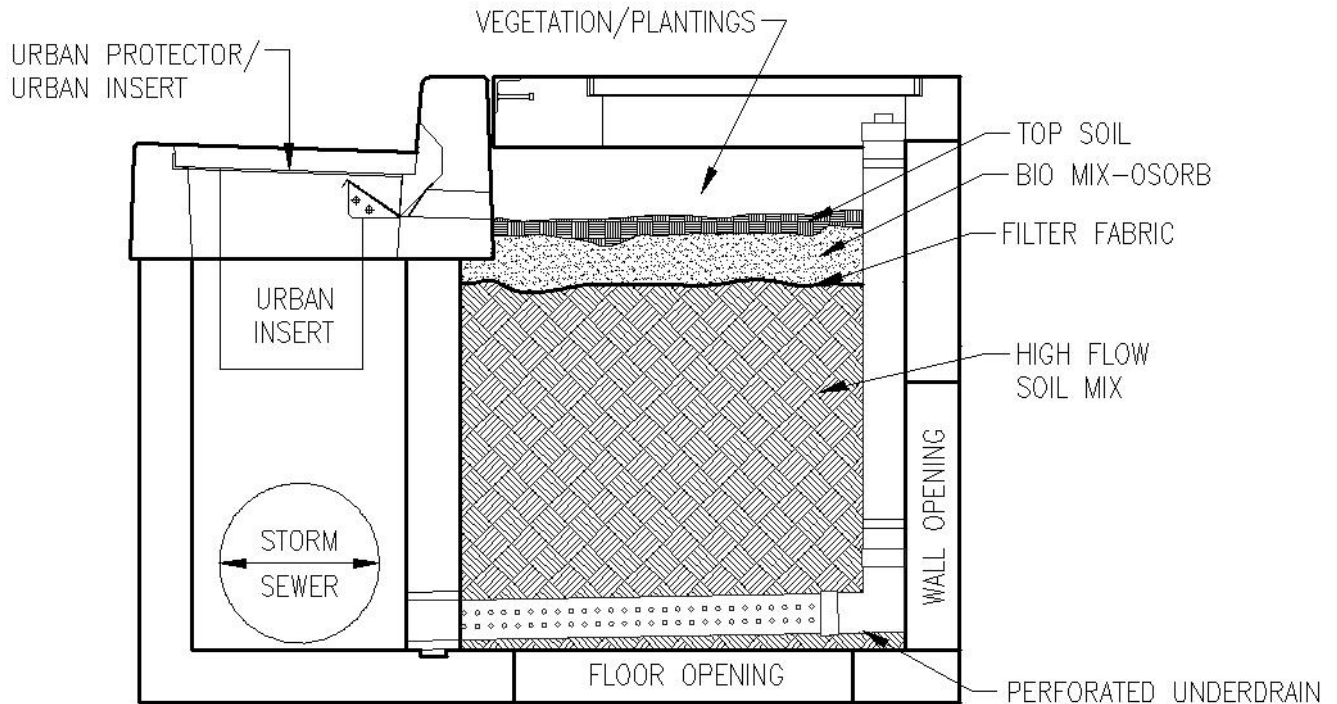
# Urban Bio Garden System

## Performance Details

1. The **Urban Bio Garden System** is a modular precast concrete LID BMP using **BioMix-Osorb** to treat a wide variety of stormwater pollutants.
2. The **Urban Bio Garden System** is smaller than conventional bioretention systems. Where annual rainfall does not exceed 45 inches, a 150 square feet **Urban Bio Garden** can treat a one (1) acre drainage area.
3. The **Urban Bio Garden System** can include pretreatment; using the **Urban Protector** with the **Urban Insert** or **Urban Insert + Plus**, or trash screen.
4. The **Urban Bio Garden System** takes all flows; it is not an offline device.
  - a. The **Low Flow Intercept** directs 90% of the annual stormwater runoff volume directly into the **Urban Bio Garden**. The higher flows enter the storm drain system directly, allowing for a sumped installation, simplifying design and construction;
5. The inlet for the **Urban Bio Garden** will comply with any DOT designs.
6. **BioMix-Osorb**, is a hyperhydrophobic nanomaterial soil amendment. It will not clog from salts or sediment. It removes hydrocarbons such as, **BTEX**, **PAHs** and **Biocides**. As a result, the bio mass increases by up to 400% and the biodiversity increases 60% facilitating the removal of a large variety of pollutants found in stormwater runoff.
7. **Osorb** works in both passive flow or pressure flow.
8. The **Urban Bio Garden** will contain sufficient quantities of **BioMix-Osorb** to attain a useful life of twenty (20) years. One (1) gram of **BioMix-Osorb** will capture and remove 75 grams of toxins before the **BioMix-Osorb** is exhausted.
9. **Terre Hill Stormwater Systems** will provide two (2) years maintenance at no additional cost.

## Urban Bio Garden Details

### URBAN BIO GARDEN



**The Urban Bio Garden System will remove a large variety of pollutants found in stormwater runoff:**

- |   |                 |
|---|-----------------|
| <b>a. Oil, grease and other hydrocarbons;</b>             | <b>(99%)</b>    |
| <b>b. Chemicals found in pesticides;</b>                  | <b>(99%)</b>    |
| <b>c. Chemicals found in herbicides, such as atrazine</b> | <b>(99%)</b>    |
| <b>d. Household pharmaceuticals;</b>                      | <b>(99%)</b>    |
| <b>e. Chlorinated solvents and aromatic compounds</b>     | <b>(99%)</b>    |
| <b>f. Metals; including Copper-2</b>                      | <b>(90%)</b>    |
| <b>g. Chelated organo-mercury</b>                         | <b>(90%)</b>    |
| <b>h. Phosphorus</b>                                      | <b>(70-80%)</b> |
| <b>i. Nitrogen</b>  | <b>(70-80%)</b> |
| <b>j. Sediment</b>  | <b>(80%)</b>    |





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