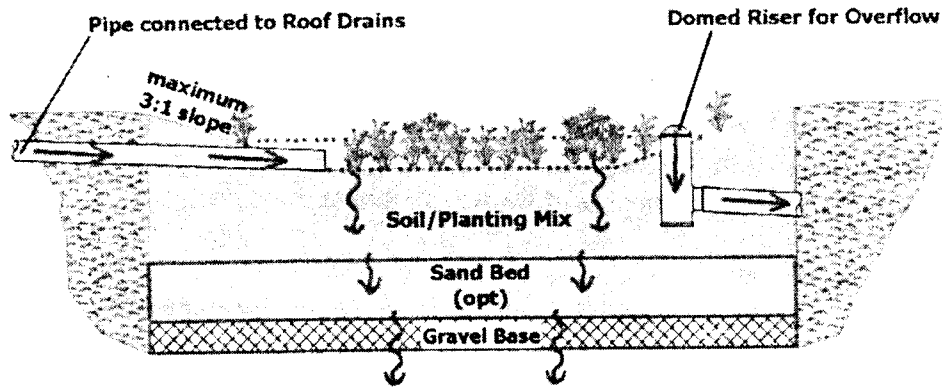


# RECHARGE GARDEN / BIORETENTION BED



Geotextile fabric should line the bed.  
 Sand bed and/or gravel base are optional features based on existing soil conditions.



PSU / Centre County Visitor Center  
 raingarden soon after construction



PSU / Centre County Visitor Center raingarden in full bloom



Raingarden at the Penn Alexander School in West Philadelphia



PSU Biofiltration Bed

### **What is a Recharge Garden?**

Recharge Gardens (also called rain gardens or bioretention areas) are usually densely vegetated, depressed features that store stormwater on the surface until it infiltrates or evapotranspires. The vegetation serves to filter and transpire runoff and the root systems can enhance infiltration. Optimal bioretention techniques mimic natural ecosystems through species diversity, density and distribution of vegetation, and the use of native species resulting in a system that is resistant to insects, disease, pollution, and climatic stresses.

Stormwater is stored within a 12 to 18 inches-deep (varies) vegetative and soil matrix layer (see the cross-section schematic). An optional stone bed underlain by geotextile liner could be included in the rain garden design to facilitate additional stormwater volume storage.

### **What is a Recharge Garden *not*?**

A recharge garden is *not* a wetland because the garden is not fed by groundwater. The recharge garden is designed so that runoff enters via an inlet and will either drain into the underlying substrate relatively quickly, evaporate or be transpired by the vegetation, or will outlet into the surrounding stormwater management system. There should be no standing water in a properly designed recharge garden.

### **Where can a Recharge Garden be used?**

Bioretention areas can be used in a variety of applications: from small areas in residential lawns to elaborate systems on commercial development sites (incorporated into parking islands and/ or perimeter areas). A recharge garden can receive overflow runoff or rooftop runoff, which is usually directed from roof leaders (gutters) into the garden. In larger developments, recharge gardens are part of a larger, comprehensive stormwater management system that contains other infiltration-oriented stormwater BMPs, such as porous asphalt pavement with subsurface infiltration beds.

### **Benefits of a Recharge Garden**

- Increased infiltration and evaporation
- Increased filtration
- Decreased runoff volume
- Plant and animal habitat
- Pollutant removal

### **Additional Information**

- PA Department of Environmental Protection is revising its Stormwater BMP Manual to include more nonstructural and infiltration-oriented BMPs. <http://www.dep.state.pa.us>
- Cahill Associates is a leading expert in designing infiltration-oriented BMPs; go to [www.thcahill.com](http://www.thcahill.com) for photographs of constructed recharge gardens
- PA Association of Conservation Districts provides design guidelines <http://www.pacd.org/products/bmp/bioretention.htm>
- [www.stormwatercenter.net](http://www.stormwatercenter.net) was created by the Center for Watershed Protection and contains fact sheets on a variety of Stormwater BMPs, including bioretention beds.

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