

Tree Filter Boxes, Town of Milton

Who: Neponset River Watershed Association, Town of Milton Department of Public Works, and MA Department of Environmental Protection.

What: A collaboration to install fourteen Tree Filter Boxes in the Pine Tree Brook watershed.

When: The Tree Filter Boxes were installed in 2009. Initial planning began 18 months earlier.

Where: On a half-mile stretch of Brook Road and on Lincoln Street in Milton. The Pine Tree Brook is a tributary to the Neponset River.



One month after installation



Why:

- Pine Tree Brook and the Neponset River have been identified by the MA Department of Environmental Protection as waterways that do not meet surface water quality standards due to bacterial pollution. When it is raining, the rivers meet water quality standards less than 25% of the time.
- Prior to installation, pollutants in the stormwater from the roadway entered catch basins and were piped to the brook through town storm drains.
- Tree Filter Boxes treat the first half-inch of rainfall. In New England, rainfall events of a half-inch or less account for 60% of total rainfall.

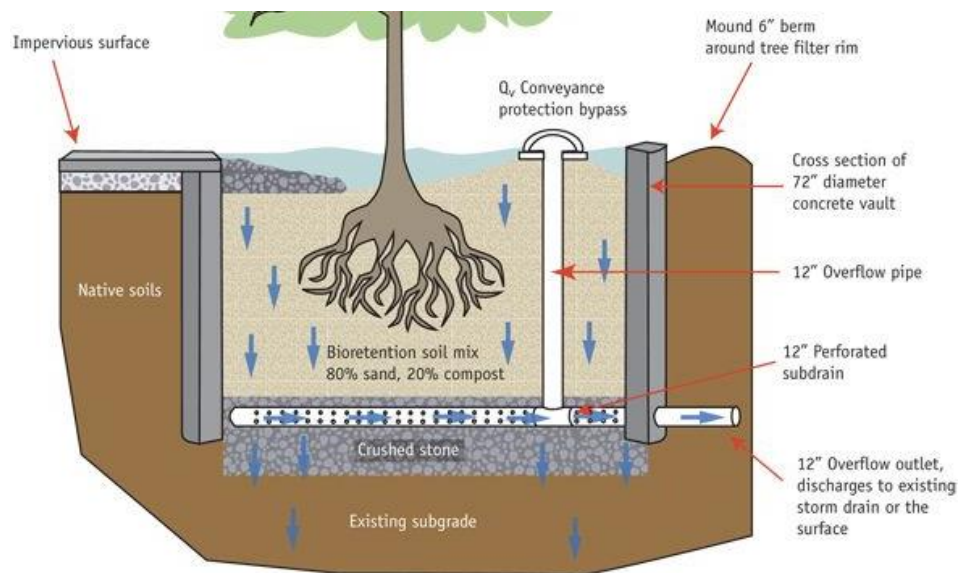
How: Stormwater from the street is directed to the Tree Filter Box for treatment. Filtered runoff exits the box via an underdrain which is connected to an existing drain line downstream of the nearby catch basin. The fourteen Tree Filter Boxes are treating 2.6 acres of impervious surface.

How does the Tree Filter Box work?

The box is made of pre-cast concrete and contains three feet of sandy loam. Stormwater from the street is directed to the Tree Filter Box. Bacteria in the soil breaks down pollutants and the tree takes up nutrients. A perforated pipe at the bottom of the tree box connects to a storm drain pipe downstream of the nearest catch basin. The soil material is approximately six inches below street level. This allows water to pond; it also allows the tree filter box to trap litter. The boxes are cleared of litter twice annually.



Stormwater that first runs off roadways is generally more polluted, as the “first flush” of rain washes pollutants from the street. Tree Filter Boxes capture this initial flow. When a rainstorm is large enough, the tree box will fill up; additional stormwater will bypass the Tree Filter Box and go directly to the catch basin.



Schematic from the UNH Stormwater Center

Benefits: Pollutants from roadway runoff are treated and removed before reaching rivers and streams. Tree boxes have high pollutant removal rates for sediment (80-90%+), bacteria (60-90%), nitrogen (40-70%), phosphorous (60-80%), heavy metals (80-90%), and hydrocarbons (80-90%). Tree Filter Boxes are a good solution when space is limited. As in this example, they work well as a retrofit to existing infrastructure. The trees provide an attractive amenity along roadways and parking lots.