GROWING BUSINESS WITH BIOFILTERS

Tree-box technology aids neighborhood redevelopment

By Steven H. Miller, CDT

Two significant environmental challenges facing new construction projects are water conservation and the handling of storm water runoff to remove pollutants and prevent erosion. College Park, Ga., recently resolved both issues with an elegantly linked plan that featured one of the first Southeastern applications of tree-box biofilters, a new environmentally friendly technology for storm water collection and primary treatment.

College Park, on the southern border of Atlanta, wanted to redevelop an abandoned residential neighborhood into a viable commercial district. When nearby Hartsfield-Jackson Atlanta International Airport expanded in the 1980s, a 16-block corridor to the west came directly under the new flight path. Homes in the area were purchased through a Federal Aviation Administration noise abatement program, and all but a few were leveled. The largely uninhabited area became blighted.

Infrastructure Plans

Two decades later, the nearby area had developed a variety of attractive features, including an airport and interstate highway adjacent on the east; the Georgia International Convention Center, two hotels and an office park to the south; and a golf course to the west.

The location now had great potential for redevelopment, but it was missing crucial infrastructure. The neighborhood was old and lacked a storm water drainage system.

"Every time it rained, the streets flooded," said City Engineer Jackson Myers. "It was unsafe to drive because of hydroplaning."

In early 2009, the city proposed two storm water management projects for funding through the Obama administration's stimulus program. Both would use environmentally conscious, low-impact development methods.

The first project was the development of a neighborhood runoff system to collect water from the streets, detaining some and piping any excess to two new detention ponds. This regional system serves as an incentive for incoming businesses because it saves the $250,000 to $350,000 expense of building an individual detention system (tying into the regional system costs approximately $10,000 per acre). In addition, businesses can access low-cost irrigation water.

The second project involved the pond that drains the adjacent Gordon Morris Memorial Golf Course. The city planned to dredge sediment from the pond to restore capacity, then pipe water from it to irrigate the grounds of the 26-acre convention center.

The project bundle was approved at a budget of $5 million—$880,000 for engineering, $2.6 million for the neighborhood storm water system and $1.5 million for the golf course system—making it the largest storm water management project of its

Biofiltration units act as storm drain inlets. They capture suspended solids and pollutants from storm water; the trees, in turn, take in water and nutrients from the runoff.

type in the Southeast. With funding from the American Recovery and Reinvestment Act of 2009 and the Georgia Environmental Facilities Authority, $3 million of that total will not need to be repaid. Prime Eng., an Atlanta-based consulting firm, handled the engineering for both phases.

Bioretention Filter Treatment

At the heart of the storm water management plan are TreePod biofilters, manufactured by KriStar Enterprises Inc. These open-bottomed tree box filters remove suspended solids, petrochemicals and other pollutants while providing integrated detention capacity.

Biofiltration units are installed at curb level and act as storm drain inlets. During a storm, the first flush of pollutant-heavy runoff—including oil and grease, bacteria, heavy metals, other suspended solids and large debris—enters the unit. Large debris is collected under the grate and can be removed easily by maintenance workers. As water moves through the system, suspended solids and pollutants are removed via settling and filtration. The tree draws water and nutrients from the runoff.

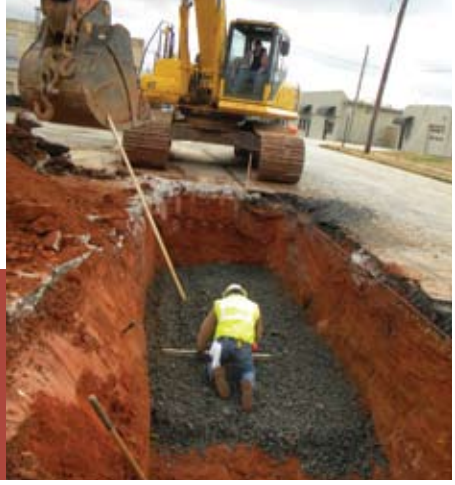
Pollutant removal efficiencies for biofilter cells (high-rate vegetated media filters) or tree-box filters with these characteristics exceed those of most other U.S. Environmental Protection Agency structural best management practices. The biofilters enable the project to meet the Georgia Stormwater Management Manual's 80% total suspended solids removal requirement.

To design for future buildout, the city assumed 10% green space in the area, with the rest either hardscape or rooftop. The project specified 111 TreePods to provide sufficient capacity.

The green nature of this solution was an important element in obtaining funding. "Without the TreePods," Myers said, "the project never would have been approved." SWS

Steven H. Miller, CDT, is a writer and photographer with Chusid Associates. Miller can be reached at steven@chusid.com or 818.774.0003.

For more information, write in 805 on this issue's Reader Service Card or visit www.estormwater.com/lm.cfm/st061105.



College Park's storm water management plan specified 111 biofilter units.