

Plant a Tree, Grow a Business

Park Tree Box Biofilters Help Redevelop a Lost Neighborhood



By Steven H. Miller, CDT

Two of the significant environmental challenges facing new construction projects are water conservation, and the handling of storm water runoff to remove pollutants. College Park recently solved the two together in an elegantly linked plan. It is one of the first applications in the Southeast of tree box biofilters, a new green 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 the Hartsfield-Jackson Atlanta International Airport was expanded in the 1980s, a 16-block corridor to the west came directly under the new flight path. Homes were bought up through a Federal Aviation Administration (FAA) noise abatement program, and all but a few were leveled. The largely uninhabited area became blighted.

Missing Infrastructure

With both 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 had great potential for redevelopment.

Missing infrastructure needed to be provided. The neighborhood was very old and had no storm water drainage system.

"Every time it rained," explained Jackson Myers, city engineer, "the streets flooded. It was unsafe to drive because of hydroplaning."

In early 2009, the city proposed two stormwater management projects for funding by the American Recovery and Reinvestment Act (ARRA), using green, low-impact development methods.

The first phase was the neighborhood runoff system to collect water from the streets, detaining some and piping excess to two large new sedimentation ponds. A new irrigation water supply system would also be installed to draw water from the sedimentation ponds and supply neighborhood irrigation at low cost.

This regional system is an incentive for incoming businesses that can save the \$250,000 - \$350,000 expense of building an individual detention system. Tying into the regional system costs approximately

\$10,000 per acre. In addition, they can access low-cost irrigation water. The second phase involved the pond that drains the adjacent Gordon Morris Memorial Golf Course. The city would dredge sediment from the pond to restore capacity and 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, the largest storm water management project of its type in the southeast: \$880,000 for engineering, \$2.6 million for the neighborhood stormwater system, \$1.5 million for the golf course system. With funding from the American Recovery and Reinvestment Act of 2009 (ARRA) and the Georgia Environmental Facilities Authority (GEFA), \$3 million of that total does not have to be repaid. Engineering for both phases was done by Prime Engineering, Atlanta.

BioFilter Treatment

At the heart of the storm water management plan are TREEPOD® biofilters, made by KriStar Enterprises, Inc. These open-bottomed tree box filters remove suspended solids, petrochemicals and other pollutants.

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 easily removed by maintenance crews. As water moves through the system, suspended solids and pollutants are removed by settling and filtration. The tree draws water and nutrients from the runoff. Pollutant removal efficiencies for such biofilter cells (high rate vegetated media filters) or tree box filters with these characteristics exceeds most of EPA's other structural best management practices (BMPs). The biofilters enable the project to meet the 80 percent TSS (Total Suspended Solids) removal requirement in the Georgia Stormwater Management Manual.

To design for future build-out, the city assumed 10 percent green space in the area, with the rest either hardscape or rooftop. One hundred eleven TREEPODs were specified to provide sufficient capacity.

The green nature of this solution was an important element in obtaining funding. "Without the TREEPODs," said Myers, "the project never would

have been approved."

Notice to proceed was given in January, 2010. The first trees were planted by early May, and were blooming a month later.

"TREEPODs are supplied as a 'turn-key' solution," explained Skip Short, KriStar vice president of sales, Eastern Region. "KriStar provides the unit, soil media, tree grates and tree. We also plant the tree, and maintain it free for the first year." The company helped College Park choose regionally appropriate trees - crape myrtles and hollies - which are warranted for one year.

City Engineer Myers is enthusiastic about the use of biofilters for storm water quality. "We're the first project with this type of system here in the Southeast, but I'm hoping we start a trend."

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