

GreenField Report

January 2013

High-Impact Post-Construction

Everyone is talking about low impact development. But what about **high-impact retrofits** for post construction? Stormwater management is becoming a full time job for more and more people. But once the infrastructure is in, decisions about Low Impact Development are mute, if they are not included in the initial construction. So what we actually need are high-impact post construction tools. Things that we can actually do to help counter balance poorly performing man made systems. **If we missed using low impact development on the construction of sites over the last 20 years, we'd better get used to using high-impact retrofits!**

For instance, Janice Kaspersan, Editor of *Erosion Control* and *Stormwater* indicated that, "by the time more than 15% of a watershed is impervious, severe degradation of surface waters is usually occurring." Last time I checked, most cities were pretty impervious, yet the opportunity for low impact development is long gone. So we need high-impact post-construction tools, like GroSoxx® or GardenSoxx®.



Filtrexx® PetroLoxx® is a natural absorbent used with Filtrexx® stormwater pollution prevention practices to reduce petroleum hydrocarbon (oil/grease, diesel fuel, gasoline), loads in stormwater runoff.

Imagine for a minute, in Boston, with 10,000 parking lots, the amount of runoff that contains hydrocarbons from man's daily activities. Now imagine many of those lots lined with GardenSoxx® growing local food; or GroSoxx® preventing further erosion, while **both trap invisible pollutants** such as hydrocarbons. They also trap heavy metals, bacteria and nutrients **while they support vegetation.**

This is a unique value proposition for post-construction BMPs—stacking the functional value of a product with the secondary benefit of providing clean local food. Ironically, parking lot runoff is the leading source of pollution in the Boston area and the Charles River is flowing full of hydrocarbons. What other solution provides equal benefits?

"In effect, Filtrexx created a living biofilter that ate hydrocarbons for lunch."

Since the new stormwater rule that is being created by EPA will consider many things like this, it is important for us to go ahead and adopt a retrofit mentality; but not one of Low Impact Development, one of **High-Impact Treatment**. Other challenges in handling peak flows, delays in runoff, and more capacity for total volume of water are issues to be considered for mass balances in any watershed that is already built out. Though options for retrofits are very limited, there are other good technologies being used; but those products lack the dual-purpose value-stacking ability that Filtrexx® Products deliver. In addition, many small applications are easily implemented using our systems, unlike expensive vaults or other tools that the average person cannot employ without special equipment.

SiltSoxx™ with PetroLoxx® were tested for efficacy to filter parking lot runoff for 30 straight rain events. Consistently, SiltSoxx™ removed well over 90% of the hydrocarbons present in each runoff event, with most performance hovering around 96% removal rate. The filter did not fill up or clog. In effect, Filtrexx created a living biofilter that ate hydrocarbons for lunch. **This is a High-Impact Post-Construction BMP.** It belongs on parking lots in every major city in the United States.

Since EPA is considering addressing some problem sites now through retrofits it will be very interesting to see what their approach is. EPA approved Compost Filter Socks for sediment control over seven years ago. In fact they were one of the first leading organizations to verify the effectiveness of our technology. Using similar technology in smaller and more decentralized areas is actually one of the most efficient items they could possibly recommend. You should let them hear your voice; send demonstration pictures and success stories. In advance, we appreciate your business and your dedication to clean water!

— Rod Tyler
CEO & Founder
Filtrexx International

Project Profiles

Southface: A Model in Low-Impact Development,

Atlanta, GA

The health of our nation's waterways has come under increasing threat as more land is developed to accommodate a growing population. Bacteria, metals, nutrients, sediment and hydrocarbons flow daily into our water system, with detrimental effects on habitat, ecology and recreation, as well as the local economy. Today there are approximately 850 U.S. cities with outdated and/or under-designed stormwater management infrastructure. Three out of four Americans live near polluted waters. The annual cost to our society is in the tens of billions.

On a natural or undisturbed site, precipitation falls on the trees, shrubs or the forest floor and is either evaporated or infiltrates the top layer of organic matter and topsoil, and only reaches our aquifers after filtration has naturally occurred. On an impervious surface such as concrete, however, a relatively small portion of the rainfall is evaporated or is filtered down to the ground water. Most of the water that leaves a developed site flows as surface runoff to our sewer system—and with that increased volume comes a proportional increase in pollutant load.

Much can be done during a project's design phase to preserve and/or restore the natural hydrology of a site post-construction. By distributing and decentralizing the flow of stormwater, we can reduce runoff volume and rate, reduce pollutant loads, and minimize flooding while we improve the water quality, increase biodiversity, and add economic value to the land.

Compost-based best management practices (BMPs) are a natural fit for green building and low-impact development, and have been

increasingly incorporated into projects. From restoring habitat, decreasing storm water, helping to decrease urban heat islands and water use, to using recycled and locally manufactured materials, compost based products are helping design teams and developers achieve a more balanced solution.

Southface is a non-profit organization that has been a leading resource for the green building community for 30 years, providing green building education, research, advocacy, and technical service. Based in midtown Atlanta, Southface has grown rapidly with the thriving green building industry, and as such, has completed a new Eco Office for their expanding staff and training capabilities, and to showcase some of the leading trends in green building design and construction.

The new Eco Office has incorporated: a green roof system to reduce the urban heat island and stormwater volume and peak flow rates; rooftop and landscape stormwater runoff catchment systems for water reuse inside and outside the building; compost and mulch erosion control blankets for site erosion control and site stormwater volume reduction; a bioswale system utilizing a vegetated wall system manufactured from compost socks; a compost-based bioretention system used to reduce site storm water volume and peak flow rates (shown at right), and filter storm water prior to entry into an underground cistern; a vegetated wall system, made from compost sock technology, used to decrease the bioretention site footprint and restore habitat to this ultra-urban environment; and a compost filter sock used to help stabilize a porous paved sidewalk system and filter storm runoff effluent exiting the porous pavement.

To learn more about Filtrexx® SiltSoxx™ for post-construction water quality treatment, attend a free upcoming webinar. To register visit www.filtrexx.com.

Make it Look Natural Nashville, TN

The scenic South Harpeth River near Nashville is one of the major tributaries of the Cumberland River. A private landowner needed to build a bridge over the river in order to improve access to his land. It was very important to him to preserve the natural beauty of his mountain hideaway—he didn't want to see rip-rap or boulders along the streambank when it was finished.

Gresham, Smith and Partners worked with Filtrexx to design a vegetated solution using Filtrexx® GroSoxx®—3' sections of Soxx™ pre-seeded for rapid and sustained vegetation that stop the loss of sediment and prevent erosion post-construction.

Mid-TN Erosion Control installed the GroSoxx®, which were pre-seeded with turf seed. It took five men only one and one-half days to install the GroSoxx® along a 150-foot stretch of streambank. **The seed germinated within five days of installation, and was fully vegetated within two weeks.**



Don't Let the Upfront Costs Fool You Columbus, OH

Corna Kokosing, one of the largest construction firms in Ohio, was constructing a sizeable hilltop retirement community adjacent to an existing development. They were experiencing significant runoff into the parking lot of the existing development and receiving regular complaints. Corna Kokosing had traditionally used silt fence, straw waddle, and some kind of knock-off compost filter sock. None of these products were working and the complaints from the neighbors were increasing.

The project manager installed 2,500 feet of 8" and 12" Filtrexx® Siltsoxx™ for slope stabilization and perimeter control. After several weeks of heavy spring rains he was quite pleased with the performance, noting that **the upfront cost of Siltsoxx™ was more than products he had used previously, but less overall—and the results were, "like night and day."** He was thrilled that the runoff problem had been solved and he no longer had to spend valuable labor hours and money to repair silt fence.



A Preference for Filtrexx® SiltSoxx™ Cleveland, OH

The City of Cleveland Department of Port Control (DPC) recently expanded Cleveland Hopkins International Airport. DPC had tried SiltSoxx™ on a previous project where they were having trouble getting grass to grow, in part due to ponded water behind silt fence inlet protection. "We needed a product that would remove sediment from stormwater and allow the construction site to drain. We used 12 pallets of SiltSoxx™ as inlet protection and check dams and were very pleased," said Beau Williams with DPC Environmental Services.

DPC updated project pre-construction meetings to allow contractors to use a "sediment filter sock, such as Filtrexx® SiltSoxx™, or equivalent..." "We prefer Filtrexx® SiltSoxx™ over silt fence. They are more durable, are less likely to fail, remove sediment, do not occlude with sediment as quickly, and allow the site to dry faster, and the contractor can get back to work faster. **Once installed they're virtually maintenance free,**" said Williams.





Getting Compliant with MetalLoxx®

Richmond, VA

An industrial manufacturing facility near Richmond, Virginia has consistently exceeded its total copper storm water discharge limit (0.018 mg/l) at four permitted outfalls. Analytical results for the first two years of the current five year permit again exceeded the discharge limit.

In 2011 as a Best Management Practice SiltSoxx™ with MetalLoxx® was installed in each outfall and the discharge limit was only exceeded at one outfall. **The Filtrexx® SiltSoxx™ remained in-place and 2012 stormwater sample results were all below the permitted discharge limit.**

These results clearly demonstrate the success and cost-effectiveness of using Filtrexx® Treatment Train™ to comply with stormwater discharge requirements. Filtrexx® Certified™ Manufacturer, YardWorks of Mosely, VA, provided the 8" SiltSoxx™ with MetalLoxx®.

Storm Water Results for Total Copper (mg/l)				
	Outfall #1	Outfall #2	Outfall #3	Outfall #4
2009	0.071	0.056	0.059	0.060
2010	0.056	0.007	0.066	0.069
2011	<0.005	<0.005	<0.005	0.089
2012	<0.005	<0.005	<0.005	0.007

Permanent Beauty with a LivingWall™

Greenville, SC

Paris Mountain is located in Greenville, SC. Developer Malloy & Company needed to build a road to make accessible four parcels of land on this 3:1 mountain grade. The client insisted on the use of 'green infrastructure' or Low Impact Development practices to preserve the natural beauty of the landscape.

Engineers SeamonWhiteside+Associates worked closely with Filtrexx to design a LivingWall™ using GroSoxx®, which was installed by Filtrexx® Certified™ Installer EcoFX of Charlotte, NC with assistance from Mulch in Motion.

"It came out great," said Joe Bryant, Branch Manager of SeamonWhiteside+Associates in Greenville. Not having used GroSoxx® for vegetated applications previously, Bryant was happy when the GroSoxx® began to germinate, and very pleased with the aesthetic value of the finished project. **"It is several years old and it still looks great. We've had no trouble."**



Above and Beyond the Spec

San Diego, CA

A major energy company planned to demolish a power plant in California. Because sediment is an inherent problem in this type of activity, the regional water authority and the California Coastal Commission (CCC) were naturally concerned. The CCC required a Storm Water Pollution Prevention Plan (SWPPP) to manage stormwater runoff during the demolition.

Alegre Environmental LLC, of San Marcos, CA developed the SWPPP, using Filtrexx® SiltSoxx™ for sediment control. The Land Stewards installed the SiltSoxx™. "This is one of the tools in our toolbox," said John Gentillon, President of Alegre Environmental.

The California Coastal Commission did not require the removal of metals from the site. However, Gentillon specified MetalLoxx® in the SWPPP "because of the site's proximity to the San Diego Bay." MetalLoxx® removes up to 73% of the metals in stormwater runoff.



GroExx® Green Tunnel™ Growing System Is Turnkey

Since 2001 Filtrexx has pioneered the use of our patented compost filter sock for sediment and erosion control applications. During that time, Filtrexx has developed over 100 applications, including vegetated applications. These vegetated applications led to the development of our GardenSoxx® product, a tightly-knitted tubular mesh capable of containing finely composted Filtrexx® GrowingMedia™ while providing optimum temperature, drainage and aeration for plant growth. Not only are they effective for establishing and sustaining vegetation in field applications, but several years of research on the GardenSoxx® have proven them to be a highly effective container for the commercial production of hundreds of varieties of fruits, vegetables, herbs, and flowers.



The heating tubes run under each row of GardenSoxx® heating only the root system, not the top of the building, where heat is not needed.

Filtrexx has partnered with two other leaders in the horticulture industry to introduce a new concept in growing systems—a heated high-tunnel. The GroExx® Green Tunnel™ Growing System is a turnkey package that combines the sturdy construction of Golden Pacific™ Structures, a highly efficient heating system from DeltaT Solutions™, and high-yielding GardenSoxx® planters in one simple package. The easy and efficient GroExx® System requires less input to produce more output—especially when compared to plastic pots or hydroponics.

GardenSoxx® allow growers to increase profits by extending the season and increasing the yield per square acre. Growers can plant spring crops long before fields have sufficiently drained, as long as temperatures are conducive. GardenSoxx® nutrient-rich GrowingMedia™ is capable of supporting more plants in less space than traditional systems. The breathable mesh helps aerate and regulate the temperature of the GrowingMedia™, keeping the root system happy.

The retail value of these items sold separately would be upward of \$50,000 but the turnkey package is available for only \$35,000. With GardenSoxx® growers can become USDA Certified Organic in year one, representing significant revenue potential over non-organic produce.

To learn more about the GroExx® Green Tunnel™ Growing System, or to calculate your potential profits using our input/output calculator, call us at 440.926.2607 or email alexm@filtrexx.com.

2013
Happy New Year!!

A New Era for Filtrexx® Siltsoxx™

Filtrexx is proud to introduce the next generation of SiltSoxx™—now USDA Certified 100% Biobased with a new distinctive green and black stripe! The new pattern will clearly distinguish Filtrexx® SiltSoxx™ from imitation products that do NOT meet spec. Only Filtrexx® products meet all EPA, AASHTO, USACE and USDA-NCRS as well as the regulations of most state agencies throughout the U.S.



Look for the green and black stripe, and know that it meets spec.

“We still make EPA approved products in other colors. But when you see green and black you know you are in compliance” said Rod Tyler, CEO of Filtrexx.

Since Filtrexx® SiltSoxx™ were patented in 2001 some imitations have hit the market. None of them has undergone the kind of rigorous scientific testing that Filtrexx® has used to develop its products and design specifications. Only Filtrexx has the independent test data to prove its performance.

“When a contractor purchases sediment control at a local supply store, or an inspector sees a compost filter sock in the field, he should look for the distinctive green and black stripe,” said Tyler. “It’s his assurance that the product meets spec and will do the job it’s intended to do.”

Filtrexx® Siltsoxx™ as Post-Construction Biofilter

Filtrexx® SiltSoxx™ have been used for more than a decade as a barrier for construction activity erosion and sediment control applications. Successful products often find expanded uses beyond their original application, and Filtrexx® SiltSoxx™ is no exception. With the rapid growth of post-construction sustainable stormwater management programs, notably Green Infrastructure (or Low Impact Development), designers have been seeking to use Filtrexx® SiltSoxx™ to filter stormwater pollutants in post-construction applications.

This means the chosen product (or practice) must blend with the natural environment, which typically means it must be vegetated. Designers increasingly want the high performance, passive filtration benefit of our SiltSoxx™, but they want it to be permanent, vegetated, and (relatively) maintenance free. Including vegetation with the Filtrexx® SiltSoxx™ system can also provide the added benefit of phytoremediation (plant uptake of pollutants trapped in the Soxx™), thereby increasing its bioremediation potential and its value as a product. As Green Infrastructure ordinances are implemented in municipalities across the U.S.; and as MS4 and Industrial Stormwater Compliance, and TMDL regulatory enforcement expands, the opportunity for permanent stormwater biofilters is enormous. Each of these programs focuses heavily on post-construction stormwater management—and no product like this currently exists in the market.

Filtrexx has begun a research project to develop and evaluate a product that can meet this growing demand. The experimental design consists of multiple SiltSoxx™ filled at low, but escalating percentages of growing media combined with Filtrexx® FilterMedia™ to determine the optimum ratio that will not disrupt hydraulic flow through or filtration, but will provide for optimum vegetation establishment in the field. All experimental treatments are being conducted in triplicate to establish statistical means and deviations. Filtrexx has partnered with Pennington Seed Company on the selection of seeds and seed blends for the research project. With the conclusion of this project, Filtrexx will provide the first-to-market post-construction, permanent, linear stormwater biofilter. Stay tuned!