

WAKE UP AND SMELL THE COMPOST: THE BENEFITS OF NATURAL SYSTEMS

I was sitting at my home office desk tonight, in pure wonderment about how nature was represented in my glass of beer. Yes, nature. The yeast did its job and I was enjoying a wonderful, well earned beer after a hard week's work. What man-made systems have such precious rewards, I thought.

Actually, there are many that should be familiar to you. Beer, whiskey, wine, vinegar, yogurt, and bread use some type of yeast-like additive for completing the natural process. When you think of pickles, think about corn silage, a naturally pickled feed for animals that makes tender steaks—they go well with beer, by the way. And when you think of more earth-related natural wonders, of course compost is at the forefront of the list. Composting is entirely natural, just like brewing beer. The yeast or micro-organisms, are naturally occurring in leaves, grass clippings and wood chips. Compost piles produce heat over 150 degrees F killing harmful weed seeds, bacteria, plant diseases, and insect larvae, eggs and adults. Yet, the process somehow leaves the 'good bugs' for when you use it. Some remove hydrocarbons, for instance.

What I find interesting is the lack of connections over the last several years between engineers and these natural systems, and their thought that the systems are actually man made. It makes me laugh. Since there are two billion organisms in a single gram of healthy topsoil, I doubt most people fully grasp what compost does for really bad soils. Compost added to soils is like adding yeast to boiled hops and water—it allows life back into the soil.

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I also find it interesting to witness the connection between healthy ecosystems and proper organic matter of soils. In naturally undisturbed systems, this organic matter content is vital. In systems that are drastically disturbed, like most construction sites, the only way to restore these systems to pre-construction benchmarks is to add compost. Yet who pays for that, right? Most Civil Engineers in charge of planning erosion control may not have had the opportunity to enjoy



Filtrexx® patented mesh containment system and Filtrexx® Certified™ FilterMedia™ have proven to be the most cost-effective BMP in stormwater management.

a soils class. Their lack of opportunity to learn about these natural systems has resulted in the use of man-made systems without a benchmark for performance.

Well, we are paying for it now—thirty years after the clean water act, we still don't have clean water. The performance of man-made systems is a laughable failure compared to natural systems. Our infrastructure now crumbles as we try and figure out what to do. Still, we have annually renewable, bio-based, organic, recycled, locally made natural products that help add 'this stuff' back to local soils, and some folks 'don't get it'. For the engineers reading this, you 'need to get it'. Wake up and smell the compost. It is the only thing that has shown pure performance across 25 low impact applications for over 15 years.

Get it. Get Filtrexx®. Ask for it by name, specify it, use it. Harness nature™. Let nature do what man cannot®.

For a free webinar and Filtrexx® Certified™ Engineer training info, visit www.filtrexx.com/certified_designers.htm/.

— **Rod Tyler**
CEO & Founder
Filtrexx International

PROJECT PROFILES

Westar Energy Substation,

Manhattan, KS

Manhattan Kansas is a vibrant city with a growing population. Westar Energy services this metropolitan area. In 2010 Westar Energy, the embarked on the design and development of a new electrical substation to meet the needs of the region's growing population.

The site was situated on a rocky hillside with a natural slope exceeding 1:2, representing a significant challenge with regard to erosion and sediment control. It was important to Westar Energy as well as the project's construction contractor, Wolf Construction of Topeka, KS, to approach the project in an environmentally sensitive manner. For this reason, the project exceeded the minimum erosion control requirements.

The project's stormwater pollution prevention plan (SWPPP) and the selected BMPs emphasized recycling technology. Trees and shrubs that were cleared were shredded and used on site. In addition to using them as mulch in the landscape around the substation pad, the wood chips were used for sediment and erosion control, as FilterMedia™ within SiltSoxx™.

New research has shown that such non-composted, organic materials may be used in targeted environmental applications where only sediment removal and hydraulic flow-through conditions need to be achieved. Research conducted by Filtrexx International has shown that these organic materials will perform as well as compost filter media for sediment control and hydraulic characteristics when certain guidelines are met. Alternative filter media is not recommended for pollutant removal. (See TechLink #3330 for details on alternate FilterMedia™, available at www.filtrexxdesignmanual.com/).

Wolf Construction chose Filtrexx® SiltSoxx™ over silt fence because of the difficulty in trenching and staking with bedrock so close to the surface. They also wanted to avoid the maintenance issues that come with the use of silt fence. The 8-inch and 12-inch SiltSoxx™ were installed by Filtrexx® Certified™ Installer Sustainable Environmental Consultants of Topeka, KS.

"Our maintenance costs with the Soxx™ are pretty much nil," said Bill Ledebor, general foreman and superintendent with Wolf Construction. "Then, of course, installing them is not an issue with the rock; you just lay it on the ground for the most part, and you're done," he continued.

Ledebor also cited photodegradable quality of the SiltSoxx™. "I'm able to just leave them," he said. "I'm going to let them degrade on their own and they'll just go away with time."

In all, 120,000 yards of dirt and rock were moved, and 2 miles of SiltSoxx™ were used on the 9.5 acre site.

Wolf Construction had used SiltSoxx™ for sediment and erosion control in the past. Impressed with the effectiveness of the product, Ledebor decided, based on his experience with the product, to space the SiltSoxx™ every six feet in elevation change, instead of every 12 feet as called for in the project plans, further increasing the effectiveness of the SiltSoxx™.

The effectiveness of the SiltSoxx™, the lower maintenance costs, and the elimination of removal and disposal costs, combined with the design expertise that Filtrexx® offers, provide value to customers, and that value set SiltSoxx™ apart from other erosion control methods. "It's a bit more pricey up front," says Ledebor, "but I haven't had anyone up here doing maintenance, because I don't need it. So you make up for the higher price in the long term."

This article was adapted from "Erosion Control" magazine, March/April 2012.



Margaret Brown Creek Bank Stabilization

St. Peters, MS

The city of St. Peters, Missouri has some 150 miles of streams and creeks that flow through it. The trees that line the Margaret Brown Creek had grown large and been encroached on by wild honeysuckle. A 16" culvert pipe that runs under a utility easement had been plugged causing the creek to overflow and cut an expanded channel.

ECO Constructors of Lake St. Louis was asked to help design a green solution to stabilize the creek. They corrected the overflow issues with a plug safe inlet extension and the creek stayed in its channel through the fall 2011 rainy season. The banks of the creek were then cleared of problem vegetation and reshaped using a mini-excavator. The sides of the creek were then repaired using the Filtrexx® Bank Stabilization design and practices. During the installation the Soxx™ were seeded with Virginia Wild Rye and plugged with live willow stakes.



Capitano Residence Stream Bank Restoration

Charlotte, NC

This streambank behind the Capitano Residence in Charlotte, NC had been subject to increasing flows and velocities of water due to upstream construction over a period of several years. The Capitanos had begun to lose their fence at the top of the streambank, and were at risk of losing part of their yard. The City of Charlotte was back logged on streambank and stormwater projects so the Capitanos turned to Eco-FX Environmental in an effort to save their land.

Eco-FX installed the Filtrexx® LivingWall™ with minimal excavation, and all site preparation was completed without heavy equipment. Sections of 12" Soxx™ were filled with rock and used as the foundation of the Filtrexx® structure.

After several major rain events, the structural integrity of the LivingWall™ is still intact and germination is occurring at an excellent rate.



Brownfield Remediation with GroSoxx®

Western PA

A hazardous waste site in Western Pennsylvania had been designated for remediation by the EPA. The site, a 50' x 300' site with a 1:1 slope contained extremely contaminated soil. The hazardous conditions prevented workers from performing any work on site. Special training and haz-mat gear were required. EPA wanted to remediate the soil and re-establish vegetation. Weaver Express of Sugar Creek, Ohio worked closely with the contractor to find a solution using Filtrexx® product, GroSoxx®, a customized "modular" EdgeSaver™.

Due to the hazardous conditions the GroSoxx® were pre-made and delivered to the job site on pallets. Contractors, with oversight from Weaver Express, installed 8" GroSoxx® in six foot sections with a custom seed mix. The expertise provided by Weaver, as a Filtrexx® Certified™ Installer made the whole installation go smoothly. The team completed the job in only five days.



Bioswale with Treatment Train

Statesville, NC

The metal recycling industry is using Filtrexx® products for the removal of heavy metals and hydrocarbons from stormwater discharge systems. One facility in Statesville, NC removes and reinstalls Filtrexx® Treatment Train products on a quarterly basis, based on the recommendations of their environmental compliance company, engineering firm W.Z. Baumgartner & Associates, Inc.

EcoFX, of Charlotte, NC removes and reinstalls 8-inch SiltSoxx with Metalloxx® & PetroLoxx® additives in swales of the outfall area in pyramid fashion to passively filter the water prior to its offsite discharge. The quarterly schedule is based on the six inches of rainfall to the site, which, according to past rainfall data, occurs approximately every three months.

Metalloxx® removes both particulate and soluble heavy metals in runoff in an efficiency range of 47-73%. PetroLoxx® absorbs 99% of diesel and motor oil and 80% of gasoline.



Living Retaining Wall

St. Charles County, MO

During 2011 ECO Constructors of Lake St. Louis was introduced to a new concept in block retaining walls—SmartSlope Living Retaining Walls, constructed using a simplified stabilizing system, irrigation slots, an expanded pocket to grow vegetation. However, the planting medium in the expanded pocket was subject to erosion from unchecked runoff when steep slopes remained above the wall.

Eco Constructors, together with The Living Wall Company and Filtrexx®, customized Filtrexx® GroSoxx® to fill the vegetation pockets and minimize erosion. GroSoxx® were installed in a SmartSlope modular wall in October 2011. The GroSoxx® were installed course by course as the wall was built using a temporary cover of a new hybrid wheat grass. The wall experienced no erosion, unlike other conventionally built walls on the project. In May 2012 the wall was re-vegetated with plugs to create a permanent cover of native perennials. See videos from SmartSlope at www.youtube.com/user/SmartSlope2010/.



Dune Restoration

Stratford Point, CT

A large scale lead remediation on Connecticut's Stratford Point in 2000-01 had stripped the shore's intertidal zone of its native peat substrate and coastal plantlife. The following decade of unabated wave action, capped by hurricane Irene had left the shoreline badly eroded. Landowners DuPont worked with the Connecticut Audubon Society, specialty contractor All Habitat Services, LLC, and CEC Connecticut to restore the coastal dune system.

The team modified Filtrexx® Bank Stabilization system, filling 12" Soxx™ with a compost and sand mixture reinforced with geotextile. The Soxx™ were covered with a thick layer of sand and planted with 38,000 dune grass plugs to form an artificial coastal dune system extending the length of the north shore. The entire structure is designed to match the height of the existing bluff. The Soxx™ are invisible from view, but provide stability to the entire system.



TREATMENT TRAIN FOR TARGETED POLLUTANTS

There is increased interest in using Soxx™ with flocculants for targeted pollutant removal—especially in California and Nevada, where Filtrexx® representative Dr. Craig Kolodge has been advising clients in a variety of industries on the use of SiltSoxx™ with Treatment Train™ additives in applications as varied as landfills, dog parks, mining sites, oil drilling sites, and a variety of industrial sites.

A metal scrap yard in Lakeside, CA is using Soxx™ with Metaloxx™ to filter out aluminum and iron and bring their Total Maximum Daily Load (TMDL) levels into compliance. They built a compost sock wall around an inlet to filter outgoing run-off. Additional compost socks were added around the perimeter of the yard as well to increase filtration capability.

Dr. Michael Cahn, Farm Advisor - Water Resources and Irrigation at the University of California Cooperative Extension of Monterey County is conducting trials using locally produced compost mulch and Filtrexx® FilterSoxx™ mesh donated by Summit Erosion Control to reduce pesticides in agricultural runoff. Preliminary data indicates a reduction in the pesticide chlopyrifos. This research is being funded by Dow Chemical Company.

Dr. Valerie Mellano, Environmental Issues Advisor at the University of California Cooperative Extension of San Diego County has conducted a field trial in cooperation with Dr. Ed Beighley of San Diego State University's Erosion Control Lab on the efficacy of SiltSoxx™ to reduce Nitrate contamination of irrigation run-off from an orchard. Based on one set of samples, she recorded a 50% decrease in the nitrate levels in the run-off. This field trial is being replicated using Filtrexx™ Treatment Train™ at various sites throughout the county.

Filtrexx® representative Dr. Craig Kolodge has been working with the City of San Diego on pilot projects using Soxx™ with Bactoloxx® to reduce E. coli contaminants coming off what they believe is contaminated "non-composted" windrows in their municipal composting facility.

In a subsequent application, a landfill site in Los Angeles attempted to reduce the hydrocarbons and metals coming off their site by using Soxx™ with Petrolox® and Metaloxx® to reduce hydrocarbon and metals respectively. The results showed a marked reduction in both. The SiltSoxx™ are being considered for use at other landfill sites throughout the state.

More research is being conducted all the time. Look for updates on the findings of this research in future issues of the *GreenField Report*.

FILTREXX INTERNATIONAL

Filtrexx UK recently completed projects using GroSoxx® for natural play and outdoor learning. At a primary school in Livingston, GroSoxx® were pre-seeded with native grass and filled on site by Scotbark's Express Blower Delivery System to "sculpt" an outdoor learning facility and a sensory garden that included a seating area and raised stage-like area for giving talks or show-and-tell.

Scotbark also installed GroSoxx® for natural play at a primary school in Colinton. The compost was pre-seeded with grass seed and used to create a labyrinth. The circular nature of the design made GroSoxx® the ideal solution to create the desired shape.



FILTREXX IN THE NEWS

Erosion Control, June 2012

A Sedimental Journey

Craig Kolodge, Filtrexx® Representative for the Western Region touts the virtues and versatility of the Filtrexx® products. www.erosioncontrol.com/EC/Articles/17160.aspx/.

Erosion Control, May 2012

Custom Site Challenges, Custom Solutions

The article features the use of Filtrexx® natural systems and recycled material for sediment control. www.erosioncontrol.com/EC/Articles/Custom_Site_Challenges_Custom_Solutions_16579.aspx

Soil Erosion & Hydroseeding, March/April 2012

RUNOFF: Understanding and Complying with MS4

The article discusses the three broad categories of sediment and erosion control, including structural barriers like Filtrexx® FilterSoxx™ <http://npaper-wehaa.com/soil-erosion/#2012/04/?article=1568335>



FILTREXX FOUNDATION REPORT

The Family Garden Initiative™, a joint effort of Filtrexx Foundation and Church of the Open Door, provided 950 Lorain County, Cleveland, and Columbus, Ohio families with a 16 square foot Gardensoxx® vegetable garden delivered to their home, planted and installed on May 12 and 19. The families also received plants, a watering can, a recipe book, and a growing calendar. Learn more about this annual initiative at www.familygardeninitiative.org/.

The Filtrexx Foundation is a non-profit with 501 c3 status created to promote educational programs centered on compost use, gardening, childhood, early development, and student programs www.filtrexxfoundation.org

RESEARCH REVIEW

A recent study concludes that SiltSoxx™ outperforms rock baskets in sediment removal efficiency. The detailed findings are available in the Filtrexx® Design Manual. See Tech Link #3332, "Sediment Removal Performance of Filtrexx® SiltSoxx™ and Rock Bags in Inlet Protection Applications" at www.filtrexxdesignmanual.com/.

Based on the experimental design and conditions presented in this study, SiltSoxx™ exhibited higher removal efficiencies for clay loam relative to silt loam sediments. The study further concluded that fine FilterMedia™ is the best option for sediment removal, while coarse FilterMedia™ is the best option for high flow situations. Rock does a poor job in removing sediments and is likely to contribute sediments if not prewashed.

GOT NEWS? COMMENTS?

Send us news from the field so we can feature it in *GreenField Report*. Send a 150 word project summary and a high resolution photograph to ann@filtrexx.com. We also welcome your questions and comments.

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