GreenField Report™
April 2014

Shorelines on the horizon

Recently, I had the opportunity to meet with a Research Colleague Dan Hitchcock, Ph.D., from Clemson University, to discuss beach restoration research efforts in South Carolina. This particular location we visited is currently under special consent order for emergency actions. I always wonder what protocols have been established and what products are used. This site allows 'sand bags' not to exceed one cubic yard of upland sand. Dr. Dan and I discussed options of using Filtrexx® containment systems instead of sand bags, so we have longer, connected, cohesive protection. The idea is not new, we have had some good experience using what we call SoilSoxx® which contain sand, soil or dredge for purposes of re-establishing beach dunes. However, this application was emergency oriented, which we had not been involved in previously. During a site visit, we reviewed the applications of SoilSoxx® results, and his initial reaction was that our technology actually HELPS MOTHER NATURE PREVENT EROSION. I laughed, and said "you mean we "*LET NATURE DO IT*". "EXACTLY," he said. Dr. Dan felt our technology harnessed what man made devices were missing, to help mother nature accumulate sand to help prevent damage from large storm events or lunar tides on beaches.

SoilSoxx at Stratford Point were filled with compost and sand, and planted with 38,000 dune grass plugs to form an artificial coastal dune system.

For 15 years, I have studied beach erosion, dune formation and destruction, vegetation establishment, and options to improve current practices. With sand fences and loose-planted vegetation having proved ineffective, and most beaches having banned concrete barrier walls, the only thing to do is go back to the drawing board and figure out what has been missing. What has been missing is the ability to combine these items into a single system to Mimic Nature®.

Sand fences build up about two feet of sand over three years. In South Carolina, vegetated SoilSoxx gained three feet of sand in eight months. Which would you prefer? SoilSoxx are mesh tubes that contain sand, soil, or dredge – that's right, dredge. Dredgespoils are an environmental problem near every shoreline. Nobody knows what to do with it.

Disposal is expensive. Ironically it is actually decent for growing plants. It has more organic matter than sand, and can be nutrient rich.We can repurpose dredge, but NOT without containment.

SoilSoxx have been used with dredge on dune establishment projects at Kathryn Hepburn's estate, Stratford Point, Conn., and other locations. In South Carolina SoilSoxx were used to prevent sudden dune erosion and accumulate sand from tidal activities. Sand bags are allowed as emergency measures in the state, and SoilSoxx are a continuous sand bag of sorts.

Let's examine the key components of our sustainable technologies:

Containment

For this application, contained sand is more successful than loose sand. One of the key features of our technology is *proper* containment. Not all mesh works to contain sand, soil or dredge. Special engineering is required.

Drainage and flow through rate

Barriers cannot be impermeable, or they will be compromised by hydraulic pressure. In addition, wet sand, soil or dredge is much, much heavier and less likely to move than an impermeable bag.

Vegetation establishment

This is key to long term success, but it is a challenge because beaches are 'dead sands' devoid of organic matter. The organic matter and leaf litter that was there hundreds of years ago has been replaced by condominiums and imported sand. In dead sands plant roots do not knit together tight enough to resist tidal flows, and the loose vegetation washes away. Vegetated SoilSoxx do not wash away, and plants hold up better.

Adding organic matter to the root zones for containment plantings is the last step. Compost, dredge, or other sources can be considered, but issues with costs and logistics abound. Since dredge has decent organic matter, is local, and generally free, it seems likely. Permits on dredging are tough, so other options should be considered.

Combination of technologies

Finally, combining with other structural tools to further improve results allows practitioners AND scientists to get excited about using our products. Combining our technology with sand fences, we have been able to naturally establish dunes of about four to six feet in height with windblown sand in two years, which have withstood the last four nor'easter storms.

We hope to establish research projects this summer to put scientific metrics on the performance of the SoilSoxx in these applications, and we look forward to using that research to engineer better solutions to problems that face our shoreline.

– **Rod Tyler**
CEO, Filtrexx International

filtrexx®
SUSTAINABLE TECHNOLOGIES

World class venue gets a world class green roof

Glasgow, Scotland

The SSE Hydro, Scotland's national arena, is the latest landmark on the Glasgow skyline. This 12,000 seat arena designed by the London-based architects Foster + Partners officially opened on September 30, 2013. The SSE Hydro hosts international musical stars and global entertainment and sports events, and is expected to attract one million visitors each year, which would make it the fifth-busiest entertainment venue worldwide, and position the SSE Hydro among the world's most prestigious venues, along with Madison Square Garden and London's O2 Arena.

The SSE Hydro includes a massive green roof that encircles most of the arena, with a pitch that varies between 8° and 52° and a height that ranges from 8-25m above ground level. Filtrexx GroSoxx® were specified as a containment system to retain the substrate and protect against wind. Filtrexx® Certified™ Installer Scotbark, who is headquartered in Glasgow, was contracted to install the GroSoxx on the green roof.

Access and movement around the construction site was limited due to the boundaries of the site and other construction work being carried out at the same time. The GroSoxx were installed in continuous lengths using Express Blower Trucks equipped with 120m hoses. This not only eliminated the need to stockpile material on an already congested site, but also helped contain costs by doing away with the need for a crane to hoist the GroSoxx onto the roof. Materials were stockpiled at Scotbark's Glasgow depot and the blower trucks were reloaded off site.

After the initial installation the contractor added irrigation pipe work and planted the GroSoxx with 37,000 *Lonicera nitida* shrubs.

Scotbark filled a total of 18,000 linear meters of GroSoxx–that's more than 11 miles–with 1200m^3 of substrate to a finished depth of 300mm. The installation was completed on schedule, with no impact on the rest of the site works.

To see Scotbark's full gallery of images from the installation of the SSE Hydro green roof, visit **goo.gl/nxWyjq**.

Having a field day

Griffin, GA

The City of Griffin, Georgia holds an annual STREAM (Stormwater Training for Regional Engineers and Municipalities) Program. The event draws more than 100 people annually, from city, county, state and federal agencies, Greater Atlanta Home Builders Association, Associated General Contractors, builders, designers, owners, and financial institutions. The morning featured several speakers on Low Impact Development. In the afternoon attendees moved to the field demonstration site, which features realistic conditions, to see demonstrations of several erosion control BMPs, including Filtrexx GroSoxx® for Bank Stabilization.

Right as rain

Bethany Beach, DE

In the spring of 2011, Envirotech Environmental Consulting, Inc. (EECI) was contacted by the Center for the Inland Bays (CIB) and the Town of Bethany Beach to address a stormwater drainage issue at the Bethany Beach Nature Center.

A swale situated on the property drains runoff from the heavily travelled Route 26 corridor into the ecologically sensitive Salt Pond ecosystem. The site was not ideal for the classic rain garden because of high water tables and wetland sub-soils, so EECI adapted a stormwater filter cell utilizing Filtrexx® products for the rain garden concept, while working with the CIB.

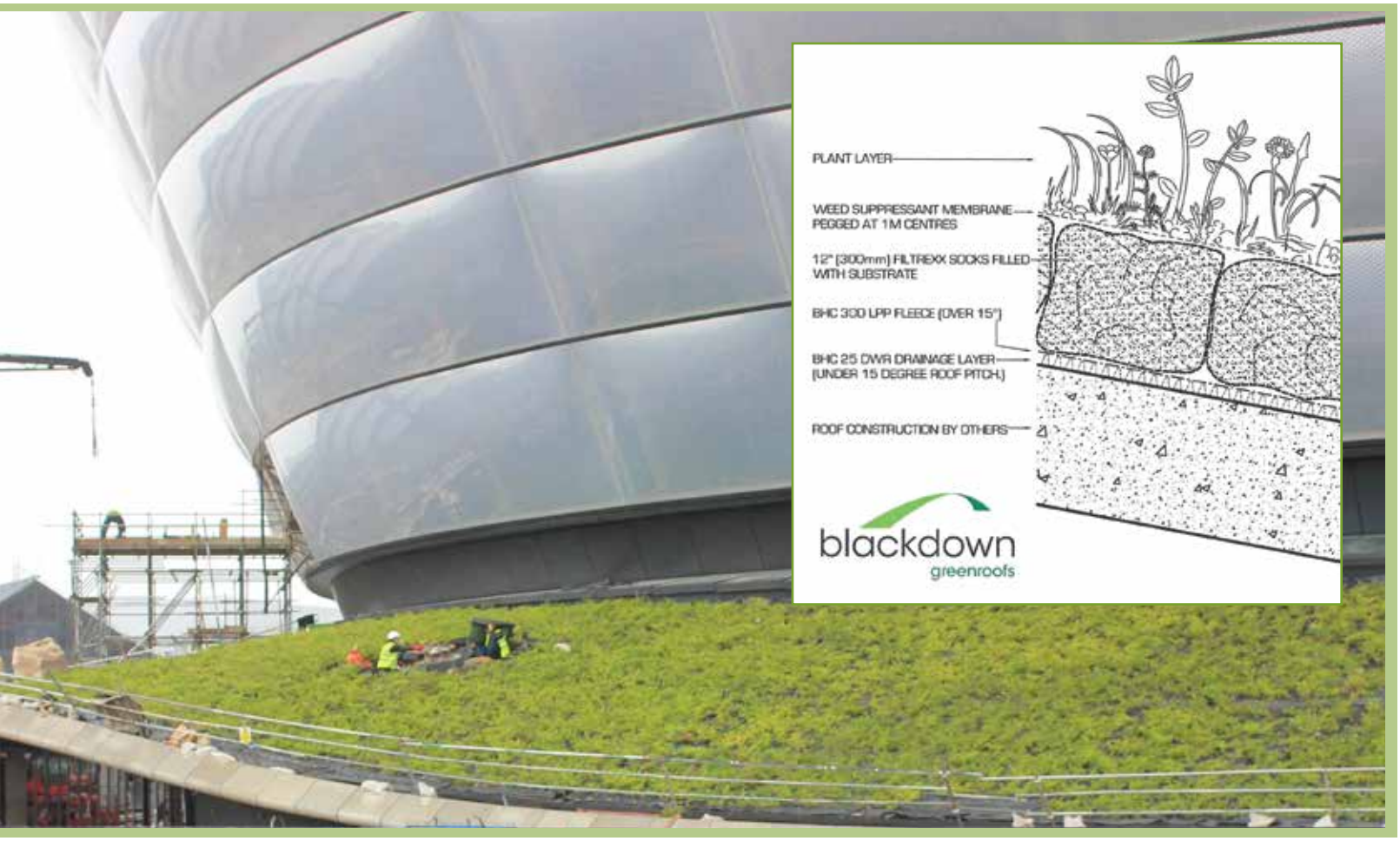
In this case, the filter cell/rain garden is bordered by a compost filled filter cell system. The planting beds are all compost-based. Compost is a natural filter that is effective at removing hydrocarbons and other nutrients from roadway runoff. The filter cell/rain garden is planted with native beneficial grasses, flowers and shrubs including Fox Sedge, Virginia Wild Rye, Switch Grass, Seaside Goldenrod, and Swamp Azalea. In addition to the ecological benefits, this project has enhanced the aesthetic value of the Bethany Beach Nature Center and serves as an educational focal point for raising public awareness of stormwater drainage issues.

EECI worked with the Town of Bethany Beach and volunteers from the CIB to complete the installation. Partnering made the job more cost effective and interactive. Employees of the Town of Bethany Beach and the CIB volunteers learned the importance of low impact design best management practices and native vegetation in reducing sediment, nutrient, and other pollutant impacts on sensitive wetland and estuary ecosystems.

Send us pollutant removal stories

The October 2014 issue will focus on pollutant removal using EnviroSoxx®.

Send a 200 word project summary, including the unique challenge and Filtrexx solution, along with a photo to ann@filtrexx.com.



Taking urban farming to a whole new level

Irvine, CA

Alegría Soxx Farms™ demonstrate organic food production using GardenSoxx®, the innovative organic food production system from Filtrexx that can be used over cement or other man-made surfaces. The new demonstration farm is a joint venture between Alegría Fresh, Orange County Produce, LLC and Filtrexx International.

The demonstration farm located at the Orange County Great Park in Irvine, CA is built atop a former marine base. To remove the cement and asphalt and convert it to healthy farmland would have cost as much as $150,000 per acre, and still the food grown there could not have been certified as organic for three years. Crops grown in GardenSoxx, on the other hand, can be USDA Certified Organic in year one because there is a weed cloth barrier between the Soxx and the ground.

The Alegría Soxx farm consists of 13 rows of 5 Soxx each, for a total of 7,800 linear feet of growing space within an 8,500 sq. ft. area (approx. 1/5 acre). Production yields are expected to be nearly double that of conventional farming. Water usage is estimated to be 70% less, and fertilizer use 50% less. Other cost savings, such as the fact that GardenSoxx are weed-free, are expected to increase the ROI of these microfarms. Thirteen different specialty crops, including several cultivars of beets, onions, red and green romaine, radicchio, red and green cabbage, and kale are being grown to demonstrate the versatility of the system and prove that urban microfarms can be profitable with no subsidies required.

"These kinds of spaces may represent 21st century farmland and can be repurposed to bring food production closer to where people live and work," says Erik Cutter, Managing Director of Alegría Farms.

The controlled growing environment assures superior nutrient-dense produce, high yields, and faster growth rates. Alegría Soxx Farms create jobs and can be employed in densely populated urban environments to provide access to superior, locally grown food. For more info, visit www.alegriafresh.com/alegriasoxxfarm.html

Bank stabilization with GroSoxx®

Clemson, SC

The Clemson University campus is bisected by Hunnicutt Creek. A small but steep bank along this creek had been steadily eroding. Land Planning Associates, Inc. in Easley, SC provided a plan to stabilize the bank using GroSoxx®. Company engineers saw this as a good opportunity to try the product on a small scale. McJunkin Grading installed 12" GroSoxx in a pyramid stack at the top of the slope to divert water to an inlet, while using 8" GroSoxx on the slope itself.

"We had used Filtrexx for sediment control in the past, but we had never used the GroSoxx. They were very easy to install," said Kevin Ross, Civil Engineer for McJunkin Grading.

LPA Project Manager Allan Fortner was extremely pleased too. "They work fantastic. They did everything we expected and more. We installed the GroSoxx last fall and they are still holding up great after winter.

New GardenSoxx® website

www.gardensoxx.com

Filtrexx is proud to announce the launch of the new and improved gardensoxx.com website. GardenSoxx® are a tubular mesh, similar to Filtrexx mesh used for erosion control, but designed to contain a composted GrowingMedia™ for growing fruit, vegetables, herbs and flowers. The new website presents the science and sustainability of the product to a wide range of consumers, as well as retailers, and provides inspiration and ideas unique to GardenSoxx.

"Our goal was not to simply provide product information, but to help each visitor understand how GardenSoxx can be used in his/her particular situation, whether it be a commercial farmer wanting to maximize profit, a community looking to make use of a vacant lot, or a home gardener who simply wants home grown vegetables," said Rod Tyler, Filtrexx CEO and inventor of GardenSoxx.

The site includes a blog that will provide home gardeners with basic gardening knowledge, helpful tips, and creative inspiration; a photo gallery with albums on tomatoes, strawberries, hoop houses, unique garden designs, and more; and plenty of how-to info on making, planting, and irrigating GardenSoxx.

Visit the new gardensoxx.com and let us know what you think! Enter promocode *greenfield* to save 20% on GardenSoxx mesh.

2014 summer webinar schedule

Webinars are from 11:00 a.m.–Noon EST/EDT and worth 1.0 PDH.

May 14: LID/Post-construction Water Quality Treatment
May 20: EnviroSoxx® for Targeted Pollutant Removal
June 18: Sediment Control
July 16: LEED/Green Building

For information and registration, visit www.filtrexx.com/.

In the news

***Environmental Connection*, January/February 2014**

This article is the third in a series of four written or coauthored by Rod Tyler and published by IECA, examining the role of compost as a practical erosion and sediment control solution. http://www.ieca.org/membersonly/resources/NewsToUse.asp (requires IECA member login).

Meet the new Filtrexx team members

Derek Dean is graduate of Akron University. He will provide inside sales and technical support at Filtrexx corporate office. He will also assist in answering technical questions and facilitating orders for materials and components for Filtrexx® LivingWall™ systems. Derek can be reached at (440) 926-2607 or derek.dean@filtrexx.com

Andy Hull joins Filtrexx to drive business development in the Southeast region of the U.S. He holds a Bachelor of Science in Agriculture majoring in horticulture from the University of Georgia. Andy brings years of experience from the landscape industry where he held roles ranging from Landscape Supervisor, Procurement and HR Manager, and Sr VP of Operations. He later served as VP Nursery Product Line for John Deere Landscapes. Andy also owned his own consulting practice for several years before serving as VP of Business Development at 10-20 Media, Inc. where everything–A to Z–in horticulture (both B2B & B2C) was electronically aggregated and used in a variety of uses such as online directories and even a 3D gardening game. Andy is looking forward to once again releasing his passion for the environment. He can be reached at (770) 928-4791 (office) or (770) 598-6572 (mobile) or at andy.hull@filtrexx.com

Allen Nimmo will spur business development in the upper mid-west. Al is a graduate of the University of Wisconsin Whitewater, with a Bachelor of Arts in Public Relations and Marketing. He brings more than 25 years of sales experience to Filtrexx. Al prides himself on partnering with his customers to help them solve business problems. He has helped past clients reduce their biohazard footprint by thousands of tons. Those items were recycled and repurposed. He also saved millions of dollars for clients in the healthcare industry. You can reach Al at (847) 815-9403 or allen.nimmo@filtrexx.com.

Jon R. Stewart joins the team to spearhead business development in the Carolinas. He has tremendous experience in the erosion control industry, having been the owner and General Manager of Eco-FX Mulch & Erosion Control blower truck service, a Filtrexx Certified Installer and Manufacturer in Charlotte, NC. Jon also spent 30 years with Bayer Environmental Science-Golf, Landcare & Pest Control. He holds a Bachelor of Arts in Biology with an emphasis in Environmental Studies from West Virginia University. Jon lives on a small "farmette" near Charlotte, where he grows in GardenSoxx. He can be reached at (704) 562-4536 or jon.stewart@filtrexx.com.

Mark Woolbright is an inventor and innovator of living walls with over 20 years in design, manufacture, marketing, and installation of plantable wall systems. He is passionate about educating the building community on the environmental benefits of LivingWalls and best practices for their use. Mark has been a long time partner and collaborator of Filtrexx, and will be running our new LivingWall Division. If you have questions on living walls, including the GreenLoxx®, Trinity™ or other systems, contact Mark at (314) 574-2887 or mark.woolbright@filtrexx.com.

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