Environmental Finance Center
Syracuse University

The Environmental Finance Center at Syracuse University **Programming Update for Elected Officials**

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Rural Leadership Development · Infrastructure Education and Outreach Tools · University-Community Collaborations

Green Infrastructure

This bioswale reduces the amount of stormwater runoff from roads while also removing pollutants from the water.

What is it? Green Infrastructure refers to ecological systems, both natural and engineered, that act as 'living' components of stormwater catchment. Green Infrastructure elements are planned and managed primarily for stormwater control, but also create social, economic, and environmental benefits (wcel.org).

Why is it important? Green infrastructure introduces a sustainable, environmentally sound, and cost-efficient alternative to traditional stormwater control systems. Compared with combined sewer systems, which are expensive to construct and maintain, Green Infrastructure systems infiltrate, evapotranspire, capture, and reuse stormwater. Green Infrastructure's natural design improves air and water quality, provides habitat for birds, butterflies and other wildlife, and creates opportunities for outdoor recreation. Natural Green Infrastructure beautifies communities, increases land value and reduces potential water pollution to nearby rivers and streams. Preservation, functionality of ecosystem services, and restoration are critical components of Green Infrastructure.

Green Infrastructure recharges local groundwater, reduces potential for flooding, can be used as an educational and research tool, eliminates standing water, increases water conservation, decreases erosion, reduces energy costs, reduces sewer overflow events, increases carbon sequestration, improves air quality and human health, provides additional recreational space, filters runoff pollution, and improves water quality.

Green infrastructure is important because it incorporates sustainability with habitability; its installation facilitates the coexistence of human communities and natural habitats while increasing the sustainability of the built environment.

Recent EFC Events

If you missed these events, and would like information for your office or for concerned constituents, please contact the EFC for event materials.

May 21, 2009: American Recovery and Reinvestment Act: This event provided information on federal funding for New York communities as part of our Technical Assistance Partnership Forum. The organizations that participated and shared funding news were: USDA Rural Development, NYS Environmental Facilities Corporation, Energy Smart Communities for the Central New York Regional Planning & Development Board, and US Department of Housing & Urban Development.

June 9, 10, & 11: Financial Dashboard Trainings: This tool was devised by the Boise State EFC for water systems management, and gave a clear and powerful picture of the following: how your municipal system is currently performing; areas where you can improve; and your future financial outlook. Bill Jarocki, director of the BSU-EFC, presented at each event. Materials can be found on the EFC website. Access this free tool at: http://efc.boisestate.edu/efc/

Upcoming EFC Events*

Legislators: Please alert your constituents to these events, as they may face water system planning challenges.

July 8 & 9 2009: Water Asset Management seminars in conjunction with NYS Department of Environmental Conservation.

SESSION I: July 8	**SESSION II:** July 9
3pm to 6:30pm	10am to 1:30pm
SUNY Brockport Metro Center	SUNY Oswego
55 St. Paul Street	Campus Center Room C114
Rochester, NY	Oswego, NY

Please see website for registration information.

September 13-17, 2009: Healthy Buildings 2009: Hosted by Syracuse Center of Excellence in Syracuse, New York, is the premiere triennial international conference of the International Society of Indoor Air Quality and Climate. This event brings together professionals from all over the world to share experiences and ideas for indoor environments and green building. For more information, visit www.hb2009.org or call (315) 443-4445.

*For all event information, please call (315) 443-4445, or check our website, efc.syracusecoe.org

The Environmental Finance Center at Syracuse University provides educational, financial, and technical services to elected officials and citizens seeking to implement or support environmental activities in their districts and communities. Our environmentally-conscious staff is constantly working to provide the most innovative, up-to-date, and cost-effective 'greening' tools to make spaces more livable and eco-friendly for all New Yorkers.

Examples of Green Infrastructure

Raingardens (or bioretention basins) are planted depressions designed to absorb rainwater from impervious areas such as roofs, driveways, walkways, and compacted low areas. Rain gardens reduce runoff by allowing stormwater to soak into the ground, as opposed to flowing into storm drains and surface waters. This is important because stormwater can cause erosion, water pollution, flooding, and can reduce ground water levels.

Vegetated Swales (or bioswales) are wide, shallow channels with a dense stand of native vegetative groundcover. These are designed to reduce the flow velocity of stormwater runoff, promote infiltration, and maximize the amount of time rainwater remains in the swale, which aids the trapping of particulate pollutants and silt. These are commonly used near parking lots and sidewalks.

Permeable Pavement (also known as pervious paving or porous pavement) is a type of road, sidewalk, and/or parking lot pavement that allows precipitation to infiltrate through to the soil below. The contrast is that impervious pavement does not absorb water, which is diverted into sewers, often leading to overflowing.

Green Roofs (also known as eco-roofs, vegetated, or living roofs) are building roofs partially or completely covered with vegetation planted over a waterproofing membrane. These roofs absorb stormwater and release it back into the atmosphere through evaporation and plant transpiration, while draining excess runoff and reducing the urban heat island effect.

Rain Barrels (or rainwater cisterns) are simple tanks that collect and store rainwater, typically from rooftops via rain gutters. This water can be used for future watering of plants, washing cars, agriculture, and the retention of stormwater for release at a later time.

Urban Forests encompass all of the above infrastructural components, as they are simply conserved areas of trees and vegetation that naturally process and filter stormwater and pollutants. It is important that communities develop open un-used impermeable concrete spaces into vegetative and leafy green forests, when possible.

The Roof of City Hall in Chicago. Studies indicate that the ambient air temperature was as much as 78 degrees cooler than the air temperature measured on the traditional black tar roof membrane which still exists on the Cook County half of the building.

Green Infrastructure Resources:

Create Your Own Rain Garden
http://blogs.cce.cornell.edu/onondaga/2006/09/07/what-is-a-rain-garden/

Native Landscaping
http://www.for-wild.org/

Rain Garden Plant List
http://www.uri.edu/ce/healthylandscapes/raingarden.htm

Stormwater Best Management Practices
http://cfpub.epa.gov/npdes/stormwater/menuofbmps/index.cfm

Rain Barrels
http://www.rainbarrelguide.com/

How to Compost http://howtocompost.org/

Permeable Pavers http://www.paversearch.com/permeable-pavers-menu.htm

Bioswales http://www.portlandonline.com/osd/index.cfm?a=115328&c=42113

Dark Sky Lighting http://www.darksky.org/

Green Roofs http://www.lid-stormwater.net/greenroofs_home.htm

Natural Resources Defense Council (NRDC), Rooftops to Rivers Publication
www.nrdc.org/water/pollution/rooftops/contents.asp

U.S. Environmental Protection Agency (EPA),
Managing Wet Weather with Green Infrastructure
epa.gov/npdes/greeninfrastructure

The Low Impact Urban Development Center, Urban Design Tools
www.lid-stormwater.net

The Green Infrastructure Planning Guide
greeninfrastructure.eu

U.S. Environmental Protection Agency, Stormwater Best Management Practices
cfpub.epa.gov/npdes/stormwater/menuofbmps/index.cfm

Funding for your community: Financing Tools and Strategies

FInancial Support Fieldguide for Green Infrastructure Projects
http://www.efc.syracusecoe.org
A guide to financial assistance opportunities and provides an overview of programs that include helpful tools and calculators which can be valuable to the planning of any Green Infrastructure project.

EPA's Guidebook of Financial Tools
www.epa.gov/efinpage/guidebook.htm
This 2008 revision of the Guidebook of Financial Tools is a reference document for officials with environmental responsibilities. It is designed to assist anyone interested in finding the means of financing environmental protection initiatives appropriate for various municipal departments.

Municipal Handbook: Funding Options
http://cfpub.epa.gov/npdes/greeninfrastructure/munichandbook.cfm#munic_funding
Describes strategies and provides case study examples of how local governments are generating reliable funding for Green Infrastructure.

Green Values Stormwater Toolbox
greenvalues.cnt.org/calculator
The Green Values® Stormwater Toolbox was originally developed primarily for use by planners, engineers and other municipal staff. As a result, the toolbox provides extensive technical information while also providing information on Green Infrastructure benefits, policy and implementation.

EPA Green Infrastructure Models and Calculators
http://cfpub.epa.gov/npdes/greeninfrastructure/modelsandcalculators.cfm
The features described here include predictive models and calculators to assist in modeling stormwater runoff, water quality impacts from land use changes, benefits of green roofs and urban tree coverage, pollutant reductions, and an evaluation of the performance of green infrastructure techniques. In addition, the calculators assist with quantifying the costs and benefits of stormwater treatment devices and Green Infrastructure application and design investments.

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