



GREEN INFRASTRUCTURE AND HOW TO “SAVE THE RAIN”

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Overview

- Introduction to GI and Onondaga County's GI Program
- Types of GI
- Sample Projects in Onondaga County
- EFC's Outreach Work

What is Green Infrastructure?

General Definition: Adaptable term used to describe an array of products, technologies, and practices that use natural systems – or engineered systems that mimic natural processes – to enhance overall environmental quality and provide utility services.

What does Onondaga County use it for? To capture water during storm events to reduce the load on our water treatment plant and reduce the need for “gray” infrastructure.

Why Is Onondaga County Using Green Infrastructure?

Stormwater/combined sewer benefits

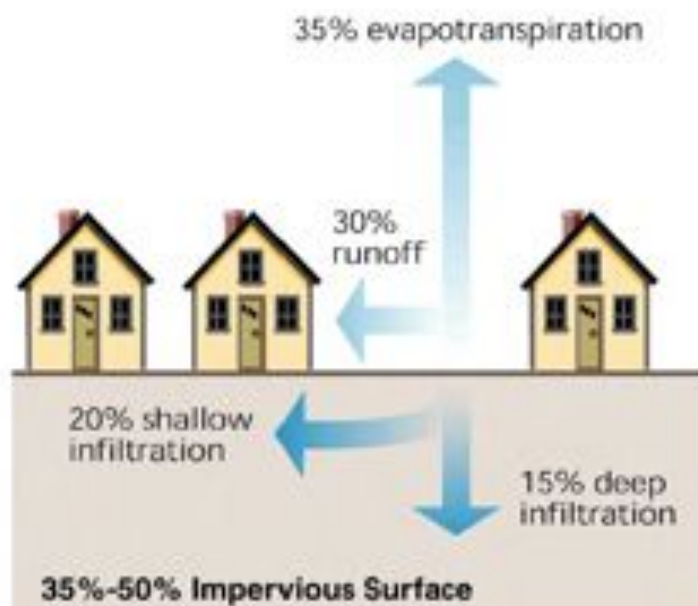
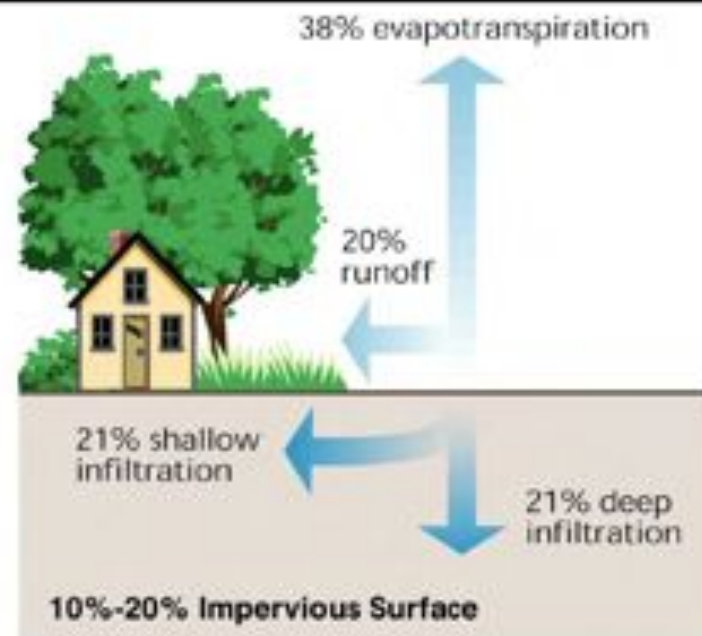
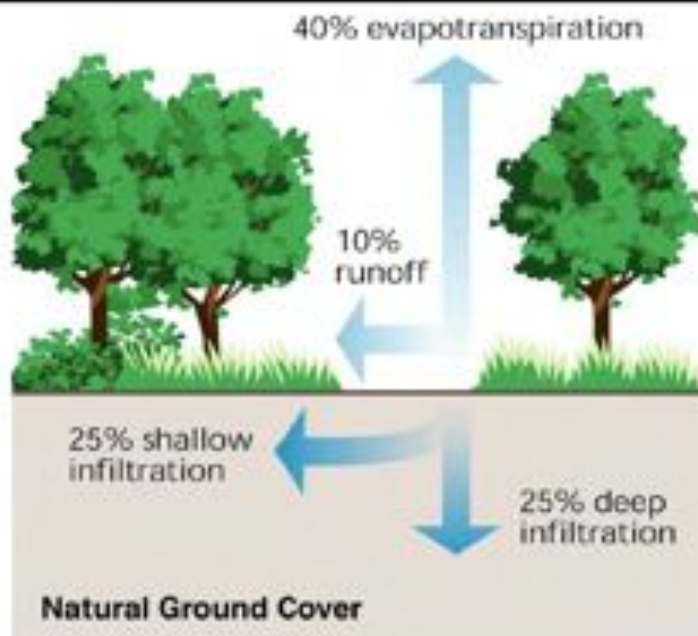
- ❑ Eliminates pollutants at the source
- ❑ Reduces discharge volumes to creeks, rivers, lakes, and wastewater treatment facilities
- ❑ Reduces flooding

Provides other benefits to the community & environment

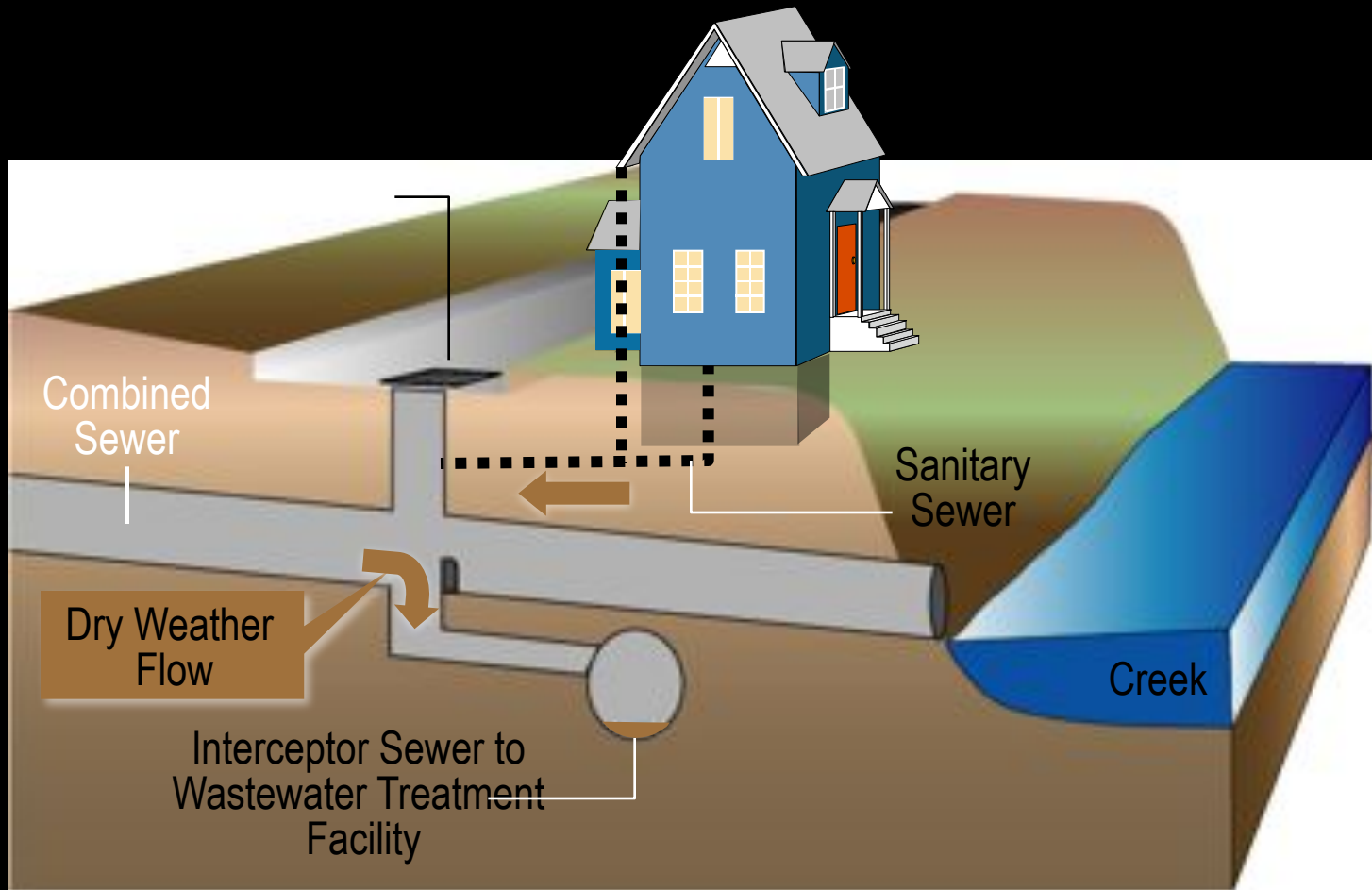
- ❑ Reduces consumption, Gray O&M costs, energy and heat island effects
- ❑ Improves neighborhood aesthetics, habitat, biodiversity, and air quality
- ❑ Can be less disruptive than large Gray Infrastructure projects
- ❑ Green Infrastructure is often more cost-effective than Gray Infrastructure

Your Water Quality Suffers

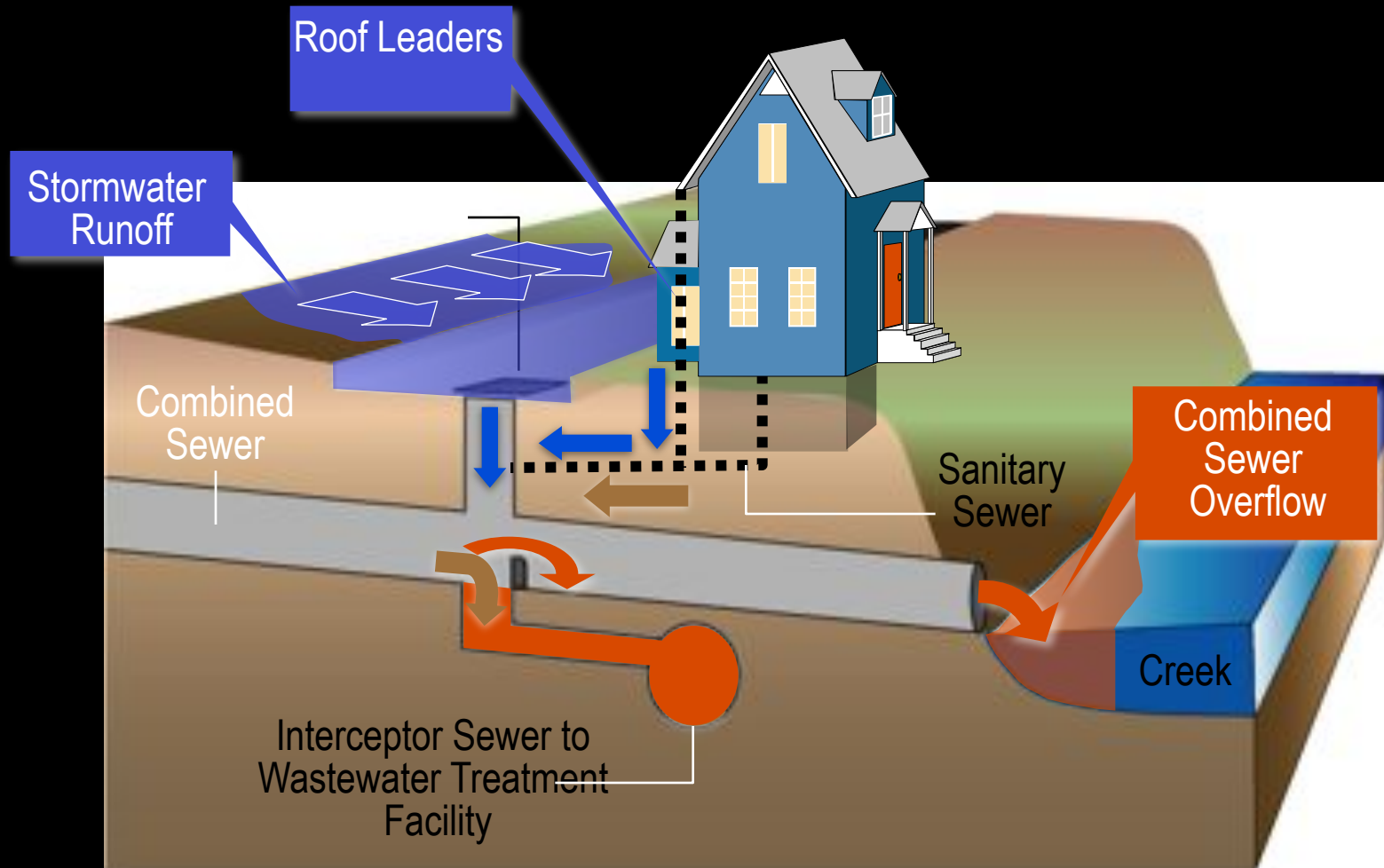
- 80% of pollution to the aquatic environment comes from land-based sources, such as runoff pollution.
- New York has identified nonpoint sources as the primary cause of water quality problems in 91% of its priority waterbodies.
- Once a watershed's impervious cover exceeds 20%, water quality suffers.



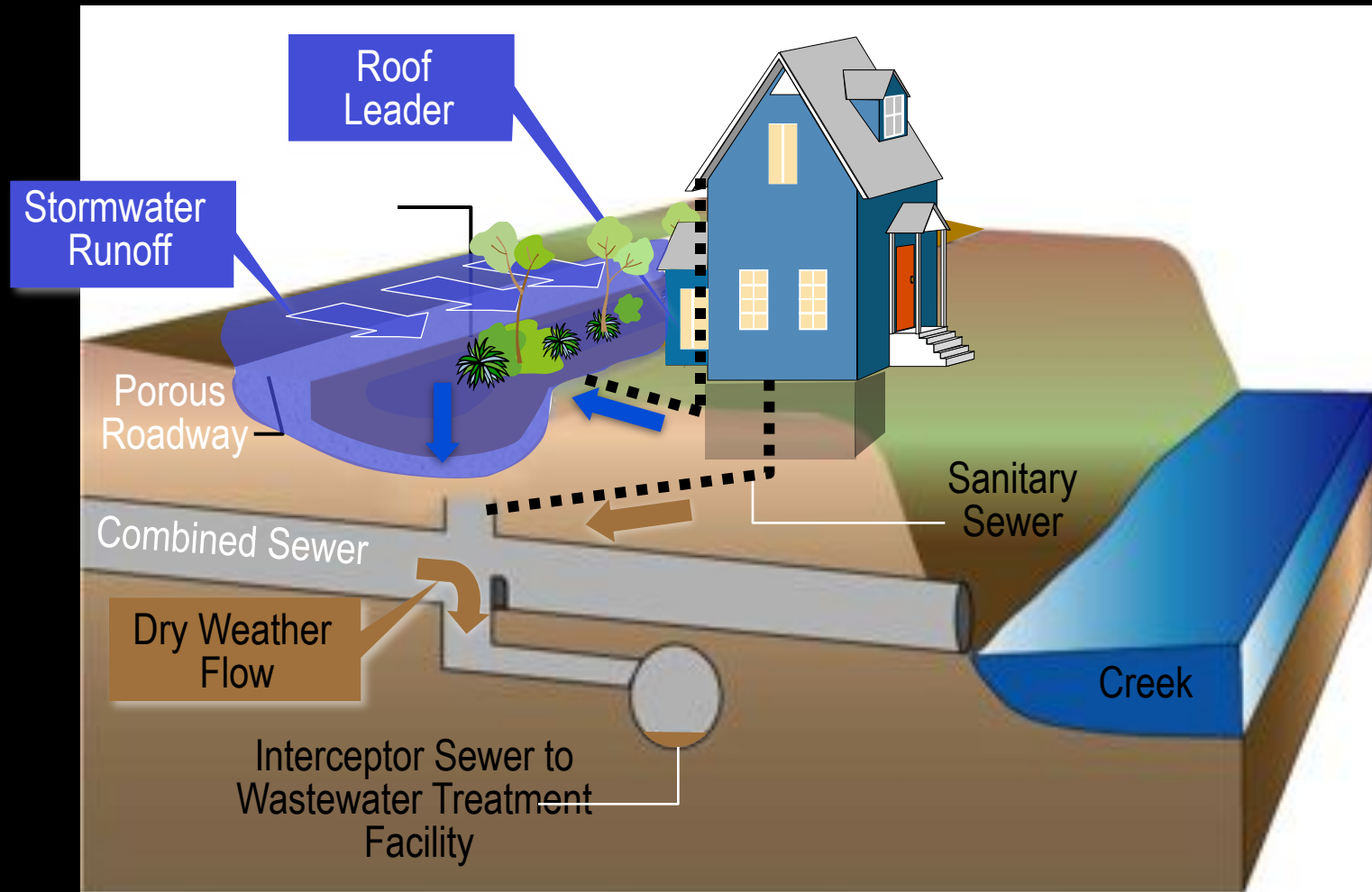
During dry weather, sanitary flows are collected in combined sewers for treatment at Wastewater treatment facilities



During wet weather, inflows exceed the collection system's capacity and trigger a CSO



Green solutions intercept and reduce stormwater flows to sewers, providing storage, infiltration, and treatment



Rethinking Saving the Rain

- Rain is a Resource!
- Shift from the curb, gutter and big basin approach to the way mother nature would manage stormwater
- Region or watershed → Neighborhood → Site

Green Infrastructure Improves:

- ❑ Water quality
- ❑ Air quality
- ❑ Neighborhood aesthetics
- ❑ Habitat and biodiversity
- ❑ Recreational and transportation opportunities
- ❑ Property values
- ❑ Community health and vitality

Green Infrastructure Reduces....

- Flooding
- Erosion
- Stormwater runoff volume
- Stormwater pollutant loadings
- CSOs
- Gray infrastructure operation, maintenance, energy and treatment costs

Types of Green Infrastructure

Green Wall



Bioswales



Rain Barrels



Rain Gardens

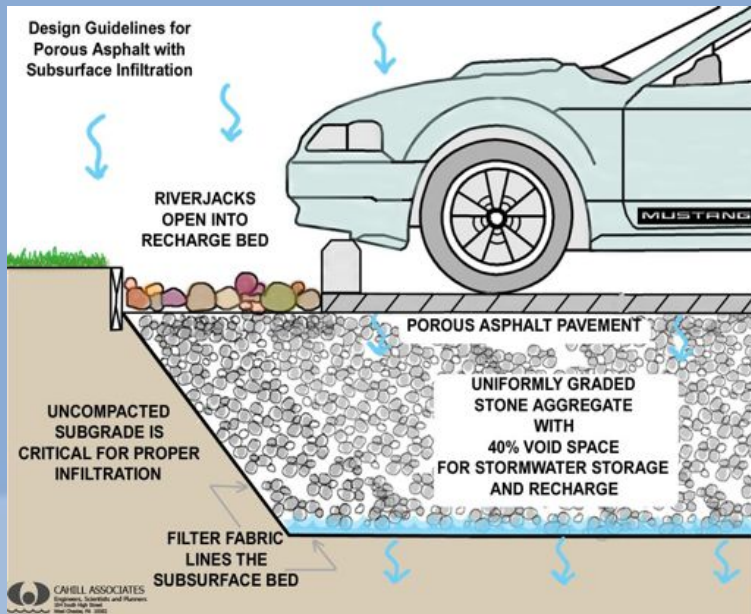
Green Roofs



Walters Hall, SUNY ESF



Porous Pavements



New porous parking lot at Dunbar Center in Syracuse







Sample Projects

Onondaga County Civic Strip

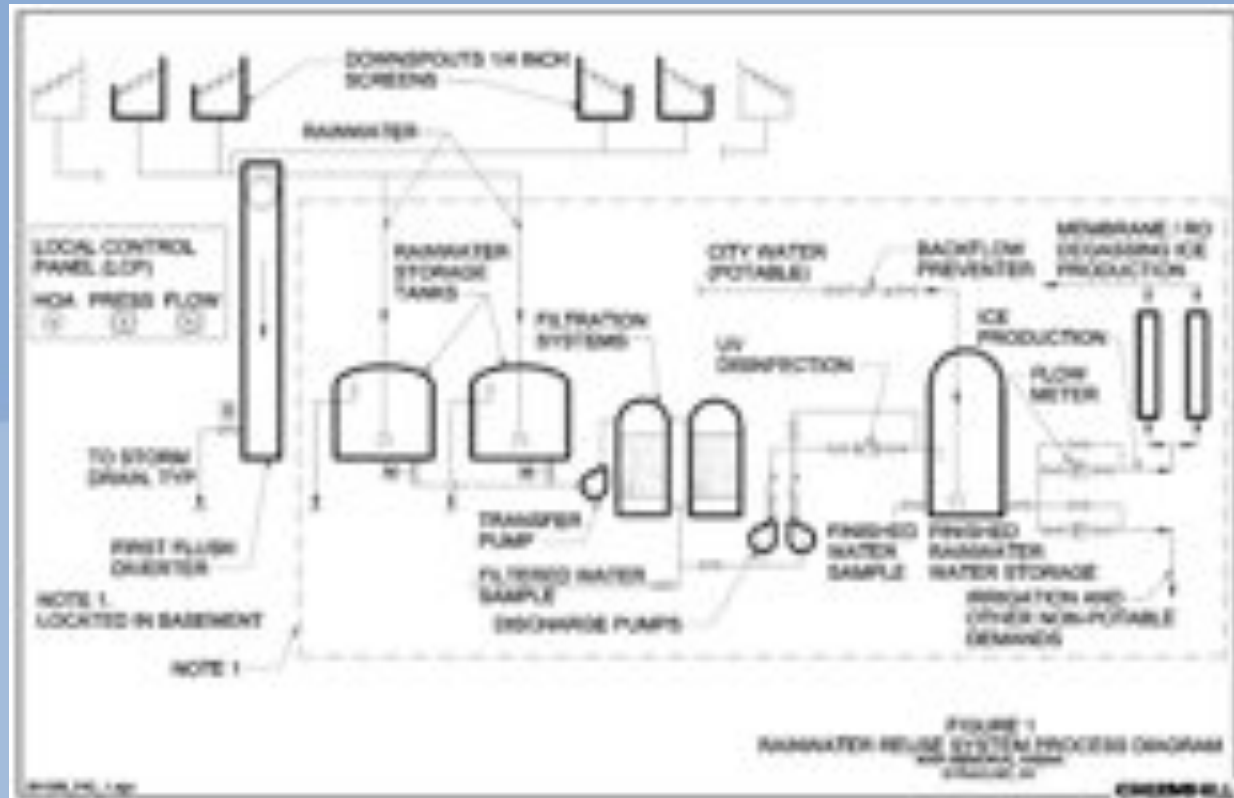
Greening County Facilities Utilizing Multiple Green Infrastructure Technologies



Location	Green Technology	Impervious Drainage Area (sq. ft.)	Estimated CSD Volume Reduction (gallons)
Court House	Bioretention, Enhanced Street Trees	6,100	88,071
Civil Center	Vegetated Roof	68,000	990,944
War Memorial	Cistern System	20,800	291,090
Convention Center	Vegetated Roof	18,700	247,506
	Pavement Removal/Bioretention	9,650	139,536
	Bioretention	15,100	218,011
Sheriff's Headquarters	Vegetated Roof	15,100	218,011
	Permeable Parking Lot	13,150	196,628
Criminal Court House	Vegetated Roof	21,400	313,430
	Permeable Parking Lot	30,750	515,491
Public Safety Building	Vegetated Roof	29,000	418,701
Justice Center	Vegetated Roof	13,100	168,099
Steam Station	Vegetated Roof	3,800	49,089
Community Plaza	Bioretention	43,000	620,832
County Parking Lot B	Permeable Parking Lot	13,940	198,080
Convention Center Parking Lot	Permeable Parking Lot	95,950	1,413,461
Convention Center Garage	Downspout Diversion to Bioretention	70,500	1,046,761
	Pavement Removal/Bioretention	6,650	96,011
E. Townsend St. Median	Enhanced Street Trees	20,120	272,988

TOTAL 458,118 6,842,210

Water Reuse at OnCenter War Memorial



EFC's Role – Outreach and Education

Save the Rain Programs

□ Workshops

□ Intro to GI for Homeowners and Businesses

- Topics include basic principles of stormwater hydrology, examples of simple GI for homes (rain barrels and rain gardens), and other GI opportunities for the community and businesses.

□ GI for New Homeowners

- Provides an introduction to green yard care and residential GI to participants in Home Headquarters' (HHQ) home ownership program.

□ Community Workshop

- Includes hands-on training for design and implementation of residential GI. Residential GI projects will be installed or maintained during each workshop through assistance by workshop participants.

Save the Rain Programs

□ Workshops

□ GI for Youth

- Participants will use and develop games, skits, role-plays, and hands-on opportunities to increase awareness about GI and instill an appreciation for the role young people play in reducing pollution.

□ GI and Art for Children

- combine crafts and hands-on activities to teach elementary and middle school age children about different kinds of GI: green roof birdhouse, painting a rain barrel, etc..

Save the Rain Programs

□ Workshops

□ Rain Barrel

- Participants at the workshops will learn proper installation techniques, maintenance and the role of rain barrels in reducing combined sewage overflows.

□ Landscape Professionals

- includes a refresher on stormwater management principles, GI options, examples of local projects, and strategies for marketing GI to landscapers' customers.

□ Pervious Products

- series of formal and hands-on workshops on the various pervious products available on the market will first provide an overview of the products, their uses and specifications, and installation guidelines.

Save the Rain Programs

- Design Charettes
 - ▣ This process will include community members in the visioning and decision-making process as plans are created to implement a neighborhood-planned and approved green street.
- Demonstration Projects
 - ▣ Rain gardens, green roofs, etc.

Save the Rain Programs

- Nature in the City
 - 3rd Grade classes learning about GI throughout SCS. The lessons will be: Traveling Water Drop, Stream Exploration, and Clean Water Matters.
- ESF in the High School
 - High school classrooms learning about GI throughout SCSD
- Exhibiting at Events
 - Come to local events like Blue Rain ECOFest and more to learn about Saving the Rain!

Collaboration is key!



Want to know more?

- Save the Rain Website:
www.savetherain.us
- US EPA's Green Infrastructure website:
www.epa.gov/greeninfrastructure
- NYS Department of Environmental Protection:
<http://www.dec.ny.gov/chemical/8468.html>
- Center for Watershed Protection:
<http://www.cwp.org/>

Contact Us

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Upcoming EFC Events

- Jane's Walk 2011
- Greenbuilt CNY
- SMM Webinars (June)
- Local Leaders Conference in Ellicottville (October)

...always check efc.syracusecoe.org, or join our eNews to learn about the latest events, resources, publications, and more!