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Onondaga County CSO Project - Save the Rain

Location: Syracuse, New York
Client: Onondaga County Executive Office
Size: Onondaga County
Cost: $2+ Million

Status: Completed 2013

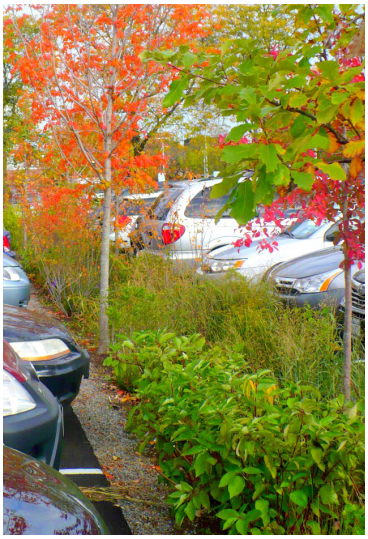
"Onondaga County's Save the Rain program has been identified by the United States Environmental Protection Agency (EPA) as a model green infrastructure community. The special recognition makes Syracuse and Onondaga County one of only ten communities nationwide to receive this special designation." -Save the Rain Website

A bioswale planted with native vegetation and large trees captures runoff from the street, provides shade and evapotranspiration, and enhances community aesthetic.

Having come under a 1998 Federal Court Amended Consent Judgment (ACJ), Onondaga County was required to reduce and/or eliminate combined sewer overflow (CSO) into area lakes and streams. The County first used gray infrastructure to manage CSO's, but by 2008, County officials recognized the need for alternative green interventions to minimize the cost of CSO reduction and provide additional benefits.

In 2010 Viridian Landscape Studio joined the green infrastructure design team bringing our familiarity with green infrastructure work and dedication to managing rain water at its source rather than in end of pipe solutions to the engineering team. Save the Rain's goal is to divert 250 million gallons of rainwater from the combined sewer system by 2018. Viridian made that goal a reality through the development of design, construction and maintenance plans for a myriad projects including: rain gardens, bioswales, wetland and meadow restorations, green roofs, street tree plantings and re-vegetation efforts. These projects not only 'Save the Rain,' but make beautiful places for people and animals alike.

Year	Project	Capture Area	Runoff Reduction
2010			
•	Townsend Parking Lot	55,000 sf	975,000 gal/yr
2011			
•	Avery Avenue Pass Arboretum Project	39,000 sf	746,000 gal/yr
•	Burnet Park /Zoo Entrance	39,000 sf	680,000 gal/yr
•	OnCenter Municipal Parking Garage	72,500 sf	1,277,000 gal/yr
•	Sunnycrest Park Arena Parking Lot	107,000 sf	1,876,000 gal/yr
•	Water Street Gateway	53,000 sf	924,000 gal/yr



Townsend Lot Bioswale after 1 growing season

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Onondaga County CSO Project "Save the Rain"

Location: Syracuse, New York
Client: Onondaga County Executive Office
Size: Onondaga County
Cost: 2010 - $342,000
2011 - $2,118,400 estimated
Status: 2011 under construction

Townsend Parking Lot - Bioswale Retrofit

Year Completed: 2010
Construction Cost: $342,000
Capture Area: 55,000 sf
Runoff Reduction: 975,000 gal/yr
Green Technology: Bioswales & Native Vegetation

The Townsend Lot has been acknowledged by the County as a "Prototype Parking Lot." Two 8' wide infiltration trenches, structural soil provides adequate rooting volume for native canopy trees and groundcover. Naturally irrigated by parking lot runoff, the trenches filter and recharge ground water. The infiltration trench design features overflow control measures to prevent localized flooding and over saturation of plantings.


Center Bioswale after 1 growing season

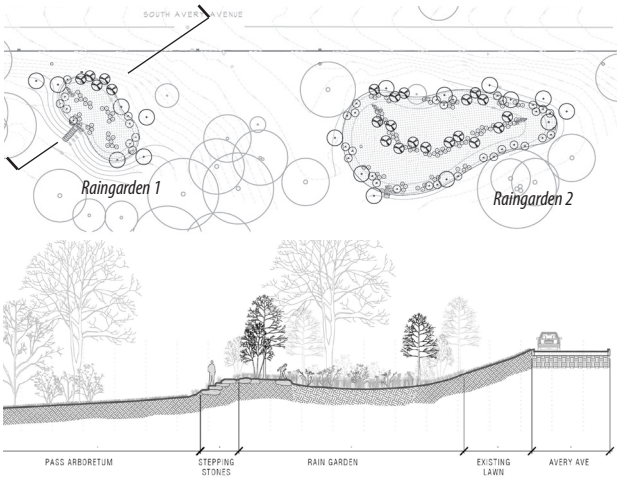

Final Plan

Avery Avenue/Pass Arboretum - Raingarden Retrofit

Year Completed: 2011
Construction Cost: $317,000
Capture Area: 39,000 sf
Runoff Reduction: 746,000 gal/yr
Green Technology: Raingardens & Native Vegetation

The Avery Avenue Pass Arboretum project is a partnership between the County and City of Syracuse Parks Department. Two raingardens, a combined total of 11,000 sq. ft., installed along South Avery Avenue, mitigate 750,000 gallons of annual runoff from adjacent neighborhood streets. The native plant palette was designed with respect for the mission of the Arboretum by providing horticultural diversity and seasonal interest while opening a new chapter in the history of the site.

Photo simulation of Raingarden 2 illustrating the horticultural nature of the proposed design.



Section thru Raingarden 1 from South Avery Avenue

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2011 - $2,118,400 estimated
Status: 2011 under construction

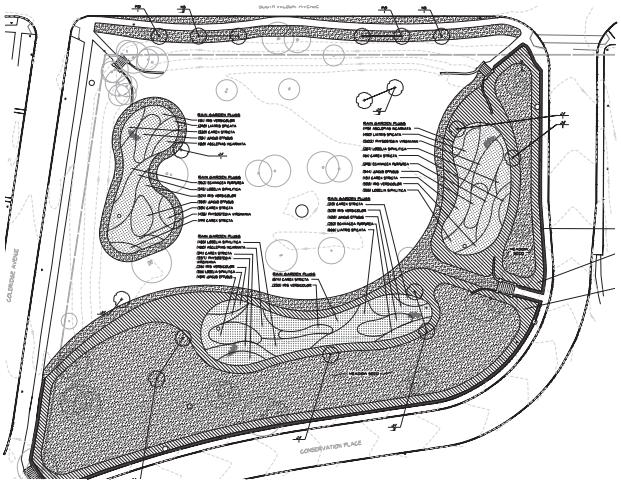
Burnet Park /Zoo Entrance - Raingarden & Meadow Retrofit

Year Completed: 2011
Construction Cost: $300,000
Capture Area: 39,000 sf
Runoff Reduction: 680,000 gal/yr
Green Technology: Raingardens & Meadow

The Burnet Park /Wilbur Ave Zoo Entrance enhancement will capture runoff from numerous adjacent streets in three large horticulturally diverse raingardens allowing for infiltration and evaporation. In addition to raingardens, the transformation of 36,560 sq. ft. of lawn into meadow also provides both runoff reduction and habitat renewal and expands upon adjacent meadow restoration efforts.


BEFORE


INSPIRATION


Final Plan with three raingardens - two set within a meadow restoration that now extends the meadow from the hill behind.

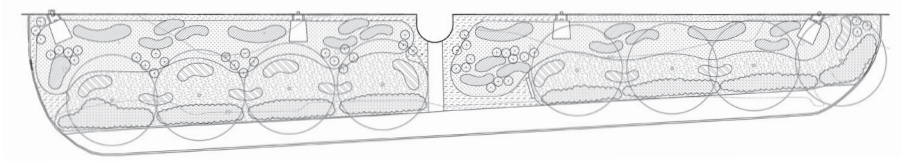
OnCenter Municipal Parking Garage - Raingarden Retrofit

Year Completed: 2011
Construction Cost: $234,000
Capture Area: 72,500 sf
Runoff Reduction: 1,277,000 gal/yr
Green Technology: Raingardens & Native Vegetation

Home to numerous entertainment attractions for regional and national audiences, the OnCenter garage parking surface is vast. By disconnecting downspouts from the CSO and directing runoff into two large raingardens, the annual runoff reduction is around 1.3 million gallons. Using techniques such as airspading, Viridian was able to design the two raingardens while preserving eight large caliper Locust trees integral to the stormwater cycle.


BEFORE


AFTER


Final Plan illustrating proposed raingardens set behind existing mature Locust trees.


AFTER

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Status: 2011 under construction

Sunnycrest Park Arena Parking Lot - Stormwater Retrofit

Year Completed: 2011
Construction Cost: $431,000
Capture Area: 107,000 sf
Runoff Reduction: 1,876,000 gal/yr
Green Technology: Bioswales & Tree Trench Plantings

Adjacent to Henninger High School, the Sunnycrest parking lot retrofit illustrates the direct benefit of stormwater reduction through green technology and design. Using a combination of porous paving, bioswales, tree trenches and street tree plantings, students and users of the park facility will be able to see first hand the connection between water, soils and vegetation.

Aerial view of existing parking lot

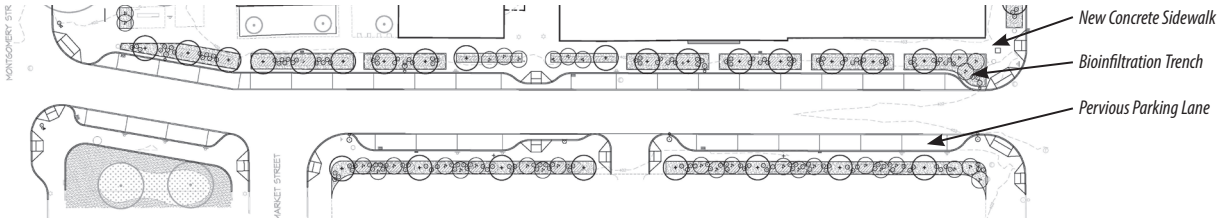
Photo simulation of proposed bioswale and street tree plantings along school entrance.

Plant Palette: Serviceberry, Black Gum, Winterberry, Sweet Pepper Bush, New York Aster & Blue Flag Iris.

Water Street Gateway - 'Green' Street Retrofit

Year Completed: 2011
Construction Cost: $837,000
Capture Area: 53,000 sf
Runoff Reduction: 924,000 gal/yr
Green Technology: Bioinfiltration Trenches, Porous Paving & Native Vegetation

The Water Street Gateway project is the first comprehensive 'Green' street application of the **Save the Rain** gateway projects. Using alternative stormwater design technologies such as street tree bioinfiltration trenches, porous pavers in parking lanes and native vegetation, the 300 block of Water Street not only captures almost 1 million gallons of runoff per year, but is a major urban streetscape enhancement that is the first part of a long term strategic vision for a Water Street green corridor.



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