



Green Infrastructure & Stormwater Management CASE STUDY

Brookside Gardens Rain Garden

Location: Brookside Gardens, MD

Client: MNCPPC-Montgomery County, Brookside Gardens

Design Firm(s): Low Impact Development Center

Landscape architect/Project contact: Ann English, ASLA

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Project Specifications

Project Description: This project was designed to eliminate a long standing runoff problem at the garden and to create a new display garden at the same time. The rain garden cells display what a rain garden can be in shade and sun. The garden was also intended to treat the 2-year storm event and to handle the additional water contributed after water moved through a permeable paver walk. The project is intended to educate the public about the positive possibilities with LID tools such as rain gardens and pervious pavement.

Project Type:

Open Space-Park

A retrofit of an existing property

Design features: Rain garden and porous pavers.

This project was designed to meet the following specific requirements or mandates:

Developer/client preference

Impervious area managed: 5,000 sq/ft to 1 acre

Amount of existing green space/open space conserved or preserved for managing stormwater on site: Less than 5,000 sq/ft. This was unusual because the majority of the drainage area was from turf. There is some contributing impervious area but largely water was running off 2 acres of compacted turf. However, the runoff was of sufficient volume that

materials from the previous display garden were washed out of the ground into the storm drain in every rain event greater than 1".

The regulatory environment and regulator was supportive of the project.

Did the client request that other factors be considered, such as energy savings, usable green space, or property value enhancements? Preserving display bed space, widening the walkway to accommodate visitation, reusing stone on-site.

Cost & Jobs Analysis

Estimated Cost of Stormwater Project: \$100,000-\$500,000
(Public funding: Federal, regional, local)

Was a green vs. grey cost analysis performed? No

Cost impact of conserving green/open space to the overall costs of the site design/development project: Costs were unique in this project due to the variety of funding sources. The garden received an in-kind donation of approximately \$60,000 from a local landscape contractor who donated the pipe, gravel, heavy equipment, 57 drain stone and the permeable interlocking concrete pavers as well as labor to do the infrastructure work. The design



and site management was funded under the auspices of a NFWF grant and included other parts such as the web based rain garden template site and presentations of the project after it was complete. The Montgomery County DEP supplied many of the plants which were installed through their RainScapes Program so the cost to the garden (client) were extremely low for a project of this size.

Cost impact of conserving green/open space for stormwater management over traditional site design/site development approaches (grey infrastructure)? Did not influence costs. This project provided a means to solve an existing problem due to the grant funding. There would not have been an ability to install other traditional SWM.

Number of jobs created: Project – 8 jobs, but this also gave the company the expertise to market and maintain their workers in a new category of work.

Job hours devoted to project:

Planning and Design: 60

Construction: 350

Annual Maintenance: 70-100

Performance Measures

Stormwater reduction performance analysis:

This was designed to fully retain the 2-year storm event. Additional storage was provided under the underdrain in the form of a 57 stone bedding layer. The garden has never crested the sides and the amount of water that is draining through the underdrain and exiting above the stream appears to be less frequent as more roots are developed in the garden.

Community & economic benefits that have resulted from the project: This provides a readily accessible and interpreted rain garden for designers and the public. It provides a timely themed display bed as the garden has shifted its overall vision towards sustainable landscape solutions. The garden is directly adjacent to a stream so the connection between best management in the garden and water health is easily made.



Project Recognition

Landscaping Contractors Award

Additional Information

Links to images: http://www.lowimpactdevelopment.org/raingarden_design/gallery1.htm
http://www.montgomeryparks.org/brookside/documents/brookside_rain_garden.pdf



This garden was developed in close collaboration with the horticultural curator at Brookside Gardens, Phil Normandy and his gardener staff. The final design reflects the collaboration of landscape architectural design & civil engineering and horticultural knowledge, which created a solution that addressed and mitigated a 20-year-old problem at the garden.