

A Citizen-Based Approach to Stormwater Management



Raingardens to Improve Impaired Waters

Powderhorn Lake, Minneapolis
Hennepin County, Minnesota

LCCMR Project 09-05e
June 2012



Education and action influenced community members to improve Powderhorn Lake water quality.

- The Powderhorn Lake neighborhood implemented best management practices to reduce stormwater runoff to Powderhorn Lake by directing 70,000 square feet of impervious area to bio-infiltration basins (raingardens).
- 230 community members were involved in activities related to implementation of water quality protection practices.
- 125 raingardens were installed through a fast-track design and construction process.
- Multiple community cleanup events were held which resulted in over 130 large bags of leaves and debris from entering the lake.



fast facts

- 125** raingardens installed
- 230** community members involved
- 50%** property owners (non-rentals) participated in test area
- > 70,000** square feet of impervious area redirected
- > 15,000** native perennials planted

how? Citizen Engagement Methods Key to Successful Outcomes

- Enlist local champions of stormwater management to reach out to community members.
- Use a combination of outreach methods: workshops, mass mailings, door knockers, neighborhood home meetings, and canvassing.
- Include multi-lingual staff and community members to engage non-english speaking community members.
- Use a non-profit organization for outreach and implementation to offset skepticism associated with a private firm or city-led effort.
- Provide an economic incentive and a well-crafted, educated message.

why? Project Vision

The long-term success in reducing impairments to urban lakes and waterways will require better citizen-based approaches to increase public awareness and effect behavior change. A coordinated plan is also required that focuses efforts on areas and stormwater management practices providing the best benefits to the impaired receiving waters. This project evaluated community outreach approaches through a pilot study of the fast-tracked installation of over 100 raingardens in a 28-acre sub-watershed draining to Powderhorn Lake, Minneapolis. Stormwater best management practices (BMPs) were restricted to installations on private property. Stormwater monitoring was also integrated into the project to assess whether reductions in pollutant loadings or volume could be detected and provide support for future water quality improvement plans for Powderhorn Lake.

Citizen-Based Approach to Stormwater Management – Neighborhood of Raingardens

The term “Neighborhood of Raingardens” was created to define the collective approach to implementing stormwater management practices clustered in neighborhood areas. The goal is to educate citizens on the ways they can have a positive effect on the local water quality through a variety of methods such as: raingardens, permeable pavers, green roofs, rain barrels, native plantings, boulevard plantings and yard maintenance. Raingardens serve as a visible tool and ‘hook’



to gain citizen interest and encourage neighbor participation. The large-scale community participation process not only teaches participants about water quality protection, but it also builds a stronger and more beautiful community through increased community outreach.

methods

The project was developed through three phases: citizen engagement, design, and installation. Measurement activities preceded and occurred throughout the project.

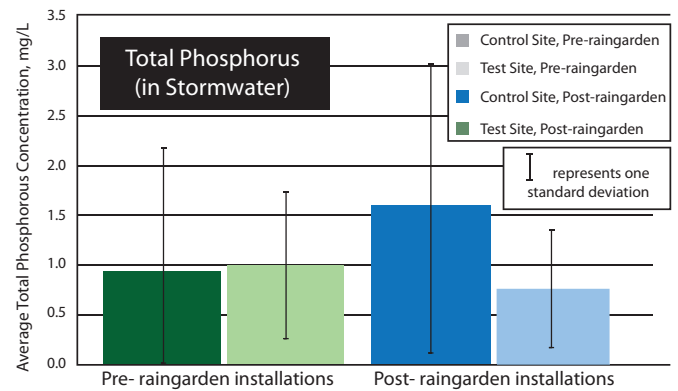
Participant Process

Metro Blooms' general approach to citizen-based stormwater management projects involves the property owner throughout the process. For this project, the property owners were presented the large incentive of free design and installation services, as well as free garden plants and materials. Because this was a fast-paced project, it was difficult for most property owners to be involved in the installation process, but local youth teams assisted and institutional properties held events that engaged numerous community members.



Measurement

Performance was measured by monitoring the water quality and quantity of stormwater discharged to Powderhorn Lake from the area with raingardens (test site) and a neighboring watershed without raingarden installations (control site) and comparing the results from the two sites. Minneapolis Park and Recreation Board (MPRB) installed and maintained equipment for three years to provide stormwater runoff characteristics before and after the raingardens were installed. Surveys, site assessments, and maintenance activities were also used to evaluate the effectiveness of the Neighborhood of Raingardens in improving Powderhorn Lake water quality.



results

Monitoring in urban storm sewers has its challenges and coupled with the climatic conditions for the project period, fewer water quality samples were collected than planned. While the paired watershed analysis results do not show a statistically significant outcome, the few water quality samples collected in 2011 provide promise that the test neighborhood efforts could have reduced pollutant loadings when compared to the control area.

Other project measurements demonstrate that education and action influenced community members to improve Powderhorn Lake water quality. Over 230 people participated in project events and over 130 large bags of debris were collected in maintenance activities. In addition, post-survey results of participating property owners indicated that 76% enhanced their garden with additional plants, landscape materials or art. Over 50% implemented additional BMPs in their yard, such as adding a rain barrel or additional raingardens.

future plans

- Continue stormwater monitoring (City of Minneapolis is funding 2012 monitoring by MPRB).
- Further develop Metro Blooms' volunteer-based, raingarden evaluation program to provide added incentive for continued maintenance of raingardens.
- Focus new urban projects on maximizing backyard runoff capture with multiple types of BMPs.

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