



### **Protect**

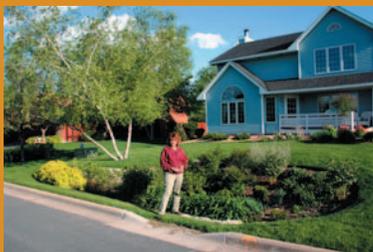
Crystal Lake

### **Infuse**

Natural Beauty

### **Create**

Neighborhood Unity



### **Recognition and Publication**

Minnesota Environmental Initiative Award  
Land & Water Magazine  
St. Paul Pioneer Press  
Minneapolis Star Tribune  
Public Works Magazine

# **Burnsville Rainwater Gardens**

*A nationally significant demonstration project*

## **Purpose**

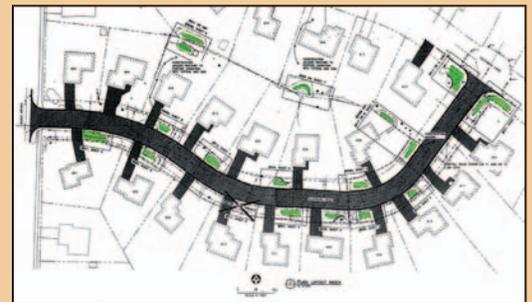
To protect Crystal Lake from excess phosphorus and large volumes of stormwater runoff through a rainwater garden system. This system is designed to soak vast amounts of water into the ground rather than routing it via storm sewers to Crystal Lake where it is detrimental to water quality.

## **Why nationally significant?**

- It's new technology.
- They work! Stormwater runoff is reduced by more than 90 percent.
- The paired watershed study proves the effectiveness of rainwater gardens in reducing stormwater runoff (see reverse).

## **Rainwater Garden Design**

The gardens were designed to add visual unity to an existing 1980s neighborhood. In all, 17 gardens were constructed—13 along Rushmore Drive and four in a backyard swale that drains to Rushmore Drive. The gardens feature limestone retaining walls, colorful perennials and shrubs, and gradual side slopes. They were designed for easy maintenance.



*The gardens are shown above in green.*

## **Construction and Planting**

In September 2003, the contractor began construction on the rainwater gardens by cutting the sod, excavating below grade, backfilling the depressions with topsoil and compost, and installing edging and retaining walls. Homeowners were involved in planting their own gardens with the help of the project team. Curb cuts were installed in May of 2004.



## **Cost and Funding**

Construction Cost: \$ 8.00 per square foot

Homeowner Education, Design, and Construction Supervision Costs: \$ 4.50 per square foot

Funded by the City of Burnsville and a grant from the Metropolitan Council

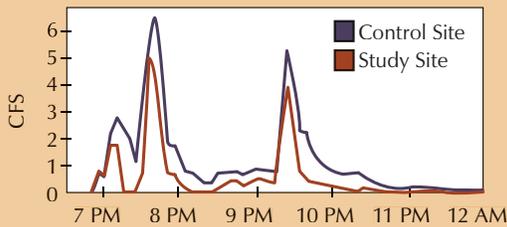


*A dip in the curb allows stormwater runoff from the street to flow into the garden.*

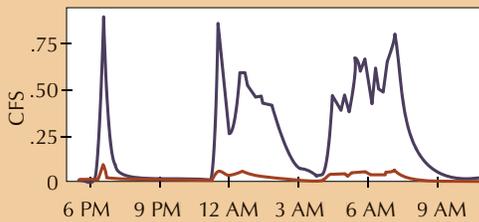


These neat and attractive gardens are easy to maintain, and homeowners love them.

### Before Construction



### After Construction



**Before:** Measured in cubic feet per second (CFS), runoff volumes from a 2.7-inch rainfall in August 2002 demonstrate the control watershed and the study watershed have similar runoff levels.

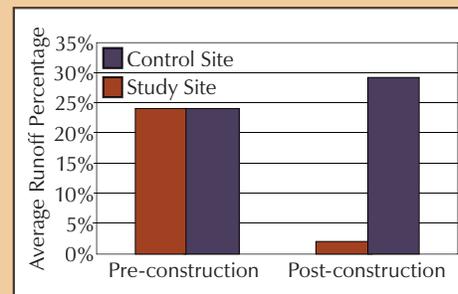
**After:** A 1.4-inch rainfall in June 2004 demonstrates the rainwater gardens have reduced runoff by approximately 90 percent.

## Amazing Results—90% Reduction

Two similar watersheds—a control site and the rainwater garden neighborhood—were monitored prior to and after installation of the new stormwater treatment practices. Runoff rates and volumes were collected in the storm sewer pipe at the outlet of each watershed. After collecting data two seasons before and two seasons after the project's implementation, the results are in, and the project is an overwhelming success.

The paired watershed study determined that the rainwater gardens have reduced runoff volumes by approximately 90 percent confirming that

existing residential neighborhoods can be successfully retrofitted with rainwater gardens and provide high levels of runoff reduction and stormwater quality improvement. In addition, the high participation rate among homeowners indicates that rainwater gardens can be viewed as a valuable amenity to property owners.



There is a 93 percent reduction in the overall runoff volume from the study watershed since the rainwater gardens were installed.



Rain gardens flank the street connecting the neighborhood visually.