



# SUNRISE ESTATES STORMWATER NEWS



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## Reducing Stormwater Runoff with Rain Gardens

By Ed Bulliner



Native plant rain gardens can be an attractive addition to your landscape. (Photo: City of Brunswick, MN and Barr Engineering)

Rain gardens can be a great way to reduce stormwater runoff from your property.

### What is a Rain Garden

A rain garden is a particular kind of garden designed to capture stormwater runoff. Rain gardens are installed with special soils and plants to help absorb water. Soils are amended by adding materials such as sand and compost to allow water to soak into the ground. Plants with a deep root structure, generally native species, are chosen as they create lots of openings within the soil for water to percolate deep into the ground. Rain gardens can be connected to your gutter's downspout or anywhere else there are large surface flows.

### How Do Rain Gardens Work

The most important feature of a rain garden is its ability to soak in (infiltrate) more water than the surrounding landscape. The soils and plants in rain gardens allow them to soak up water like a sponge. Water that infiltrates into the ground is more likely to stay there instead of immediately running off to our streams. This water can then return to the atmosphere through a combination of water evaporation and plant water use, a process called evapotranspiration. Increasing evapotranspiration helps reduce surface runoff and creates lower peaks in flow downstream during storm events that could otherwise be harmful to aquatic habitat.

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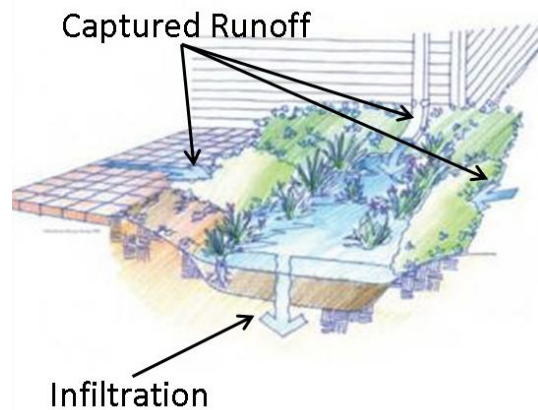
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### Monitoring Rain Gardens in Sunrise Estates

One of the goals of the Hinkson Creek Urban Stormwater Retrofit Project is to understand the effectiveness of rain gardens in reducing stormwater runoff here in central Missouri. To do so, we will install six monitored rain gardens in the Sunrise Estates subdivision. In addition to reducing stormwater runoff, these rain gardens have instrumentation to measure exactly how much runoff the rain gardens are capturing and infiltrating.

### Why Monitor Rain Gardens?

In central Missouri, our clay soils have naturally low infiltration rates. As a result, altering the soil to allow for more infiltration is particularly important. Unfortunately, there is not much information for our region as to what alterations work best and are the most cost effective. We will be testing different soil mixes to determine which soil alteration results in the best infiltration rates and greatest decrease in stormwater runoff. These mixes will consist of different amounts of sand, compost, and topsoil.



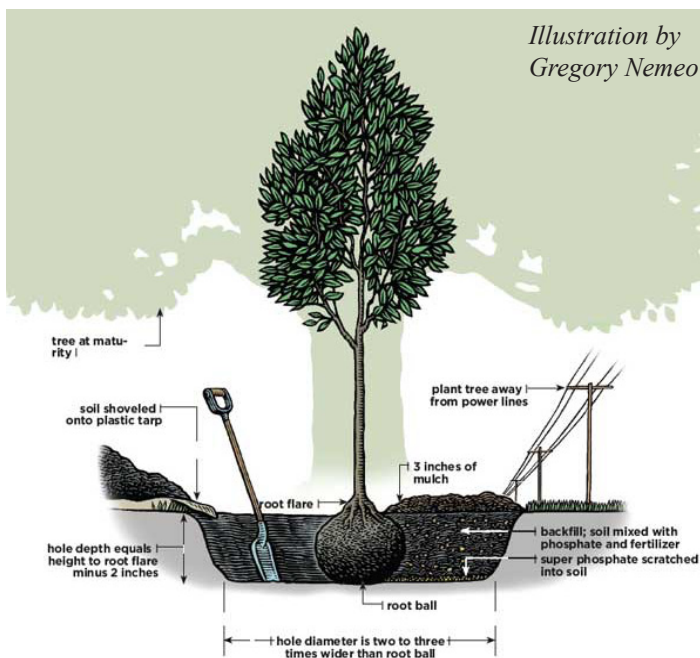
Monitoring equipment will be installed in six rain gardens to measure how much of captured stormwater runoff infiltrates into the ground. (Image: Chicago Field Museum)

# Planting Trees to Improve Water Quality

By Nicki Fuemmeler

## Tree Benefits/Function

Trees improve water quality by decreasing the amount of stormwater runoff and pollutants that reach our local streams. Trees can reduce stormwater runoff by capturing and storing rainfall in the canopy and releasing water back into the atmosphere through evapotranspiration. Tree roots promote the infiltration of rainwater in to the soil, reducing runoff and flooding. Did you know a 25 foot diameter Swamp White Oak can capture and remove more than 3,400 gallons of water a year?



## Installation

Plant trees at least 15 feet away from other trees, houses, and sidewalks. There are several steps that should be taken to correctly plant large trees. First, measure the tree's root ball and mark a circle two or three times wider than the root ball's diameter where you want to plant the tree. This will allow the roots to spread away from the root ball. Remove enough soil to expose the root flare. Measure the height of the root ball from the ground to the root flare, subtracting two inches to determine digging depth. This will allow for settling. When the tree is placed how you want in the ground, remove the wire basket, twine, and burlap from the root ball. Loosen tightly packed soil around the root ball to expose the roots. Combine the correct fertilizer with the excavated soil and

backfill, leaving the root flare exposed. Form a six inch curb around the tree and fill the crater with water. Knock the curb down once the water is soaked in. Spread three inch bark mulch over the exposed soil, keeping the mulch away from the tree trunk. After planting, remove branches that are broken, rubbing, or crossing each other. Cutting a few of the smallest branches back to the trunk will help direct growth into the terminal leader and stronger lateral branches. For plants dug from a nursery (not grown in a container), moderate thinning at planting time will help compensate for the loss of roots due to digging. Do not remove more than 20% of branches.

## Maintenance Requirements

Newly planted trees should be watered daily for six weeks after planting, unless temperatures are below freezing. Following this period, trees should be watered weekly with approximately five gallons of water unless there has been enough rain to soak the ground or temperatures are below freezing. Maintaining a 2-4 inch layer of hardwood mulch will help to prevent moisture loss. After initial pruning, newly planted trees should not be pruned for the first three years.

## How Much Benefit Do Your Trees Provide?

Trees in urban areas provide a number of important benefits. They help clean the air, decrease stormwater runoff, raise property values, and reduce energy costs. To see how much benefit your trees provide, visit [www.treebenefits.com/calculator](http://www.treebenefits.com/calculator).



For more information visit [www.sunriseestates.net](http://www.sunriseestates.net).



## *Sunrise Estates Stormwater Project*

# **PLANTING TREES** *to* **REDUCE STORMWATER RUNOFF**

***Sat. April 28, 2012***

**9:00 - 11:00 am**

***Prairie Grove Baptist Church***

Boone County and our partners are working to reduce flooding and improve water quality in Sunrise Estates by cost-sharing with residents to plant trees.

To receive a free tree you must:

- Attend the workshop
- Sign a maintenance agreement to water and care for your tree
- Contact "DigRite" prior to tree planting
- If renting, please show written permission from the property owner
- Plant your tree within one week of the workshop
- A tree planting demonstration will follow at the Sunrise Estates Park Pavillion

*Help us reach our goal of planting 30 trees this spring!*

*Please register by 5:00pm April 13 with*

**Steve Johnson at 573.256.2602,  
or email at [manitoubluffs@gmail.com](mailto:manitoubluffs@gmail.com)**

Chad Herwald, the City of Columbia's Arborist will make a presentation on proper planting and tree care.

Staff assistance is available to help with information about tree placement in your yard to maximize stormwater reduction.

*See the list on the back and tell us which tree you prefer!  
We can't wait to see you!*



U.S. Environmental Protection Agency Region 7, through the Missouri Department of Natural Resources, has provided partial funding for this project under Section 319 of the Clean Water Act. G11-NPS-12



## ***Medium Height Trees***

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None of these trees should get over 40 ft tall, with most in the 25-30 ft range.

River Birch, 30-40 ft

Service Berry, 20-25 ft

Redbud, 20-25 ft

Papaw, 15-20 ft

Silver Bell, 25-30 ft

## ***Trees Suited for Wildlife Habitat***

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These trees produce fruit or berries that attract a range of song birds, butterflies and other wildlife. *The persimmon can be quite messy; therefore we will not order them unless specified by you.*

Service Berry, 20-25 ft

Sassafras, 30-60 ft

Redbud, 20-25 ft

Papaw, 15-20 ft

Hackberry, 40-60 ft

Witchhazel, 15-20 ft

Persimmon, 35-60 ft

## ***Showy Trees***

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These medium height trees provide beautiful spring color. They are perfect for front yards and under the canopy of larger trees.

Silver Bell, 25-30 ft

Redbud, 20-25 ft

Witchhazel, 15-20 ft

## ***Shade Trees***

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Do you want a large tree for decades of shade? These hardy trees placed in an optimal spot will get more than 50 ft tall. Several are very slow growing, so perhaps grandchildren will be around to enjoy them as well.

Swamp White Oak, 50-60 ft

Hackberry, 40-60 ft

Tulip Tree, 70-90 ft

Basswood, 60-75 ft

Burr Oak, 50-60 ft

Pin Oak, 60-70 ft

## ***Trees that Love Wet Soils***

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These trees can handle getting their feet wet. If you have standing water or areas prone to frequent flooding, these might be the best choice for you.

Swamp White Oak, 50-60 ft

Witchhazel, 15-20 ft

Bald Cypress, 50-70 ft

Nutall Oak, 40-60 ft





All residents who are registering for the Tree Planting Workshop must start the process to have the utilities in their yard marked through the **Missouri Dig-Rite Program** which provides a one call service to locate underground utilities. The initiation of the service must be made by the property owner or renter. This can be done by calling or going online to submit a request for free utility location.

## Call 1-800-DIG-RITE (800-344-7483) or 811

Or start the process through the internet by going to: [www.mo1call.com](http://www.mo1call.com) and clicking on "Homeowner Information"

### The questions you will be asked to process the request include:

- |   |   |
|---|---|
| -Name                                     | -Depth of excavation                                  |
| -Telephone Number                         | -Address and county                                   |
| -Type of work and equipment               | -Where on the property the work will take place       |
| -Will you excavate on public right of way | -Name of two intersecting streets job site is between |

The utility service people will mark the underground utilities within two full working days of the request (assuming all information has been provided by the homeowner).

## REGISTRATION

**REGISTER BY CALLING:**  
573-856-2602 or email to  
[manitoubuffs@gmail.com](mailto:manitoubuffs@gmail.com)

**MAIL TO:**  
Missouri River Communities Network  
200 Old 63 South, Suite 203  
Columbia, Missouri 65201

- ☐ Yes, I want to register to attend the Tree Planting Workshop and receive a free tree.
- ☐ Yes, I want to register to attend the Build Your Own Rain Barrel Workshop and build a rain barrel.

\_\_\_\_\_ Number of barrels you want to build

\_\_\_\_\_

First Name

\_\_\_\_\_

Last Name

\_\_\_\_\_

Home Phone Number

\_\_\_\_\_

Cell Phone Number

\_\_\_\_\_

Address

\_\_\_\_\_

City

\_\_\_\_\_

Zip Code

\_\_\_\_\_

Email



U.S. Environmental Protection Agency Region 7, through the Missouri Department of Natural Resources, has provided partial funding for this project under Section 319 of the Clean Water Act. G11-NPS-12







# Build A Rain Barrel Workshop

Learn to build a Rain Barrel and then take it home to install

**Saturday, April 14 9am-12pm**  
**Sunrise Estates Park Pavilion**

**\$20 each barrel**  
(\$45 discount from retail)

**Register by Friday, April 6**

All participants **must** register in order to receive a barrel.

Complete the registration form in this newsletter and send it to Steve Johnson, or go to the Sunrise Estates website ([www.sunriseestates.net](http://www.sunriseestates.net)) to register online.

## What is a rain barrel?

A rain barrel collects and stores rainwater from rooftops to use later for watering landscape plants and gardens, or washing the car. Water collected in a rain barrel would normally pour off your roof directly or flow through roof gutter downspouts and become storm water runoff.



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Practice	Goal	# Installed/planted
Rain Barrels	25	17
Rain Gardens	20	0
Community Stormwater Features	3	0
Tree Plantings	60	4

## Climate Station Provides Weather Data



The Hinkson Creek Urban Stormwater Retrofit Project has installed an electronic climate station in the neighborhood (near the community park). To view the intensity, duration and amount of rainfall, wind speed and direction, relative humidity, temperature and solar radiation, visit <https://www.hobolink.com/p/d6e8c67e0df65682779f62c31a15fe3e>.

If you are a Sunrise Estates Association member and would like to receive weather updates from the climate station, please complete the request form at [http://sunriseestates.net/?page\\_id=177](http://sunriseestates.net/?page_id=177).



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### New Vocabulary

**Evaporation** – The conversion of a liquid (e.g. water) to a vapor through the application of heat energy.

**Transpiration** – The process by which water absorbed by plants is evaporated to the atmosphere from the plant surface. Humidity, air temperature and wind speed all affect transpiration rates.

**Evapotranspiration** – The loss of water from the soil through both evaporation and transpiration from plants.

**Infiltration** - The process by which water enters soil pores or spaces.

**Native Vegetation** – Trees, shrubs, flowers, grasses, ferns and other plants that originate and evolve in a region over time.

### Sunrise Estates Stormwater Project

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