



The City of Springfield
Environmental Services Division
541.726.3694

A Homeowner's Guide to RAIN GARDENS



A rain garden is a great way to add beauty to your landscape and improve water quality at the same time. A rain garden is a sunken garden bed that collects and treats runoff from rooftops, driveways, parking lots, streets, and lawns. Water from redirected downspouts or paved areas can be directed to a rain garden, where plants and soil can soak up runoff from your property.

Why Plant a Rain Garden?

As our city grows, native soils and habitats are replaced with impervious surfaces like roofs, roads and parking lots. Impervious surfaces do not allow water to soak into the soil, and actually increase the amount of water flowing from developed areas, or stormwater. This can result in flooding, and strain the City's stormwater system. Rain gardens collect and filter runoff onsite, which can reduce flooding, replenish groundwater, and restore natural hydrology.

Rain gardens can also improve water quality. As rain water flows over hard surfaces, it picks up pollutants like motor oil, pet waste, fertilizers, and pesticides. This dirty water flows into the stormwater system, ending up in local streams and the McKenzie and Willamette Rivers. In fact, stormwater is considered one of the biggest threats to water quality. Rain gardens reduce the amount of pollution flowing from urban areas into waterways. They also treat stormwater runoff. Plants and soils take up nutrients and break down pollutants.

By installing a rain garden in your yard, you can reduce the amount of stormwater and pollutants coming from your property. Rain gardens are a beautiful way to manage stormwater onsite, and can provide habitat for birds and butterflies.



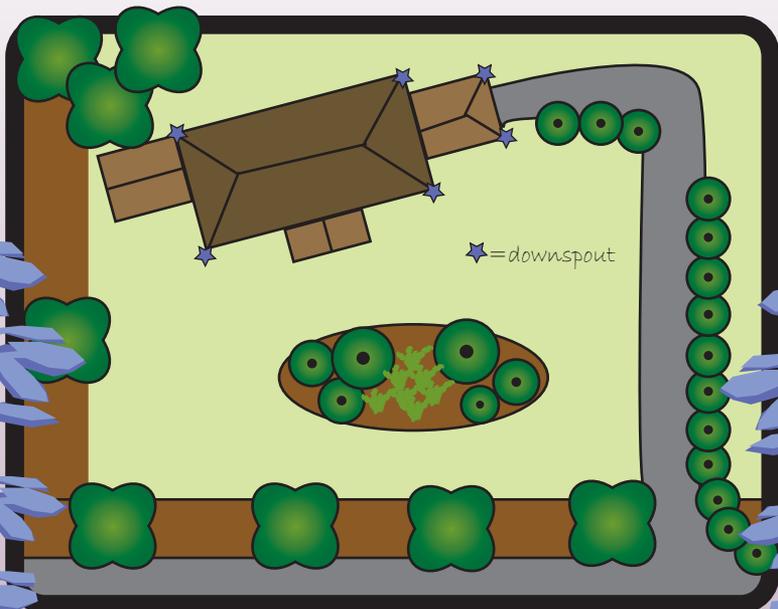
How to Begin

Start by observing and learning about your property and then make a plan for your rain garden. This guidebook will take you step-by-step through the process of locating, designing, and building your rain garden safely.

Step 1: Locating the Rain Garden

There are several considerations that are important for successful rain garden placement.

First, determine what areas of your property could drain to a rain garden. Rooftops, driveways, patios, and grassy areas with compacted soils all produce runoff that a rain garden can collect and filter. Sketch a site plan and mark the location of downspouts and paved areas. Map where the rain garden could go – choose spots that are downhill of downspouts or paved areas. Depending on your site, you could capture all or part of the runoff from your property. Also consider that you could build more than one rain garden.



Make a sketch of your property to help determine where you might place your rain garden.

Next, think about safety considerations.

Don't build a rain garden on steep slopes. Locating a rain garden on slopes greater than 10% can cause instability and erosion. If the slope of area is greater than 10%, seek technical assistance from a qualified engineer. If there is only slight slope, add a berm on the downhill side of the garden to hold rain water.

Measuring slope:

Slope is a measure of a land gradient, typically expressed as a percent.

$$\text{percent slope} = \frac{\text{rise of slope}}{\text{length of slope}} \times 100$$

Tools needed: 2 stakes, string, level, measuring tape

Pound in a stake on the uphill side and one into the ground downhill. Tie a string between the stakes. Use a level to make sure the string is completely flat. Measure the distance between the stakes (length of slope) and from the string to the ground on the downhill stake (rise of slope). Divide the rise of the slope by the length of the slope. Multiply by 100 to get percent slope.



Call before you dig!

Call 1-800-332-2344 to locate all underground utilities. Do not locate rain gardens over gas, power, phone, or water lines.

- ✿ Locate rain gardens away from septic tanks, drain fields, or underground oil tanks.
- ✿ Rain gardens in areas with a high groundwater table will not function correctly. Make sure there is at least 3 feet between the bottom of the rain garden and the top of the groundwater table.
- ✿ Rain gardens must be at least 10 feet from building foundations (5 feet if down slope), 5 feet from property lines, and 2 feet from sidewalks.
- ✿ Make sure the rain garden is placed in an area down slope from structures.
- ✿ Avoid building a rain garden in an area where water ponds, because rain gardens require good drainage.

Now that you've located a good spot for your rain garden, the next step is to test the soil and see how well it drains. It is important to have adequate drainage in your rain garden – it should drain completely within 24 hours.

Soil drainage test

1. Dig a hole 24" deep and about 12" wide
2. Fill the hole with water and let it drain
3. Fill with water again.
4. Monitor how fast the water drains. If it drains within 24 hours, the soil has adequate drainage for a rain garden.
5. If the hole does not drain completely in 24 hours, try another location for your rain garden.
6. Note: If you encounter water while digging the hole, the groundwater table is too high for a rain garden at this location. If you run into bedrock or are unable to dig, the bedrock is too shallow to support a functional rain garden. Try another spot for your rain garden.

Dig a hole



Fill it with water



Wait for it to drain



Step 2: Designing the Rain Garden

Sizing the rain garden is the next step. The size of the rain garden should be at least 10% of the area that drains to it.

For example, if the roof area draining to your rain garden is 500 square feet, the rain garden should be at least 50 square feet.

$$\text{Roof area} = 500 \text{ ft}^2 \times 0.10 = 50 \text{ ft}^2$$

- ✿ Make sure you have enough space available for your rain garden. Remember, even treating part of your runoff onsite can improve water quality and restore hydrology. Installing more than one rain garden, or one larger garden, may allow you to collect and treat all of the runoff from your property onsite.
- ✿ The shape of the rain garden depends on your personal taste – round, square, or kidney shapes are popular choices.
- ✿ Next, determine how you will direct the water away from your house. Water can be transported from your downspout or driveway through a swale lined with plants or decorative rocks, or through a pipe. If you choose to use a swale to transport water, it should be lined within 5 feet of the building.
- ✿ Minimize erosion from water coming out of the pipe by placing rocks or a small pool at the inlet to the rain garden.



- ✿ Plan where the rain garden will overflow to during large storm events. Make sure the overflow is directed away from buildings or neighboring property. The overflow can also be lined with rock, which will prevent erosion.
- ✿ Now that you have designed the structure of the rain garden, it's time to think about plants. Plants are an important part of your rain garden because they filter pollutants and soak up nutrients. They also prevent erosion and improve drainage, increasing infiltration and retention.
- ✿ Rain gardens can also provide habitat for birds and other species. Native plants are a great choice, but many ornamentals will also work well.
- ✿ First, think about where the garden is located – Is it in the sun or shade? How it will blend into the other aspects of your landscape?
- ✿ Choose plants based on the different water levels in your garden. The bottom of the rain garden will have water in it frequently, so choose plants that can tolerate lots of water. Upland plants that are drought tolerant are best for the top of the garden. Also consider the size, shape, and foliage type of the plants.



Step 3: Build the Garden!

- ✿ Outline the area of your rain garden with stakes and string
- ✿ Moisten soils with water to make digging easier. Excavate the entire area of the garden with a shovel, gently sloping the sides. Dig the rain garden to about 18 inches depth. Use a level to make sure the bottom is relatively flat.
- ✿ The finished rain garden depth should be between 6 to 12 inches. Add a soil mix and compost to the bottom of the rain garden.
- ✿ Lay out the pipe or swale that will deliver water to the rain garden. Test this to make sure it will transport the water effectively. If using a swale, line the part that is close to buildings.
- ✿ Lay out the overflow.
- ✿ Plant your rain garden!
- ✿ Add mulch. This will help feed your garden and discourage weeds. Don't use grass clippings as mulch, or anything that will easily float away.
- ✿ Note: If disconnecting a downspout, wait until the plants in your rain garden have had a chance to grow roots and establish before you let water flow into the garden.



Lay it out



Dig



Plant!

Step 4: Maintenance

- ✿ Plants in the rain garden will need to be watered during the dry season for the first 1 – 2 years. Water deeply once a week to encourage root growth during dry months.
- ✿ Pull weeds by hand regularly.
- ✿ Avoid using herbicides and fertilizers in the rain garden.
- ✿ Remove sediment and debris as needed.
- ✿ Periodically check and make sure the rain garden is functioning. Check for erosion.
- ✿ Add compost or mulch a few inches deep once per year.

ENJOY YOUR GARDEN!

