



# Building a Rain Garden

to slow and filter roof or driveway runoff



*Note: These factsheets are for voluntary improvements by homeowners that are unlikely to need a city permit. You can check permit requirements at DPD Applicant Services: 684-5362, email [SideSewerInfo@Seattle.gov](mailto:SideSewerInfo@Seattle.gov)*

## Why build a rain garden?

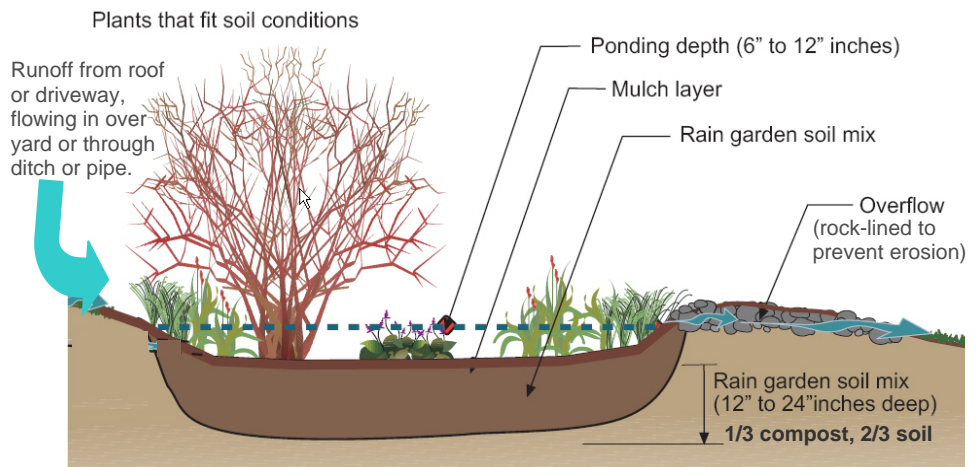
Rain gardens (or “bioretention cells”) are shallow depressions (6-12 inches deep) that can hold and infiltrate runoff from roofs and driveways. They have compost-amended soils 12-24 inches deep to help the rain water soak in. They are landscaped with plants that fit your yard, and the sun, soil, and moisture conditions. By slowing and filtering roof or driveway runoff, rain gardens can help protect our streams and reduce sewer overflows and flooding. They can also be a beautiful addition to your landscape, with attractive plantings in deep, rich soil.

## Is a rain garden right for me?

A small, shallow rain garden can be easy, but a large one that can handle most of your roof runoff is a big project. Before starting, read the *Rain Garden Handbook for complete design and construction details*, on the RainWise website.

### You need:

- ☑ **A fairly level yard** – up to about 5% slope (1 foot drop in 20 feet).
- ☑ **A big enough area** – free of big tree roots or utilities. See “Location and Sizing” below.
- ☑ **A way for roof or driveway runoff to flow to the rain garden** – over the yard, or through a pipe or rock-filled ditch.
- ☑ **A safe route for excess water to overflow to street drains** when a big storm fills the rain garden.



## Getting started: planning your rain garden

- **Safety first!** Read the *Disconnecting Downspouts* factsheet on the RainWise website, and follow those precautions. Don’t install near oil tanks, or contaminated soils. Don’t install within 500 feet of steep slopes or landslide-prone areas – check <http://web1.seattle.gov/dpd/dpdgisv2/mapviewer.aspx>. Consult a civil or geotechnical engineer if in doubt.
- **Location:** Consider the building setbacks, utilities, and other factors described in “Step 1 – Location” on next page.
- **Materials:** Check out the compost and plant sources in the *Materials and Suppliers* list on the RainWise website.
- **Sizing:** First, never send more than one-half your roof runoff, or up to 1000 square feet of roof or driveway area, to a single rain garden (this reduces the chance of failure). Figure out how much roof/driveway area you want to send to the rain garden. For instance, if one downspout drains half your roof, and your total roof size is 25x40 feet (= 1000 square feet), then that downspout carries 500 square feet of roof area runoff.
- **How big a rain garden do I need?** In Seattle, the bottom area of the rain garden should be about 15%\* of the contributing (roof or driveway) area. In our example above, 500 sq. ft. roof area x 0.15 = 75 sq. ft. of bottom area needed in the rain garden. Add about 2.5 feet on each side, to allow for the gradually sloping sides, to get the top dimensions. For instance, 75 sq. ft. bottom area equals 7.5 ft. x 10 ft. Adding 2 feet on each side, that gives a top dimension of 11.5 x 14 feet (or any other shape with that much area) to lay out for your rain garden. *Additional requirements apply if designing for stormwater code compliance – contact DPD at the number above to learn more.*
- **Hire a professional** to design or do the work, if this sound like too much. Find one on the RainWise website below.

**Disclaimer:** This sheet contains general principles only, which may not be appropriate or safe for every property or project. Use good common sense. You assume the risk and are responsible for all consequences of your modifications to drainage flow or your property, for legal compliance, and for necessary permits and authorizations. The City of Seattle is not responsible for your modifications and disclaims liability for your actions.

## 4 Steps to Building a Rain Garden - summary

See planning and construction details for each step in the *Rain Garden Handbook* on the RainWise website below.

### Step 1 - Locate and size possible sites

- Determine needed size (see previous page).
- Don't locate over underground utilities or major tree roots. For a free utility location service, call 1-800-424-5555 or see [www.callbeforeyoudig.com](http://www.callbeforeyoudig.com)).
- Don't locate in soggy areas (where water won't soak in) or on slopes above 5%. Don't locate near steep slopes or landslide-prone areas – see "Safety First" on previous page to locate them.
- Set back rain gardens at least 5 feet away from any building. If you or a neighbor have a basement, locate at least 10 feet away. If the basement is deeper than 5 feet underground, add 2 feet more setback for each foot the basement extends deeper than 5 feet.
- Determine which roof or driveway areas will flow downhill to your possible rain garden sites (use a board with a level, or set a hose running to see where the water flows). How would you get the water to the rain garden: by pipe, through a rock-filled ditch or shallow grassy swale, or just flowing over your lawn to the rain garden?
- Make sure there's a safe route for the overflow water out of the rain garden in big storms, to street drains.
- Think about where the rain garden would fit and enhance the appearance of your landscape.

### Step 2 - Design, excavate, and amend soil in rain garden, then create a safe inflow and overflow

- Lay out a garden hose or string in the shape you want, measure and adjust to get the needed size.
- Determine whether runoff will arrive by pipe, rock-filled ditch, or overland flow.
- Excavate soil 18-30 inches deep (some soil can be used to berm the downhill edge – pack berm tightly).
- Replace with 12 inches or more of bioretention soil mix without compacting it, so that the bottom of the rain garden is at least 6 inches, but not more than 12 inches, below the overflow height. This is your "ponding depth" which will hold rain to soak in.
- Create an overflow (see diagram on previous page) at the lowest point along the edge of the rain garden. Armor that overflow area out several feet with rocks, to spread the water's flow and prevent erosion. Overflow water should run to a street drain, rather than flooding your neighbors' yards or sidewalks.

#### Learn more:

Before starting to build, please read the cautions in the *Disconnecting Downspouts* factsheet. Then see the *Rain Garden Handbook* for full design and construction details, and *Plant Lists*. You can read them, along with factsheets on Cisterns, Rock-filled Infiltration Trenches, Permeable Paving, Compost-Amended Soil, Trees, and other RainWise ideas at [www.seattle.gov/util/rainwise](http://www.seattle.gov/util/rainwise) For printed copies, contact the **Garden Hotline** at (206) 633-0224 or email [help@gardenhotline.org](mailto:help@gardenhotline.org)



- Create an inflow with a pipe or rock-lined ditch from your downspout to the upper edge of the rain garden. Protect that area with rock too.

### Step 3 - Plant and mulch

- Chose plants that fit your yard, and fit the conditions.
  - <> Bottom: plants that like wet conditions.
  - <> Sides: plants that can stand wet or dry soil.
  - <> Top edge: drought-tolerant plants.
 Consider sunlight, and maintenance needs too. The *Rain Garden Handbook* and the RainWise website have lists of well adapted plants. Your local nursery is a good place to see plants, and get advice.
- Plant, and water well to establish plants.
- Mulch the bottom of the rain garden with 2 inches of compost (it doesn't float away easily), and mulch the sides and top with 3-4 inches of arborist wood chips (usually free from a tree trimming company).

### Step 4 - Maintain your rain garden

- Water your new plants regularly for the first 1-3 years, until they are well established.
- Replenish mulch layers annually to conserve water and reduce weeds for several years, until the plants close in over the soil.
- Weed in spring, summer, and fall until the plants close in. Don't use fertilizers or weed killers.
- Keep the inflow and overflow areas free of debris, and well protected with rocks from erosion.
- Follow the links on the RainWise website to learn more about Natural Yard Care.

See links on the RainWise website if designing with intent to apply for a [Stormwater Facility Credit](#), or for code requirements and additional design guidance in the [Stormwater Flow Control Manual](#).

Learn more at [www.seattle.gov/util/rainwise](http://www.seattle.gov/util/rainwise)



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