

Building a Raingarden to Reduce Stormwater Runoff



**ONEIDA COUNTY
LAND AND WATER CONSERVATION
715-369-7835
www.oclw.org**

**COURTHOUSE
1 SOUTH ONEIDA AVENUE
P O BOX 400
RHINELANDER WI 54501**

Introduction

Rain gardens are landscaped areas planted with native wildflowers and other native vegetation to soak up rainwater, mainly from a downspout on the roof of a house or other building. The rain garden fills with a few inches of water after a storm and the water slowly filters into the ground rather than running off into a storm drain.

If a rain garden is placed below a downspout in the front yard of a typical quarter-acre lot, the annual runoff from that lot will be reduced about 25 percent.

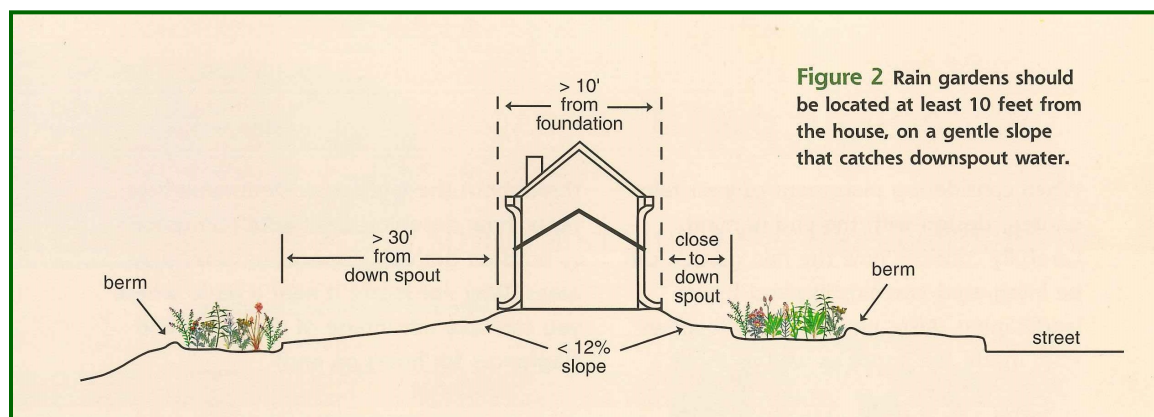
As cities and suburbs replace forests and agricultural land, stormwater runoff from impervious surfaces becomes a problem. It can carry pollutants from streets, parking lots and even lawns into local streams and lakes and leads to costly improvements in stormwater treatment practices.

An individual rain garden might be a small thing, but a community can produce substantial neighborhood and environmental benefits by:

- ♦ increasing the amount of water that filters into the ground, which recharges local and regional aquifers;
- ♦ helping protect communities from flooding/drainage problems;
- ♦ helping protect streams and lakes from pollutants;
- ♦ enhancing the beauty of yards and neighborhoods
- ♦ providing valuable habitat for birds, butterflies and many beneficial insects.

Where to put your rain garden.

Put your rain garden at least 10 feet from the house (See Figure 2).



Where NOT to put your rain garden.

- ♦ Over utilities (Unsure? Contact Wisconsin One Call Center at 811)
- ♦ Within ten feet of house foundation
- ♦ Over septic tank or drain field
- ♦ Steep slopes (over 12%)
- ♦ Easements
- ♦ Under the "drip" line of trees

How big should your rain garden be?

The surface area of your rain garden can be almost any size, but time and cost will be important factors. Any reasonably sized rain garden will provide stormwater runoff control.

A typical residential rain garden ranges from 100 to 300 square feet.

The size of your rain garden will depend on:

- ♦ **how much water** from your roof will drain into the garden,
- ♦ **how deep** the garden will be, and
- ♦ in **what type of soil** the garden will be planted.

How Much Water?

1. Find your home's footprint (roof area). Walk one length and one width and multiply.
(30' x 70' = 2,100 sq. ft.).

2. Estimate what percent of water comes off the roof and goes into the downspout that supplies your rain garden. (Picture 1 - yellow roof area - feeding into downspout - red oval).

We estimate 40% of roof surface water will go to this downspout. Multiply the footprint by 40 percent
(2,100 x .40 = 840 sq. ft.)
This is how much water drains into your garden.

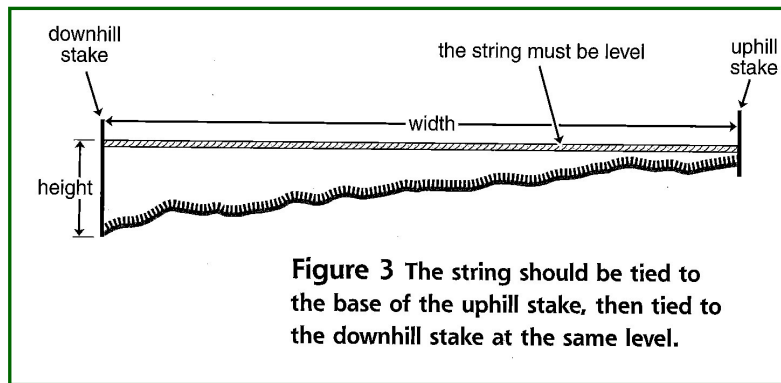
Picture 1



How Deep?

The slope of your lawn will determine the depth of the rain garden. Find percent of slope by following these steps:

1. Put a stake at each end (uphill & downhill) of the garden site.
2. Tie a string to the bottom of the uphill stake and run it to the downhill stake.
3. Using a level, make the string horizontal and tie to the downhill stake at that height.
4. Measure width (in inches) between the two stakes.
5. Measure height (in inches) on downhill stake between ground and string.
6. Divide height by width and multiply the result by 100 to find percent of slope.
(See Figure 3.)



SLOPE: We measured the length of the string between the stakes at 180 inches. Height is 9 inches. Divide height by width, then multiply by 100 to find the lawn's percent of slope.

$$9 \div 180 = 0.05 \times 100 = 5\%$$

Using the slope of the lawn, select the depth of the rain garden from the following options:

- ♦ If the slope is less than 4 percent, build a 3 to 5 inch deep rain garden.
- ♦ If the slope is 5 to 7 percent, build a garden 6 to 7 inches deep.
- ♦ If the slope is between 8 and 12 percent, build your garden 8 inches deep.

With 5% slope, the rain garden should be 6 inches deep.

What Kind of Soil?

**If your soil feels very gritty and coarse,
you probably have sandy soil.**

**If your soil is smooth but not sticky, you have silty soil.
If it is very sticky and clumpy, you probably have clayey soil.**

**NOTE: Most soils in
Oneida County are sandy.**

Having chosen the **soil type** (sandy), and estimated rain **garden depth** (6"), use Table 1 (next page) to choose a multiplying factor.

Table 1 Rain gardens less than 30 feet from downspout.

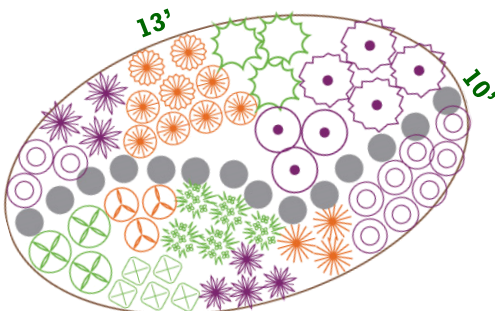
	3-5 in. deep	6-7 in. deep	8 in. deep
Sandy soil	0.19	0.15	0.08
Silty soil	0.34	0.25	0.16
Clayey soil	0.43	0.32	0.20

Now that we have established a multiplier (0.15) and determined how much water drains into the garden (840 sq. ft.), it's time to **CALCULATE** the size of your rain garden.

840 sq. ft. by 0.15 = 127.5 sq. ft.

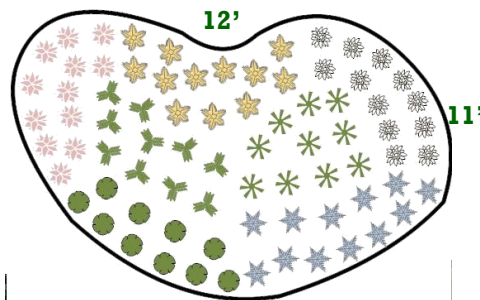
What could a 127.5 sq. ft. rain garden look like?

Design possibilities for rain gardens are almost limitless. A rain garden can be any shape, but approximately 10, 12, or 15 ft. wide is typically recommended. (See samples below). Rain gardens that are crescent or kidney bean shaped tend to be successful because they maintain a funnel-like shape that helps capture as much water as possible. Keep in mind the natural “look” of your yard as you design your rain garden.



Sample 1:

127.5 divided by 10 would be a garden approximately 10 ft. by 13 ft.

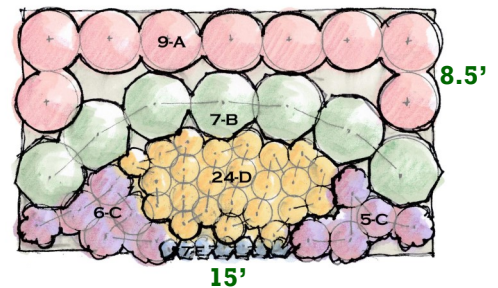


Sample 2:

127.5 divided by 12 would be about a 12 ft. by 11 ft. garden.

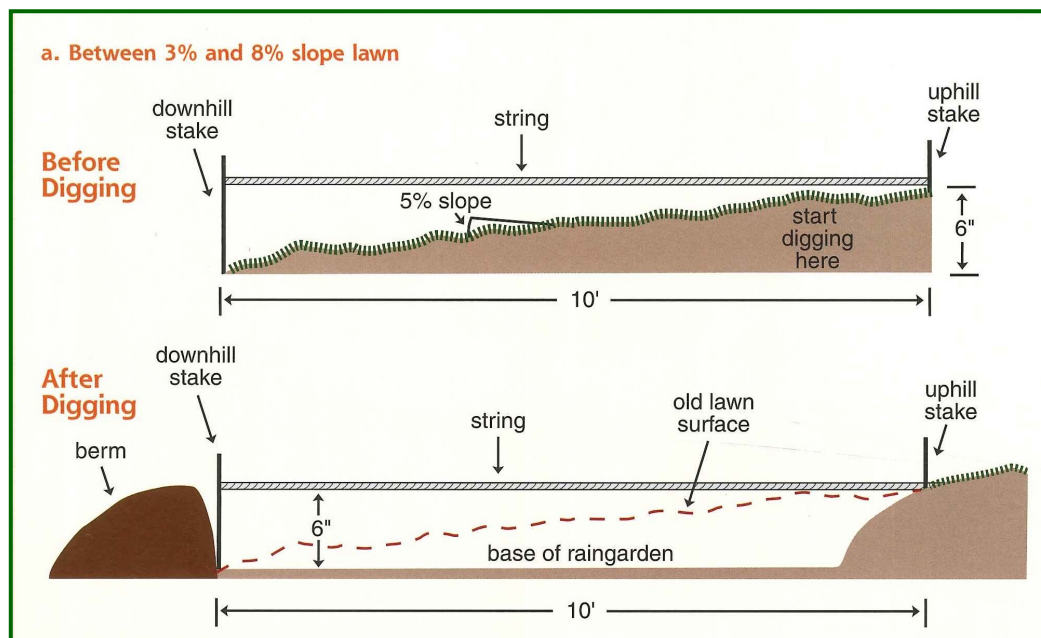
Sample 3:

127.5 divided by 15 would be a 15 ft. by 8.5 ft. garden.



Where to dig and where to put the soil you've dug.

Water flowing into the rain garden will naturally try to run off the downhill edge. A berm is needed to keep the water in the garden. (The berm is a low “wall” around three sides of the garden that holds the water in during a storm.) When digging, heap the soil around the edge where the berm will be.



What should you plant in your rain garden?

Planting your rain garden is when the fun begins! Choose flowers, shrubs or grasses based on height levels, your favorite colors, or according to planting recommendations. Some examples include: New England aster, Blue flag iris, High bush cranberry, Little blue stem or Golden alexander. A number of resources for native plants, flowers, shrubs, ferns, etc., can be found on the Oneida County Land and Water Conservation Department website at www.oclw.org. Click on the Native Plants tab and then Rain Gardens, or call 715-369-7835.

**Good Luck
and
Happy Planting!**