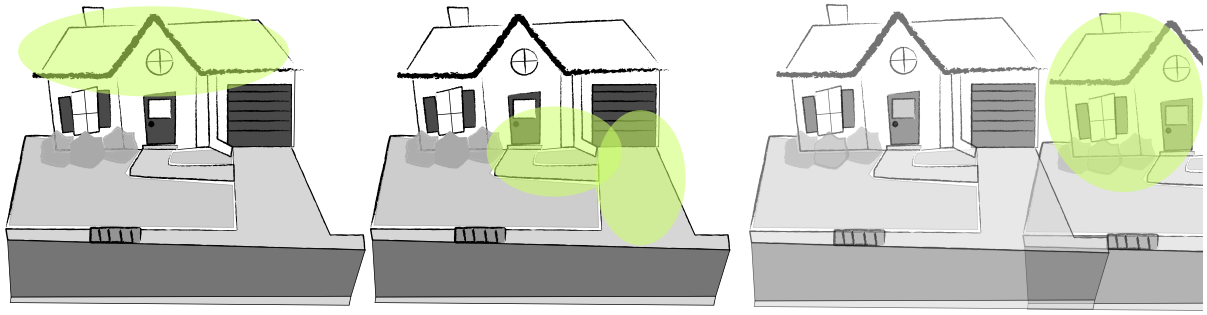
sources of runoff:



your roof | your driveway | your neighbor

determining your impervious surface:

Rain gardens are designed to hold runoff. Most of this runoff comes from the impervious surfaces at your home. Some even comes from your lawn which is not as pervious as you might expect, which is why replacing lawn with conservation planting and rain gardens is such an effective stormwater management tool.

A rain garden is designed to hold water for a day or so. You may not have enough area to hold all the water you want and that is fine as long as the overflow berm is stabilized with rocks and/or plants. The larger the rain garden area, the more runoff it will catch. The deeper the rain garden, the more runoff it will catch also. Any size rain garden is better than no rain garden.

So, how big do you need your rain garden to be? This depends on how much impervious surface area you have draining to it. In the example below we will look at a simple roof with one peak.

Step 1: Calculate the area of your roof that you wish to capture in a rain garden.

The highest priority downspouts to capture in a rain garden are those that drain most directly to the stormwater system. The roof usually drains to a gutter and the gutter will run to down-spouts. If you have two downspouts at either end of the gutter, you can assume half of the roof runoff goes to one and half to the other. Using our example on the next page, half the roof drains to the front yard, and half of that drains to each downspout. We will direct runoff from one downspout to a rain garden.

The total roof area of a home is approximately the same square footage of your one story home, or the first floor of your multi-story home. (The roof area is actually greater than the area of the floor below it, because it is on an angle.)

To calculate square footage, multiply length x width. Our example home has 1 peak in the middle of the house so half the roof drains to the front and half drains to the back. So, you will divide the entire roof area by two. Now you have the amount of water which will drain down the front

of your house. Because you have a downspout on each end, divide that number by 2 to get the amount of area this will flow to one of the downspouts and runoff into the stream unless it is captured.

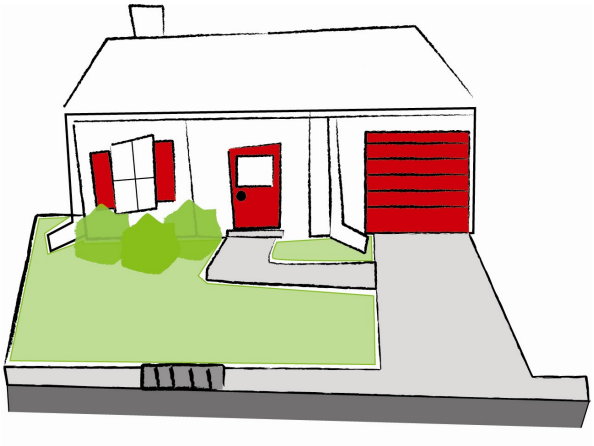
Step 2: Calculate the area of any concrete or other impermeable surface - driveway, walkways, outbuilding roofs, etc. that contributes to runoff leading to your rain garden. Measure length x width of each and add them all together.

Step 3: Add these two areas together. Area of the roof (Step 1) + area of all the other impervious surfaces (Step2). This will give you the area in square feet that will contribute runoff to your rain garden.

Step 4: Convert the area from step 3 into rain garden size. We use an average storm of 1 inch. This means the rain garden should be sized to store and treat 1 inch of rain falling on the impervious areas leading to the rain garden. We construct rain gardens to be different depths such as 3, 4, or 6 inches deep. The deeper it is, the smaller the area needs to be to hold the same amount of water. (Technically, we are determining the volume of the rain garden.) The simplest way to determine the final area of a rain garden is to divide the area to be treated by the depth of the final garden. So, if you want to store and treat 600 sq ft in a 6 inch deep rain garden, divide the area from Step 3 by 6. That gives 100 square ft rain garden, which can be 10' x 10' or 5' x 20' or approximately 12' x 8'.

area of rain garden (sq ft) = area to be treated (sq ft)/ depth of rain garden (in)

example



Here is a roof that pitches in 2 directions. The problem area is in the front yard, where runoff quickly exits the property and flows into a storm drain.

- Total roof area = 1000 sq. feet
- Front half of roof = 500 sq. Feet
- Driveway + Walkway = 400 sq. feet
- Total Impervious area = 900 sq. feet.
- To create a 6" deep rain garden, divide the impervious area by 6.
- 900/6= 150 sq ft rain garden
- A 150 sq ft garden could be 10x15, or 5x30, or approximately 12x12, or about a 14 ft circle.

resources:

http://www.bae.ncsu.edu/stormwater/