

Rain Garden Design Worksheet - Example

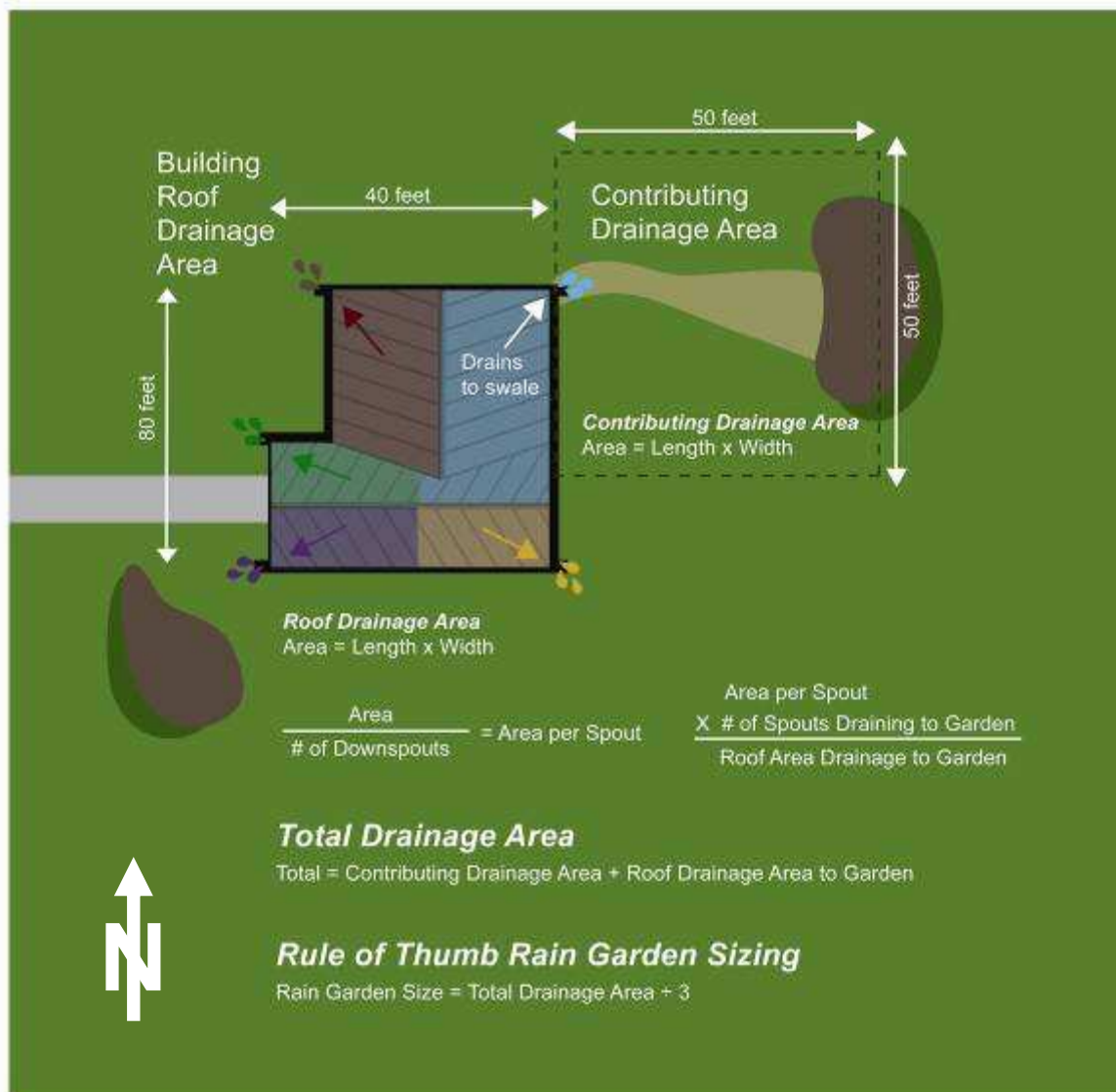
Date: 4/7/2009

Name: John Q. Public

Location: Anywhere, Fort Wayne, IN

STEP 1. Sketch the Site

Be sure to include permanent fixtures including the house, garage, sheds, large trees, driveway, sidewalks, and fences. Indicate which direction is north, downspout locations, low-lying areas in the yard, the general direction stormwater flows across the yard and the sun exposure in different areas of the yard. Highlight or hatch the areas from which rainfall runoff will be diverted into your rain garden.



Rain Garden Design Worksheet

STEP 2. Determine the Roof Drainage Area of the House, Garage or Other Buildings that will Drain to the Rain Garden

$$\begin{array}{rcccccc} \text{Length of House} & \times & \text{Width of House} & = & \text{Total Square Feet of Drainage} \\ \underline{80} \text{ ft} & \times & \underline{40} \text{ ft} & = & \underline{3,200} \text{ sq ft} \end{array}$$

STEP 3. Determine the Drainage Area for Each Downspout by Dividing the Total Square Feet of House Drainage by the Number of Downspouts

$$\begin{array}{rcccccc} \text{Total Square Feet of House} & \div & \text{Number of Downspouts} & = & \text{Drainage Area per Downspout} \\ \underline{3,200} \text{ sq ft} & \div & \underline{5} \text{ downspouts} & = & \underline{640} \text{ sq ft/downspout} \end{array}$$

STEP 4. Determine how many Downspouts will be Directed to the Rain Garden and Multiply by the Result from STEP 3

$$\begin{array}{rcccccc} \# \text{ of Downspouts to Garden} & \times & \text{Drainage Area/Downspout} & = & \text{Drainage Area to Rain Garden} \\ \underline{2} \text{ downspouts} & \times & \underline{640} \text{ sq ft} & = & \underline{1,280} \text{ sq ft} \end{array}$$

STEP 5. Add Drainage Areas of Other Locations that will Flow to the Rain Garden (Driveways, Sidewalks, etc.)

$$\begin{array}{rcccccc} \text{Square Footage of Other Areas} & + & \text{Roof Drainage Area to Garden} & = & \text{Total Drainage Area} \\ \underline{2,500} \text{ sq ft} & + & \underline{1,280} \text{ sq ft} & = & \underline{3,780} \text{ sq ft} \end{array}$$

STEP 6. Determine the Infiltration Rate of the Soil

Assume for this example that the water level dropped 1 inch in 6 hours during the infiltration test

$$\frac{1 \text{ inch}}{6 \text{ hours}} = \frac{X \text{ inches}}{24 \text{ hours}} \quad \rightarrow \quad X = 4 \text{ inches} = \text{Recommended Rain Garden Depth (for this example only)}$$

STEP 7. Divide STEP 5 Result by the Recommended Depth from STEP 6 to Determine the Rain Garden Size (Note: assume the garden captures a 1" rain event)

$$\begin{array}{rcccccc} \text{Total Drainage Area of Garden} & \div & \text{Depth of Garden (inches)} & = & \text{Rain Garden Size} \\ \underline{3,780} \text{ sq ft} & \div & \underline{4} \text{ inches} & = & \underline{945} \text{ sq ft} \end{array}$$

STEP 8. Determine the Dimensions of the Rain Garden from STEP 7 Based Upon the Shape

STEP 9. Determine the Number of Plants Needed by Dividing Rain Garden Size from STEP 7 by 2.5

$$\begin{array}{rcccccc} \text{Rain Garden Size} & \div & 2.5 \text{ sq ft} & = & \text{Number of Plants Needed} \\ \underline{945} \text{ sq ft} & \div & 2.5 \text{ sq ft} & = & \underline{378} \text{ Plants} \end{array}$$