



Water Conservation and Rain Gardens

“A rain garden is an artificial depression in the landscape that collects and stores stormwater runoff until it can infiltrate the soil.”

Justin Mechell and Bruce Lesikar, TX A&M

“Adding long lived, deep rooted, drought and wet tolerant plants adapted to local weather extremes and soil conditions increases the rain garden’s sustainability.” **Adds Carrie Dubberley**

Why have rain gardens?

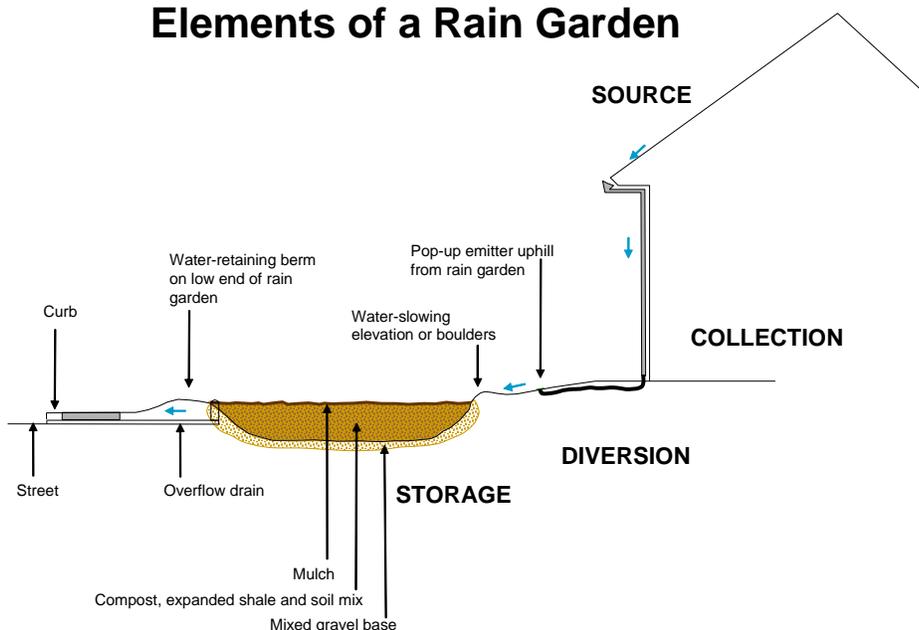
To have an attractive landscape while saving on water and maintenance. Sustainable landscapes featuring rain gardens require maintenance only for the first year or two, and weeding twice per year thereafter. A sustainable garden reduces or eliminates the need for mowing, fertilizers, pesticides, fungicides, and herbicides.

Furthermore, urbanization has resulted in an increase of impervious surfaces (concrete, asphalt, patios, and lawns) and an increase in stormwater runoff. Once water had the opportunity to infiltrate into the soil, now much of it runs off after storms directly into streams and lakes, contaminating them, preventing the recharge of groundwater, and losing water for landscape irrigation that is then replaced with treated municipal water. Rain gardens and sustainable landscapes reverse this process and allow water to remain in a landscape long enough to be absorbed into the soil, supply the needs of surrounding plants, and to be naturally filtered to recharge groundwater systems.

Elements of a Rain Garden

The basic elements are source, collection, diversion, and storage. Rainwater that falls on roofs and lawns may be collected through downspouts and drains and directed (diversion) to a rain garden, where it is stored and slowly infiltrates through layers of mulch, compost and native soils, and gravel. Rain harvesting systems such as rain barrels complement the function of rain gardens.

Elements of a Rain Garden



Design Considerations

Some of the aspects to consider when designing a rain garden include rainfall and catchment area, location, the size and shape of the garden, plants.

Rainfall and catchment area: The catchment area includes roof area and the grass drainage area. For each inch of rain, 100 s.f. of catchment area captures 62 gallons, or 8.3 cubic feet of water.

Location: A rain garden should be located at least 10 ft from a building or house. It should be on the lower end of a gentle slope.

Size of Rain Garden: There are many ways to calculate the size of a rain garden, or Rain Garden Surface Area (RGSA). A simple method is to multiply the catchment area by a size factor. The size factor depends on the soil type and on the distance from the downspout to the garden. Tables of size factors for different conditions are available through the Texas Cooperative Extension of the Texas A&M University System. Typically, if the RSGA is greater than 300 sq. ft., then multiple rain gardens are built. Rain gardens are usually 4 to 8 inches deep.

Soil Type: Soil types influence how fast water will infiltrate. Clayey soils such as those found in North Texas have the slowest infiltration, and gravel and sand the fastest. Impermeable layers and seasonal high water tables must also be taken into account when building a rain garden.

Slope: The greater the slope, the more soil needs to be brought in and the deeper the rain garden.

Shape: The shape of a rain garden depends on the site and the creativity of the landscape designer. Typically the width is about half the length. The top and bottom of the rain garden must be level, to facilitate absorption and prevent water drainage to one end only.

Plants: Native plants that are adapted to both droughts and rainy conditions usually do well on rain gardens, which supply all their water needs once they are established. Some of the plants that thrive in the southwest region include spring blooms plants such as yarrow, bergamont, columbine, and blue false indigo; summer blooms such as Mexican milkweed; purple perilla, and daylilies; Fall blooms such as gayfeather, cardinal flower, purple aster, and goldenrod. Native grasses such as Indian grass and longspike tridens, because of the long root systems, can tolerate drought conditions well and also the moist seasons.

Rain Garden Benefits

As water becomes more scarce and expensive, we will need alternatives to highly maintained landscapes. Droughts and floods will create demand for rain gardens and these gardens will become more mainstream as earth-friendly landscape solutions multiply.

In the long run, rain gardens save money by saving water, maintenance, and energy. In addition the reduction or absence of chemical controls in gardens and sustainable landscapes make them a healthier environment for children and adults and provide a greater exposure to nature.

Resources

Dubberley Landscape, Inc. Carrie Dubberley, Founder and President of Dubberley Landscape, Inc., 972-618-6177 cell

Our mission is to develop and deliver beautiful outdoor living environments and native landscape solutions that conserve both water and energy. Experience the professional touch.

Rainwater Harvesting, Raingardens, Texas Cooperative Extension of the Texas A&M University System.