Size Your Rainwater System

A water balance analysis, typically referred to as a water budget, describes the amount of rainwater that can be collected in the project catchment area and determines if that amount will meet the user's water demands. A water budget will provide a supply-and-demand analysis on a monthly basis and will help determine the size of the storage area. In addition, a water budget will determine how much, if any, supplemental water is needed to augment the intended use of the collected rainwater.

Step 1. Find out the monthly rainfall in your area. Online, go to www.climate-charts.com.
Step 2. For each month, multiply the catchment area (in square feet) by the amount of rainfall received (expressed in feet).
Step 2. Adjust for inefficiencies. Multiply the result in Step 2 by the percent efficiency afforded by the collection surface: 0.9 for smooth, impervious surface like metal, tile, built-up and asphalt shingles; 0.8 for gravel roof and paved surfaces. Multiply this answer by 7.48, the number of gallons in a cubic foot. This gives you the amount of rainwater per month that can be collected from the catchment area.

Calculate Collection Capacity

A designer can use the maximum gallons harvested and recorded under the heading of accumulative storage, shown in the water budget, to calculate the volume and number of cisterns that will be required for the proposed project. Consider pipe spacing inside a cistern or tank from the top of the cistern when preparing storage capacity calculations or when designing the inlet for a supplemental water supply. A cistern capacity should be calculated from the floor of the cistern to the invert of the overflow pipe.

Want to learn more about rainwater? Read Heather Kinkade-Levario's newest book, *Design for Water* (New Society, 2007).