

Dave Goodell

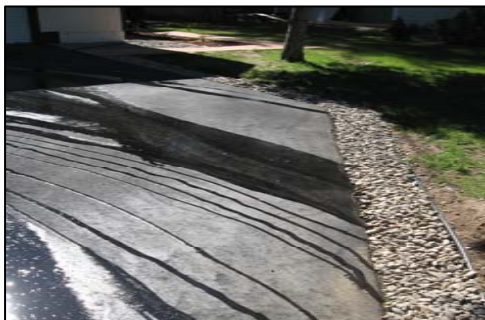
Figure 5. Rock-lined basins require maintenance less often than rain gardens. Do not place landscape fabric or plastic under the rocks.

### Reduce Unnecessary Paved Areas

Remove unnecessary parking areas or cement patios, and convert them to attractive planted areas or areas covered with gravel or decomposed granite. Aim to have your landscape absorb rain runoff like a sponge. Planted areas have the added benefit of providing wildlife habitat.

### Grade Driveways or Other Paved Surfaces so They Drain onto Infiltration Areas

When paving driveways or creating other impervious surfaces, make sure that rain will drain toward an infiltration trench adjacent to the driveway (Fig. 6), a flat, vegetated area or lawn, or an infiltration system such as a shallow basin.



BMP Retrofit Partners

Figure 6. Slope driveways so they drain toward an infiltration system.

### Avoid Driving or Parking Vehicles on Unpaved Areas

Areas with hard, compacted soil cannot infiltrate water. It is best not to drive on unpaved areas. If possible, block them off with boulders or parking barriers (posts). Areas that have been compacted can be tilled and replanted with low-water use plants to make them attractive and allow rainwater to soak in.

### Helpful Publications

*Low Impact Development in Northern Nevada: Bioretention.* Available online at: <http://www.unce.unr.edu/publications/files/nr/2009/fs0925.pdf>

*Low Impact Development in Northern Nevada: Vegetated Swales and Buffers.* Available online at: <http://www.unce.unr.edu/publications/files/nr/2009/fs0925.pdf>

*Home Landscaping Guide for Lake Tahoe and Vicinity.* Available online at: <http://www.unce.unr.edu/publications/files/nr/2006/eb0601.pdf>

*Rain Gardens—A How-to Manual for Homeowners.* Available online at: <http://clean-water.uwex.edu/pubs/pdf/home.rgmanual.pdf>



An EEO/AA Institution  
Copyright © 2010 University of Nevada Cooperative Extension



## Put Runoff in its Place—Infiltrate it into the Ground



J. Cobourn

Written by  
**John Cobourn**  
Water Resource Specialist

**Steven R. Lewis**  
Extension Educator

**JoAnne Skelly**  
Extension Educator



University of Nevada  
Cooperative Extension

## Introduction

In natural settings, rainwater and melting snow usually soak into the ground. Water soaks, or *infiltrates*, into the soil to be absorbed by plant roots or to percolate down to groundwater. Soil in natural settings is usually less compacted than soil in urban settings, allowing better infiltration.

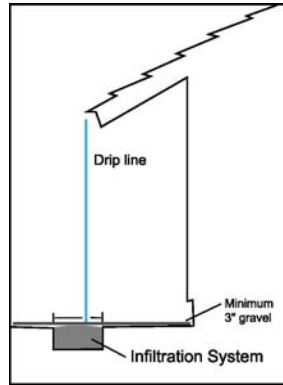
When we build streets, houses and driveways, we create impervious surfaces which prevent precipitation from infiltrating into the ground. Instead, the water runs off the surface. This “runoff” can erode bare soil, sweep trash and other pollutants into roadside gutters, ditches or storm drains, and carry them to the nearest stream and into the Carson River. Nationwide, stormwater runoff is one of the biggest sources of pollution to rivers and streams.

Homeowners can determine if they have runoff problems by observing what happens during rainstorms. If muddy water flows off the property, homeowners can take various measures to allow runoff water from rooftops and driveways to infiltrate or soak into the ground. This will reduce both runoff and erosion. An eroded landscape is unattractive. Improperly directed runoff can also fill roadside ditches and storm drain systems with sediment and cause flooding.

Here are ways to improve infiltration of water on your property.

## Infiltrate Runoff from Roofs and Pavement

Control runoff from rooftops and pavement by creating infiltration systems. Armor the drip line below roof eaves with gravel or install a gravel-filled infiltration trench (Fig.1). If you have gutters and downspouts, direct the water to spread out on a flat, vegetated area or to an infiltration system. Armor the areas at the outlet of downspouts with energy dissipaters or perhaps with rock or turf grass to prevent erosion.



*Figure 1. Roof runoff falling from eaves should land on turf grass, dense herbaceous vegetation, gravel or an infiltration trench filled with gravel.*

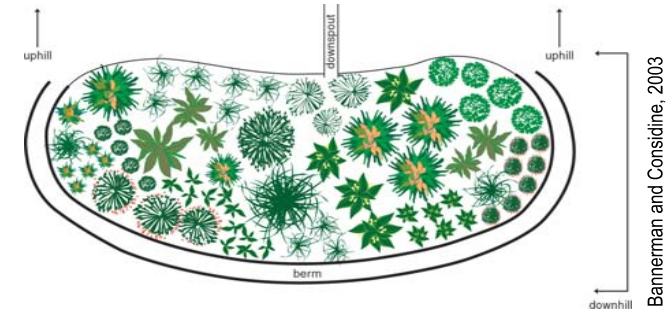


*Figure 2. Place rain gardens where they will receive runoff from rooftops or pavement, but not closer than 10 feet from foundations.*

One kind of infiltration system that is gaining in popularity is the rain garden, which is basically a planting bed that is recessed into the ground (Fig. 2). These gardens work best on flat or gently sloping sites with soils that allow water to soak in easily. They should be placed at least 10 feet away from building foundations, where runoff from paved surfaces or rooftops can be diverted. Direct runoff to the shallow depression by using underground pipes, a vegetated channel or a gutter extender.

The planting surface of the rain garden should be level and about 6 to 8 inches to eight inches below the surrounding ground surface. If your lot is gently sloping, create a sod or rock covered berm, (a small dam) on the lower side of the rain garden (Fig. 3). This will allow the rain garden to store

runoff until it can infiltrate (soak) down to ground water. Finally, choose attractive plants which have similar water needs. They will need irrigation each year from May through October. Drip or microspray irrigation works well in rain gardens. For design details, see the publication listed on the back titled “Low Impact Development in Northern Nevada: Bioretention.”



*Figure 3. A rain garden on a slope has a berm and a level floor, planted with attractive native and adapted plants.*

## Other Infiltration Systems

One variation on the rain garden is a shallow basin or swale in the lawn that can hold and infiltrate rainwater runoff. Such basins can be various shapes and sizes. If they have gradually sloping sides, they can easily be mowed as part of routine lawn maintenance (Fig. 4).



*Figure 4. Infiltration basins can have turf or other plants on their floor.*

An even simpler variation is a basin lined with rocks (Fig. 5). Such basins may require less maintenance than vegetated basins.

www.metrocouncil.org

Bannerman and Considine, 2003

Truckee Meadows Low Impact Development Manual