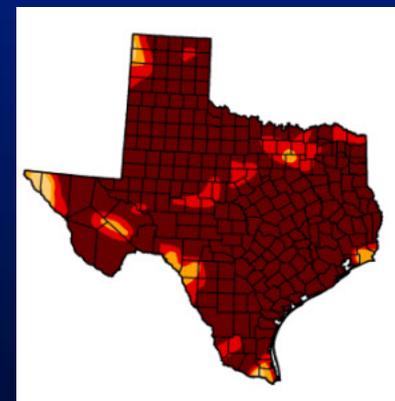


# Designing for Drought



John Gleason, Landscape Architect  
City of Austin Watershed Protection Department

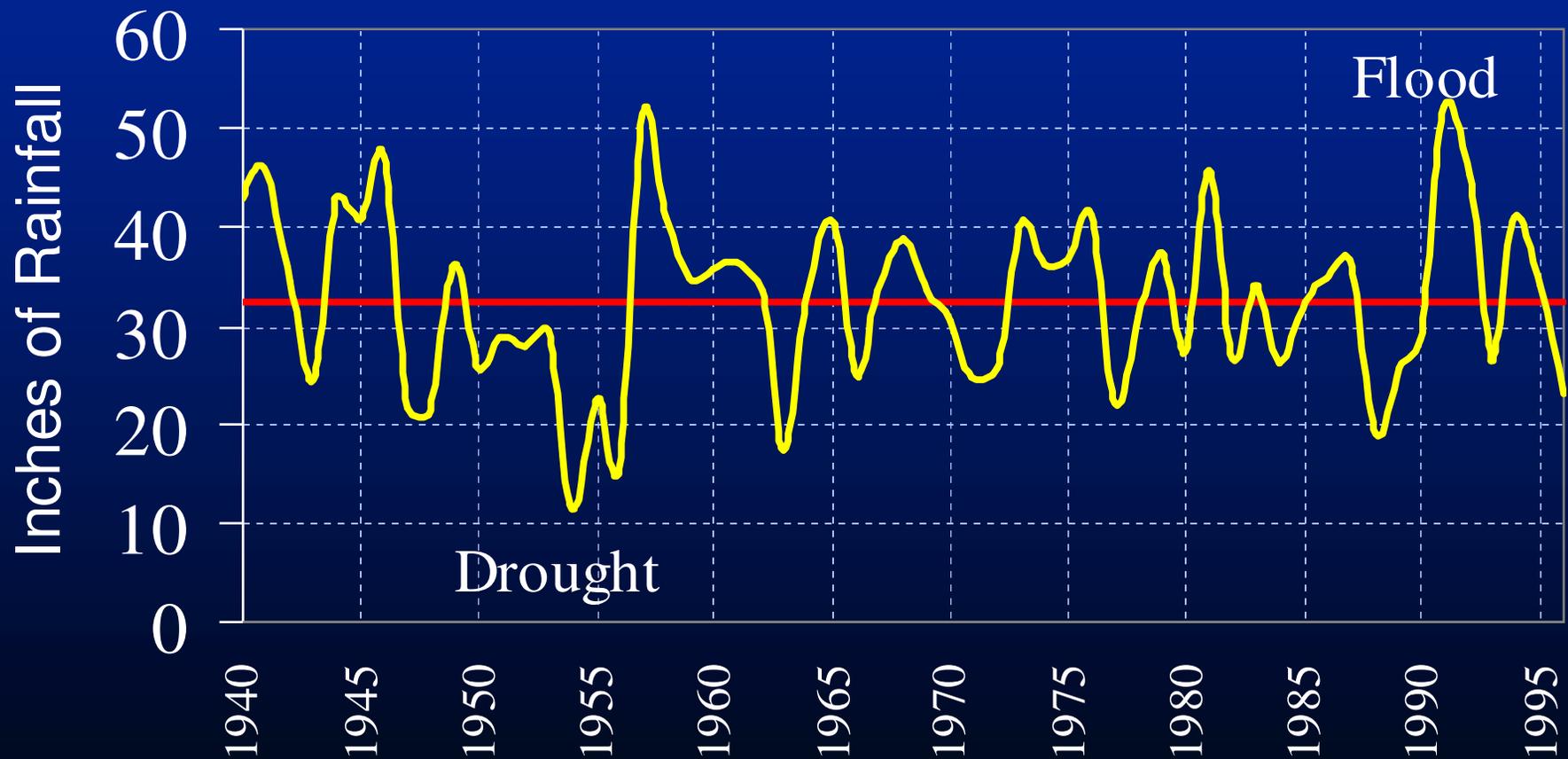
# The Drought of 2011



# Austin Rainfall Trends

— Average

— Annual Total Rainfall



# 5 Steps to Design for Drought

Do these Now!

1. Assess Your Site & Goals
2. Plan & Design
3. Rainwater Catchment
4. Improve your Infrastructure
5. Landscape with Plants



# Assess Your Site & Your Goals

## Site Elements

- ✓ Front Yard (Image)
- ✓ Privacy & Shade
- ✓ Drainage & Water
- ✓ Circulation
- ✓ Recreation
- ✓ Storage

## Goals

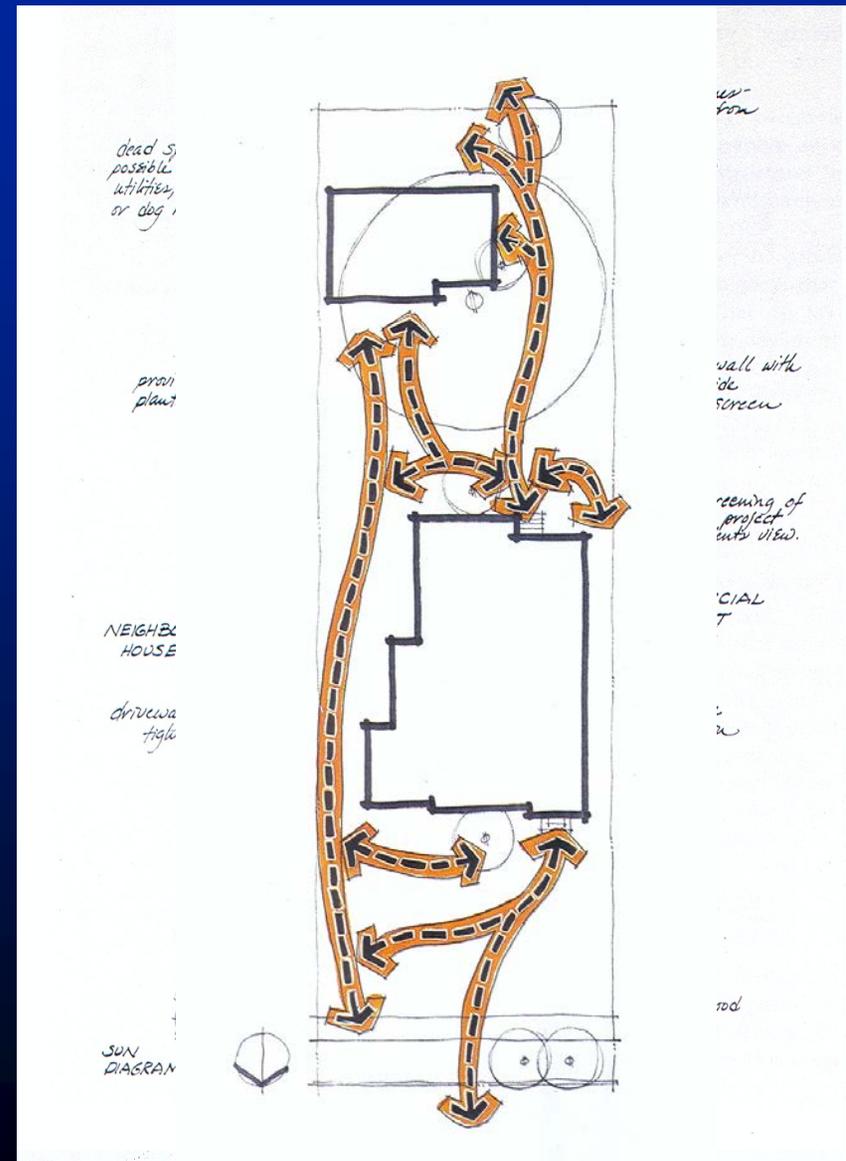
- ✓ Increase Curb Appeal
- ✓ Manage Views & Sun
- ✓ Rainwater Catchment
- ✓ Paths & Access
- ✓ Patio & Play Areas
- ✓ Shed & Garage

# Site Assessment: Maps & Graphics

## Start with a Base Map

Use symbols & notes to record your thoughts on good & bad aspects of:

- ✓ Front Yard (Image)
- ✓ Privacy & Shade
- ✓ Recreation
- ✓ Storage
- ✓ Drainage & Water
- ✓ Circulation



## Site Assessment - Take a Hard Look



# Site Assessment - Take a Hard Look



# Landscaping Adds Beauty, Function & Value



## Financial Considerations

- In proportion to your home value (10% - 30%)
- Excellent ROI (75% - 150% after 5 yrs. growth)
- Plant value increases each year (esp. trees)



## Cost per Landscape Category

Category	Rebate	Planning-level Costs
Non-Irrigated Areas	.30/s.f.	\$2 – \$15 /s.f.
Native & Adapted Plants	.20/s.f.	\$2 – \$4 /s.f.
Drought-tolerant Turf	.10/s.f.	.20 – \$2 /s.f.

# Create a Landscape Just for You

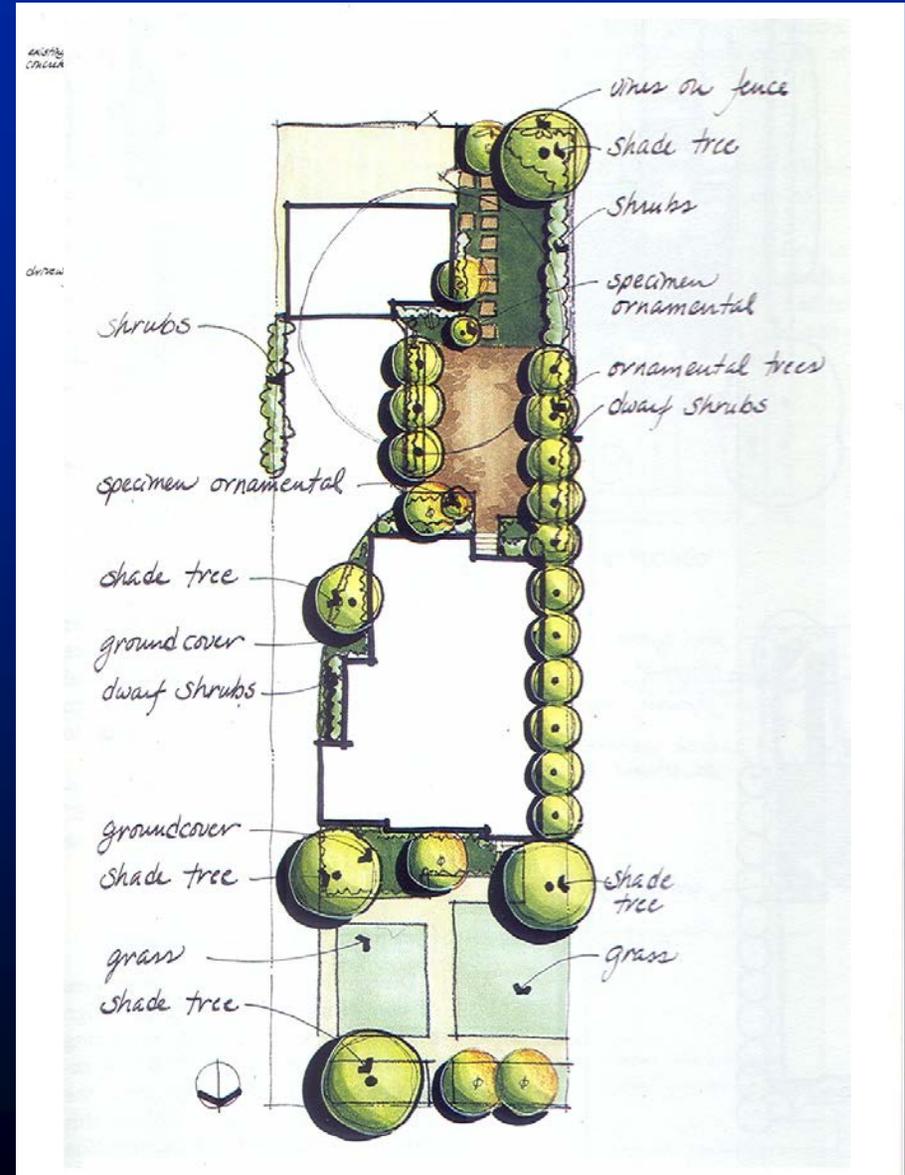


**A Versatile  
Landscape for  
the Entertainers**

# Planning & Design

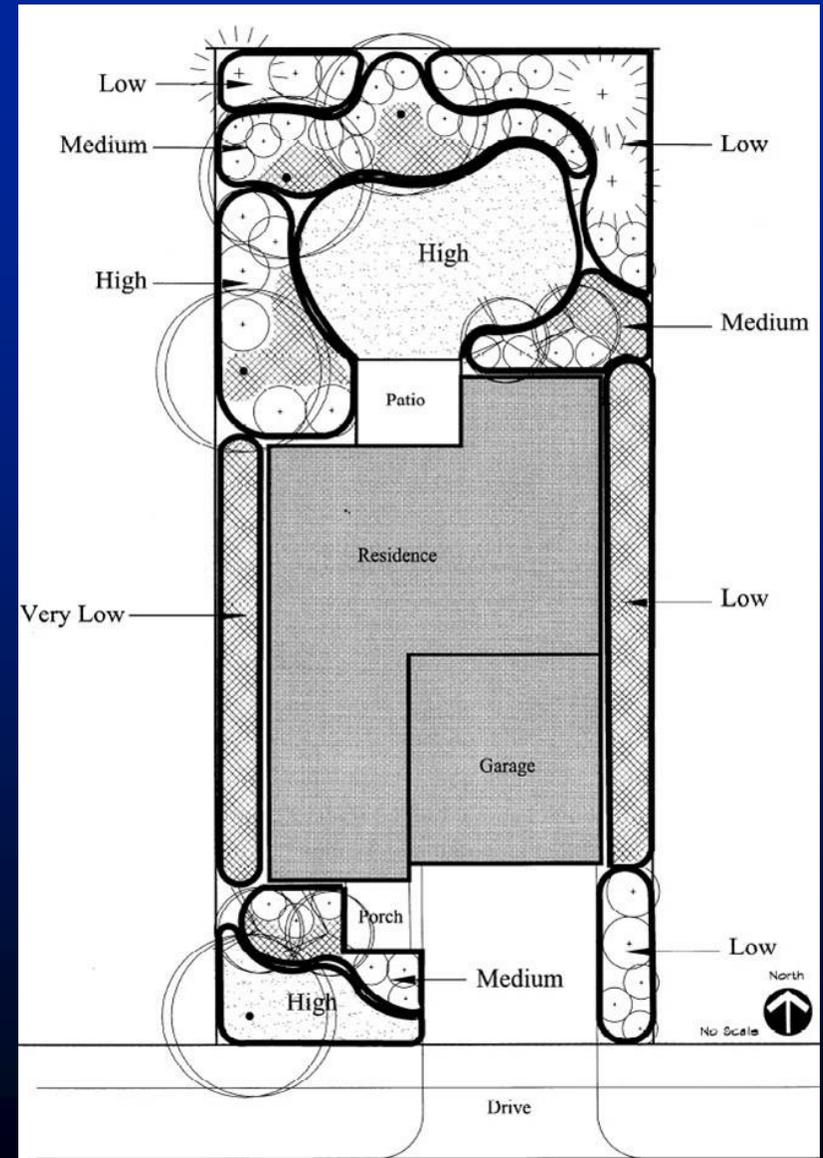
## Draw Variations on a Theme

- ✓ Sidewalk Configurations
- ✓ Hardscape Layout
- ✓ Tree & Shrub Locations
- ✓ Ground-level Planting

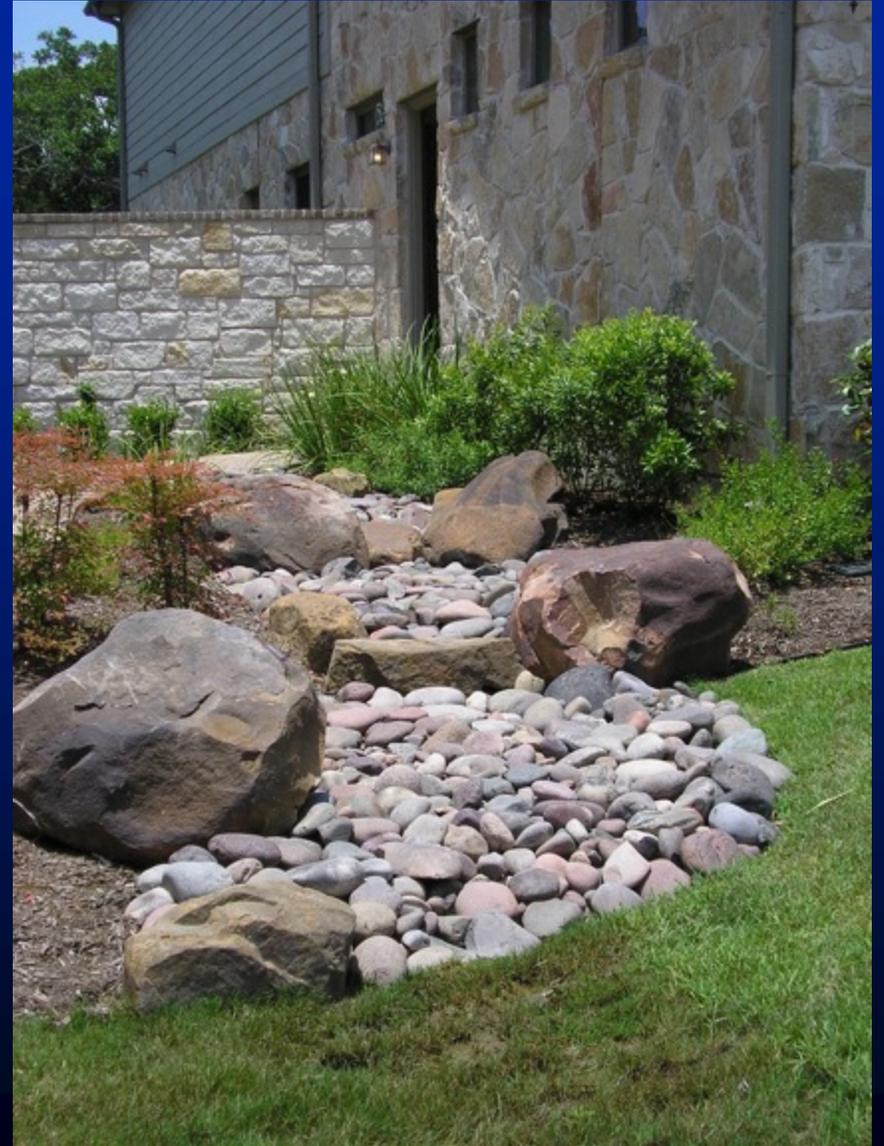


# Hydrozones and Irrigation Design

- Hydrozone system to match landscaping
- Critical areas need low-volume irrigation
- Install a rain shut-off device & flow meter
- Get an “as-built” drawing of the design



# Rainwater Catchment and Drainage



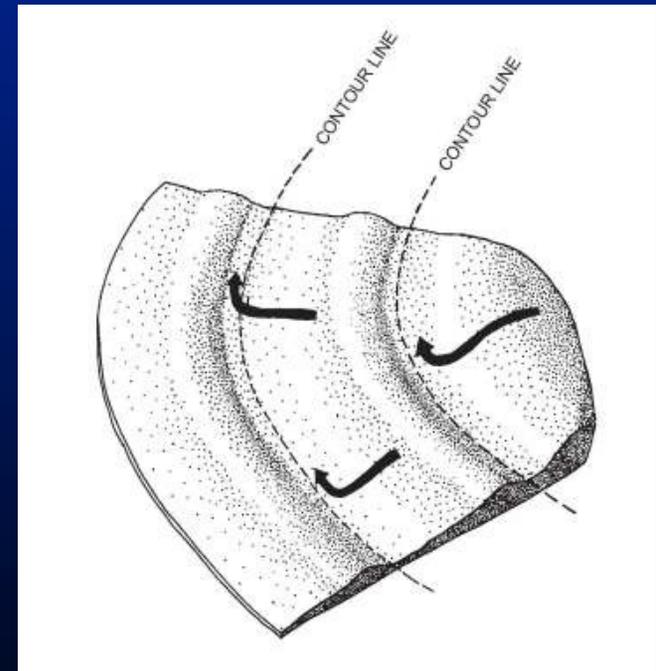
# Rainwater Harvesting, Rain Gardens & Ponds

- Quality is Ideal for Ponds & Plants
- Use Gravity to Direct Water



# Passive Rainwater Catchment

- Capture rainwater before it runs off
- Use berms and raised edging to detain the water
- Passive rainwater catchment needs little maintenance



# Rain Gardens Keep Water on the Land

## KEEP WATER ON THE LAND

With increased population growth and smaller lots, much of our land is being covered with roadways, rooftops, parking lots and sidewalks that do not let water soak into the soil. This decreases baseflow (the constant flow in a creek) while increasing the chances of flooding and streambank erosion. The result is that many creeks have excessive flow during heavy rains and dry up shortly afterwards.

You can help both our waterways and your drainage problems by incorporating some "greenscape" techniques into your landscape plans.

### Rainwater Harvesting

By directing rooftop gutters to a rain barrel, you can then use the collected rainwater on areas of the land that most need water.

### Swale or "Dry Creekbed"

Install a stone or grassed channel that directs rainwater to an area of the yard where it can be better absorbed.

### Soils

At least 4 inches (and ideally 6-8 inches) of organic topsoil should be added to help keep nutrients and water on the land.

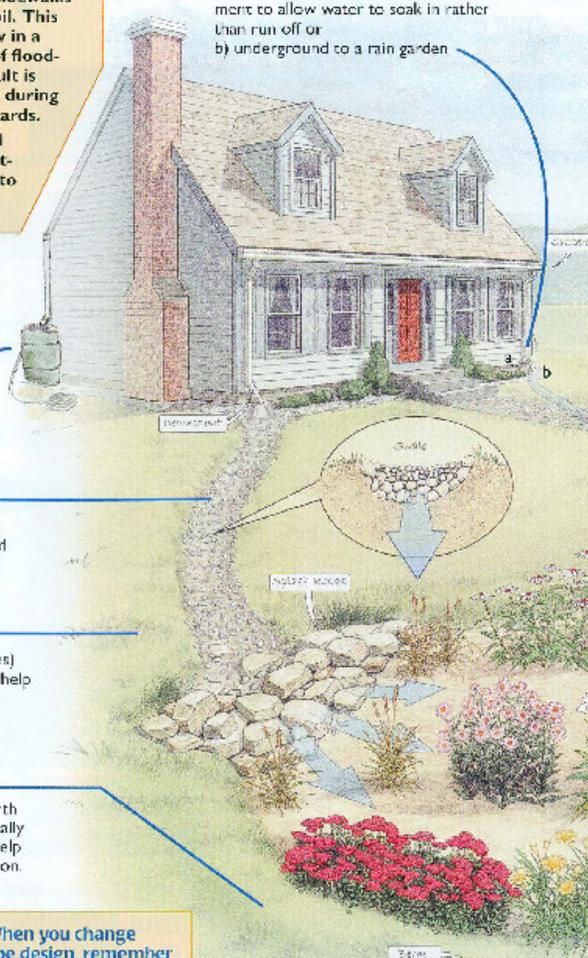
### Berm

This could be a mound of earth or a low stone wall. It is typically at the bottom of a slope to help retain water or prevent erosion.

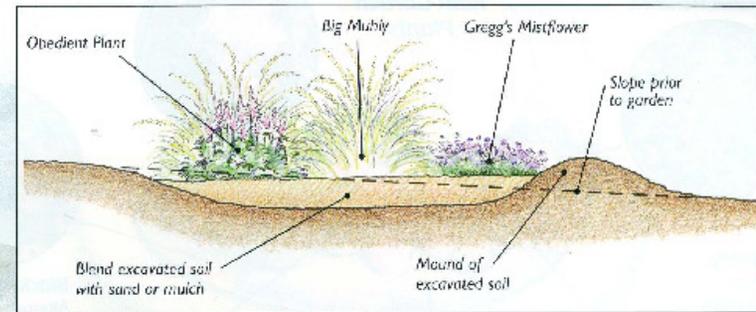
**Reminder: When you change your landscape design, remember to change your sprinkler system as well!**

### Gutter downspouts

Direct downspouts to either  
a) vegetated areas rather than pavement to allow water to soak in rather than run off or  
b) underground to a rain garden



## Cross Section: Rain Garden



### Trees

Plant disease-resistant natives to promote water retention, improve air quality, provide shade and habitat.

### Porous Pavement

An alternative to asphalt, porous materials contain voids to encourage water to infiltrate the land. Some options include bark mulch, gravel, pervious concrete, paving stones and tumbled glass.

### Your Lawn As a Filter

Grass slows down water flow and allows infiltration. Lawn does best in an area that is nearly level and should not be treated with chemicals in order to reduce the potential for water pollution.

### Rain Gardens

These gardens are designed to catch and store rainfall for short periods of time and then dry out; they can be filled with attractive plants and often help solve drainage issues in the yard. For details on rain garden design and plant choices, see the following page and visit [www.growgreen.org/plants.htm](http://www.growgreen.org/plants.htm).

Illustration adapted from the Family Handyman, April 2007

# Use Rain Gardens to Catch Rainwater



earth-wise guide to

## Rain Gardens

Keeping Water on the Land

### what is a rain garden?

A rain garden is a shallow, vegetated depression designed to absorb and filter runoff from hard (impervious) surfaces like roofs, sidewalks, and driveways. Rain gardens are usually planted with colorful native plants and grasses. They not only provide an attractive addition to the yard, but also help to conserve water and protect our water quality.

### how does a rain garden help?

As Austin becomes increasingly urbanized, native landscapes are replaced with impervious surfaces that prevent rainwater from soaking into the ground. Stormwater quickly runs off these hard surfaces, picking up pollutants from the land and carrying them to our creeks. This rapidly flowing water also increases the chances of flooding and erosion.

The goal of a rain garden is to keep water on the land. Rain gardens, with their shallow depressions, capture stormwater and provide for natural infiltration into the soil. This provides water for the plants and helps maintain a constant flow of water in our streams through groundwater. They also help filter out pollutants including fertilizers, pesticides, oil, heavy metals and other chemicals that would otherwise reach our creeks through storm drains or drainage ditches. By reducing the quantity of water that runs off your property, rain gardens help lower the risk of flooding and erosion.

growgreen.org



Austin Parks and Recreation - 919 West 28th Street

## Create A Rain Garden in Six Steps

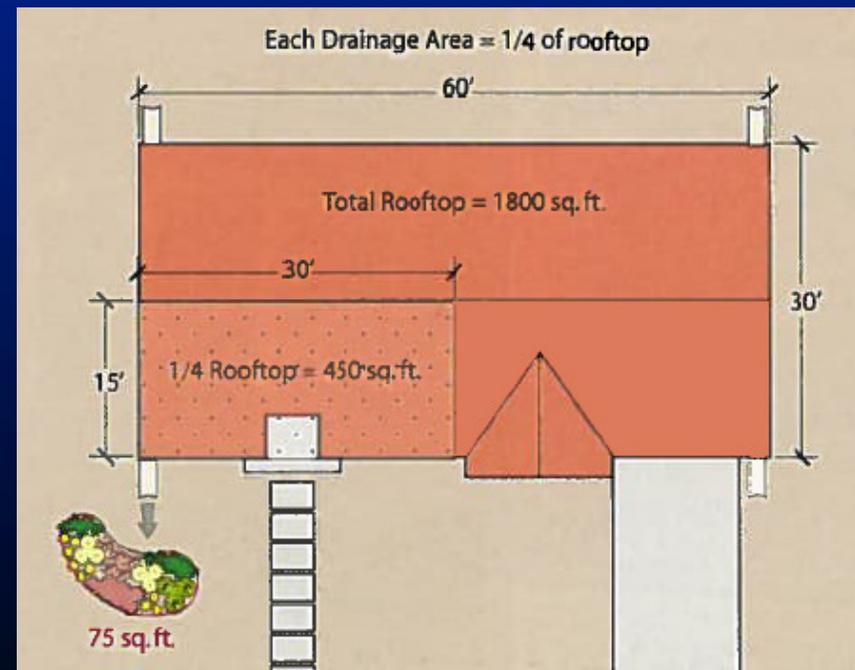
### 1 Find the Right Location

- Observe the flow of water from rooftops, driveways, or other hard surfaces and place the rain garden where this water collects



- Select an area on gently sloping or flat land
- Calculate the slope of your lawn (instructions on next page). The slope should be less than 10%
- If possible, pick a spot in full to partial sun. Shady locations will still work, but the options for flowering plants are more limited in the shade
- Make sure that any overflow will not cause unintended runoff to a neighbor's property or other structure
- If drainage-related problems are occurring (e.g. foundation problems, erosion or flooding), consider placing the rain garden at least 10' away from the structure
- Avoid areas with utility lines. Be sure to call 1-800-DIG-TESS (344-8377) to identify the location of underground utilities - the service is free

A shallow, vegetated depression designed to absorb and filter runoff from hard (impervious) surfaces like roofs, sidewalks, and driveways



# Rainwater Catchment and Drainage

- Excavate 6" - 8" of Soil
- Avoid Tree Roots
- Create a Berm to Hold Water
- Figure Out Overflow

Dig A Hole and Fill w/Water:

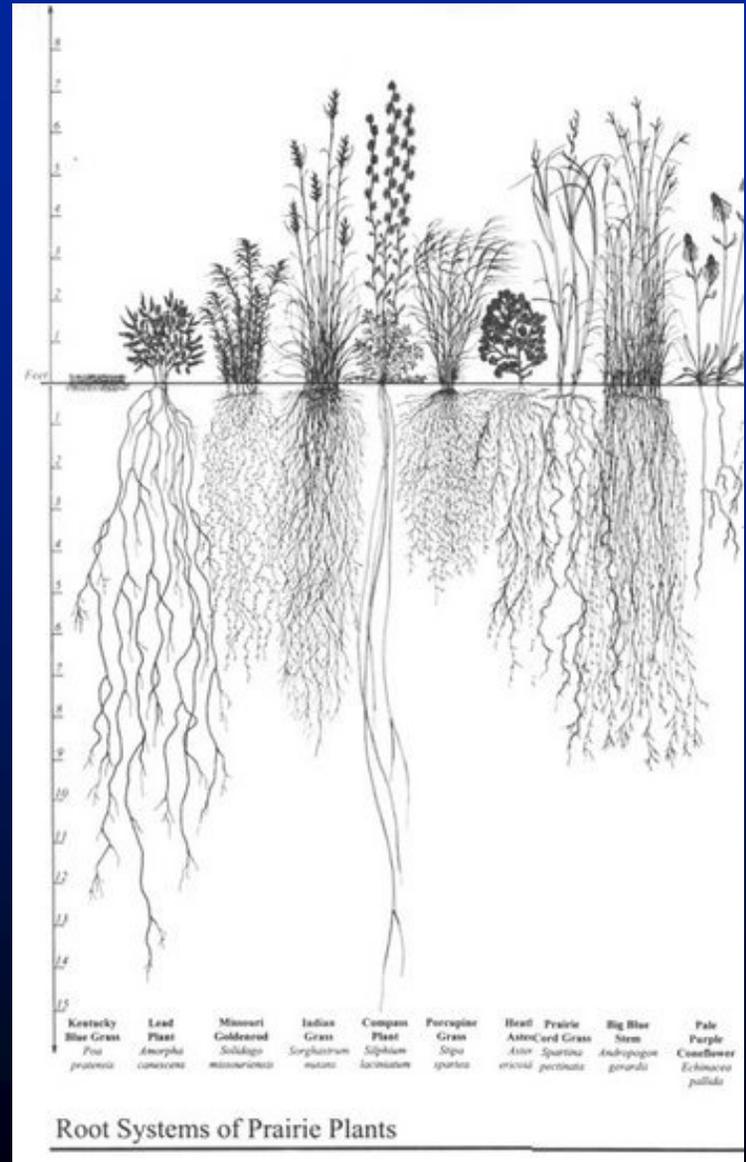
- 6" Wide x 12" Deep
- Fill w/Water Twice
- 2<sup>nd</sup> Time Fill to 6"



# PARD Annex Rain Garden



# Rain Garden Plants - Grasses



# Improve Your Infrastructure

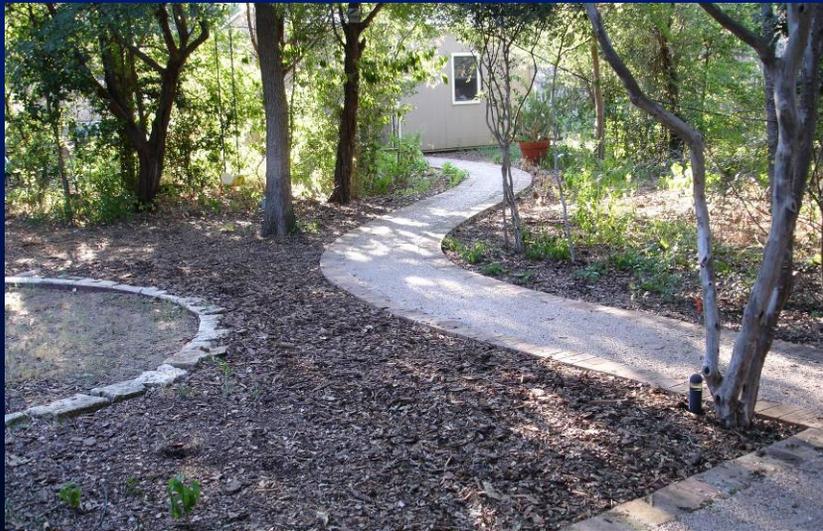


## Pre-Inspection Required

- Kill Grass & Weeds
- Paper & Mulch
- Level the Soil
- Install Paths
- Create Future Beds

# Non-Irrigated Areas & Mulch

- Minimizes weeds
- Moderates Soil Temperatures
- Promotes infiltration
- Provides a walking surface
- Aesthetic appearance



# Porous Pavement

- Water Infiltrates Through Pore Space
- Regular Sweeping Prevents Clogging



Pervious Concrete



Permeable Pavers

# Soil Restoration

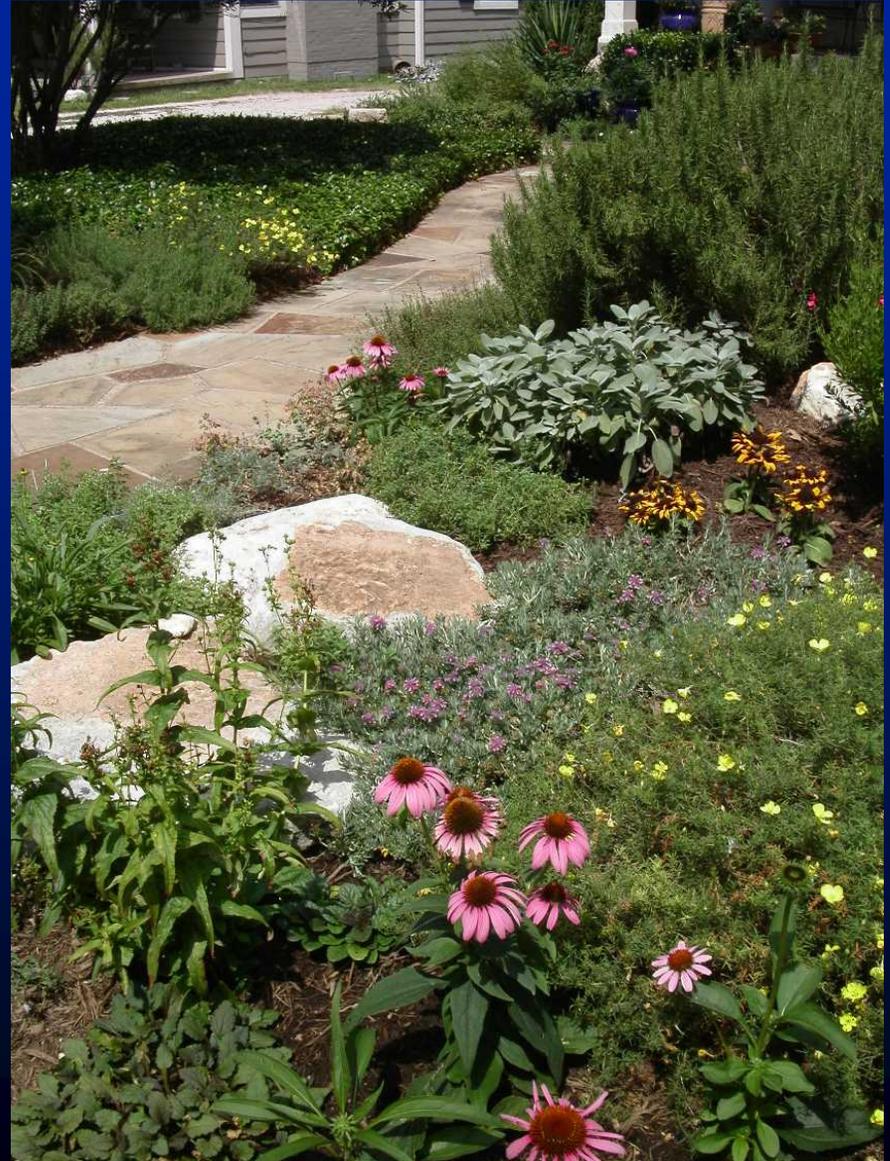
Blend compost into soil  
for better infiltration and  
vegetative growth



# Sinclair Residence Landscaping



# Sinclair Residence Landscaping





Passive Rainwater Catchment on a Slope

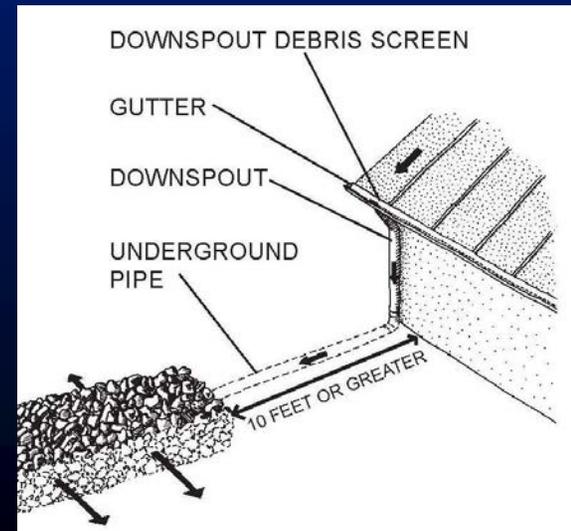


Use Roof Runoff



Mulch Pathways

Downspout to Infiltration Trench



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## For More Information

Dial 311 w/ questions, complaints, etc.



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[www.growgreen.org](http://www.growgreen.org)

[www.waterwiseaustin.org](http://www.waterwiseaustin.org)