



**BORDERLANDS
RESTORATION
NETWORK**

**REBUILD.
RESTORE.
RECONNECT.**

Creating Habitat at Home with Rain Gardens

Caleb Weaver, Community Restoration Program Manager

August 17, 2023

Our Mission & Vision



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We partner to grow a restorative economy by rebuilding healthy ecosystems, restoring habitat for plants and wildlife, and reconnecting our border communities to the land through shared learning.

We envision connected borderlands where rivers flow, plants, wildlife and cultures thrive, and communities develop an inclusive restorative economy where a sense of place inspires a sense of purpose.



Restoration Economy



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A restorative economy creates synergies between human economic activity and natural systems to build a more prosperous, just, and sustainable local community.



Why create habitat at home?



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There's not enough habitat in nature preserves to support earth's biodiversity

We need to increase biodiversity in human-dominated landscapes

Managing for biodiversity in ways that don't diminish human utility is a 'win-win'

What does wildlife need to survive?



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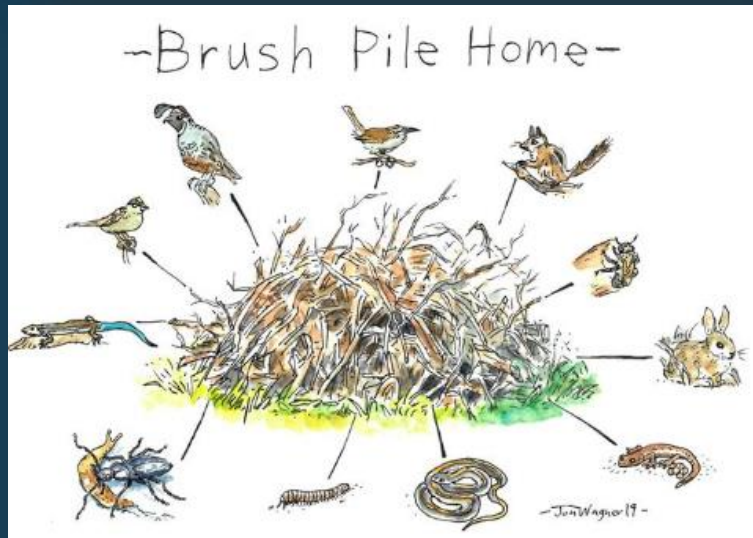
Food



Water



Shelter



Safety



What does wildlife need to survive?



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Food



Water



Shelter



Safety

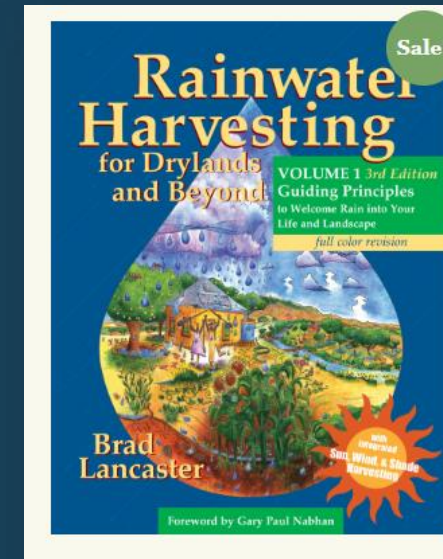


Where do I start?



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In arid regions, we must first plant the rain before we can plant our gardens



www.harvestingrainwater.com

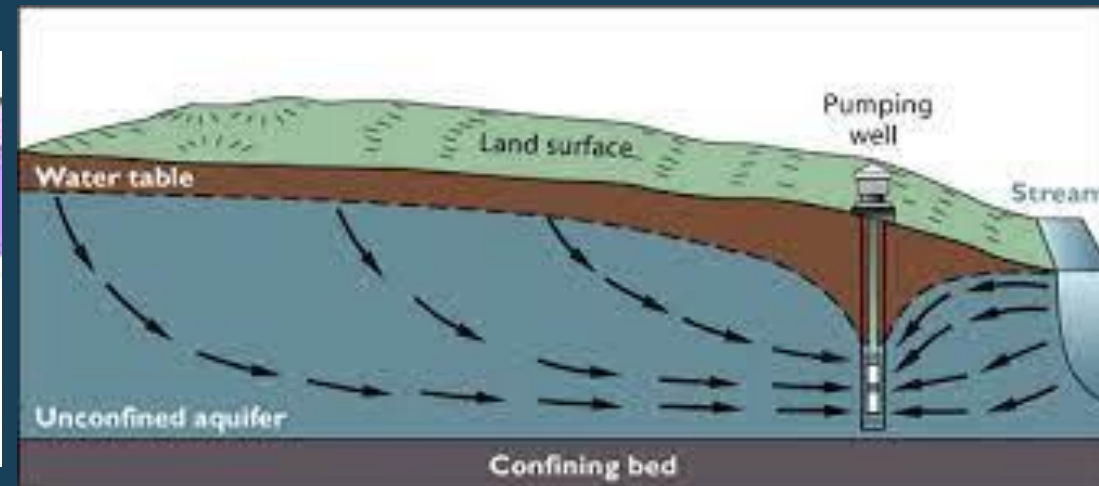
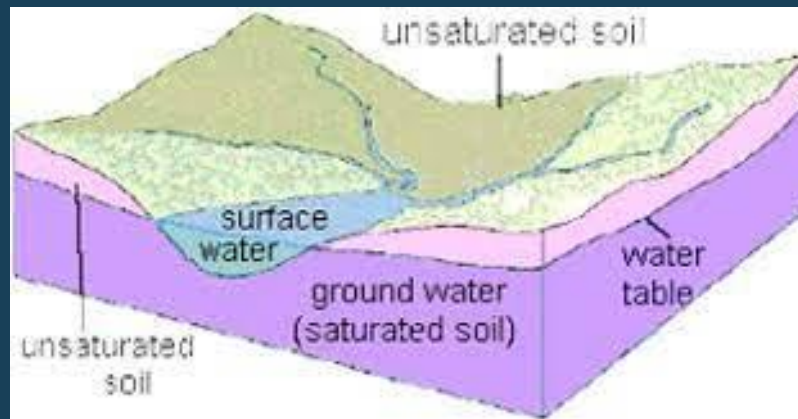
Why Harvest Rainwater?



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96% of surface water in Arizona has disappeared since European arrival



Plummeting groundwater leads to disappearing surface water

Why Harvest Rainwater?

Climate Change Predictions



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More
Wildfires



WHERE YOUR SUMMER IS HEADED



Hotter

Drier



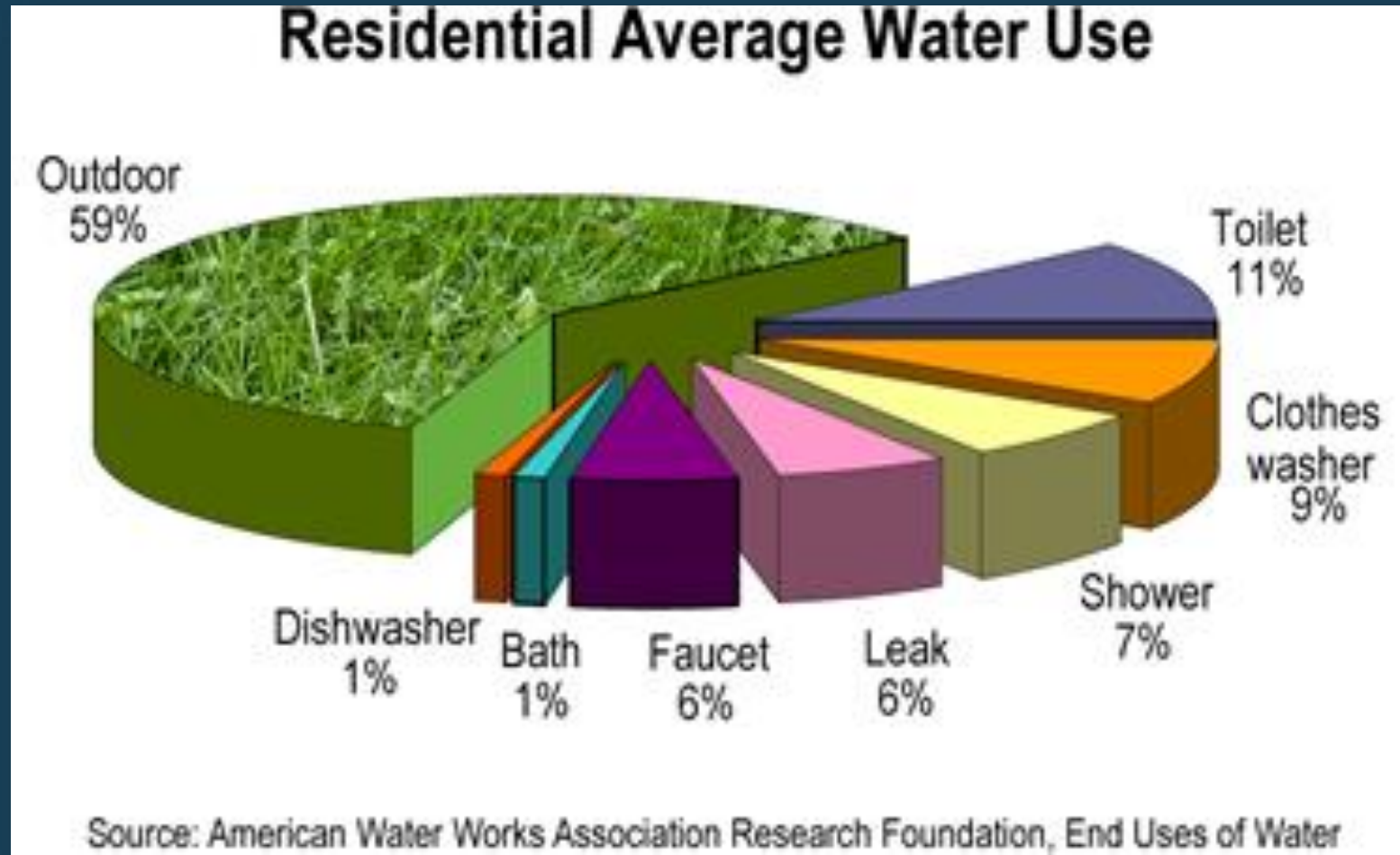
More
Violent
Storms &
Flooding



Why Harvest Rainwater?



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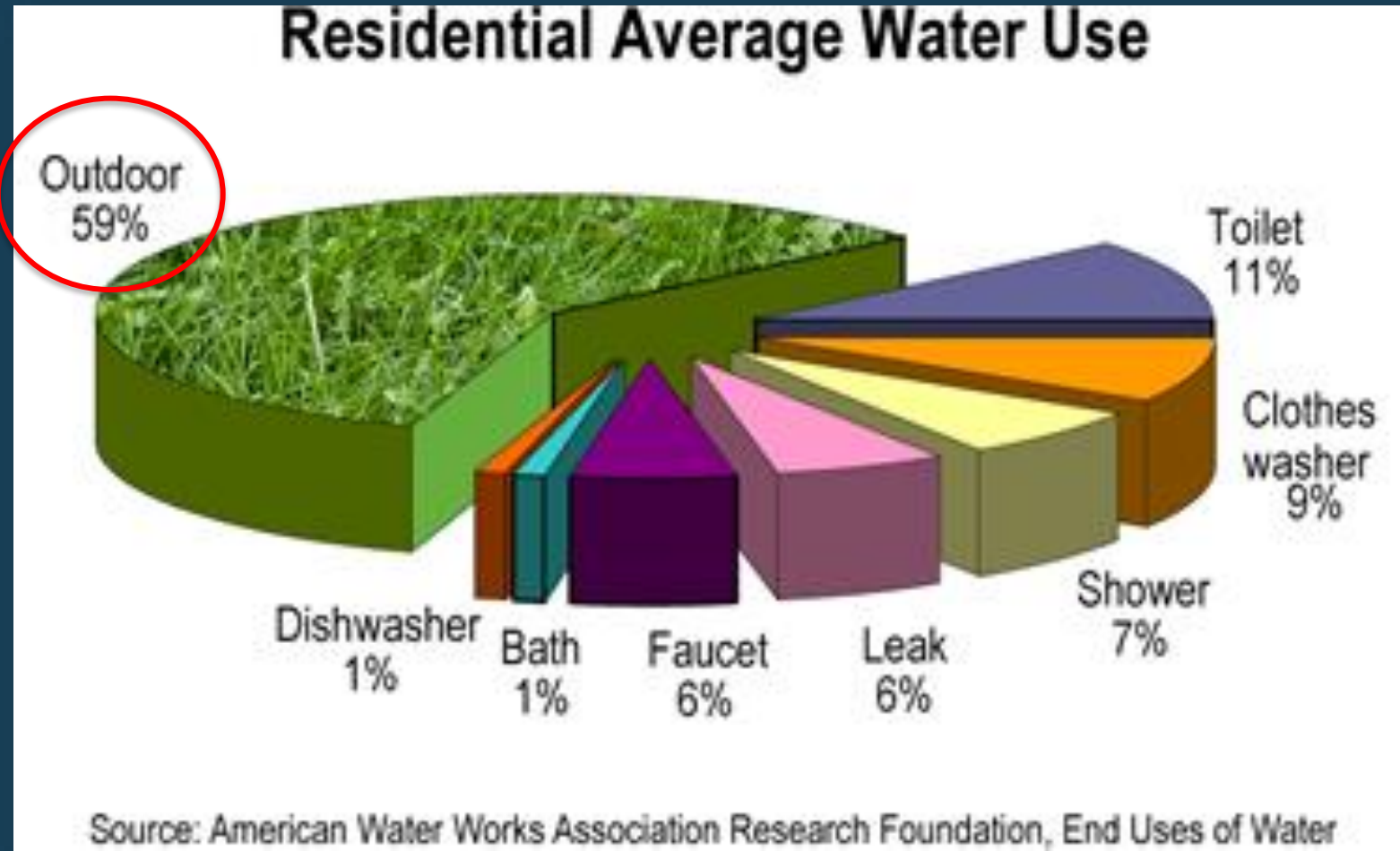


The average Arizonan uses 146 gallons of water per day

Why Harvest Rainwater?



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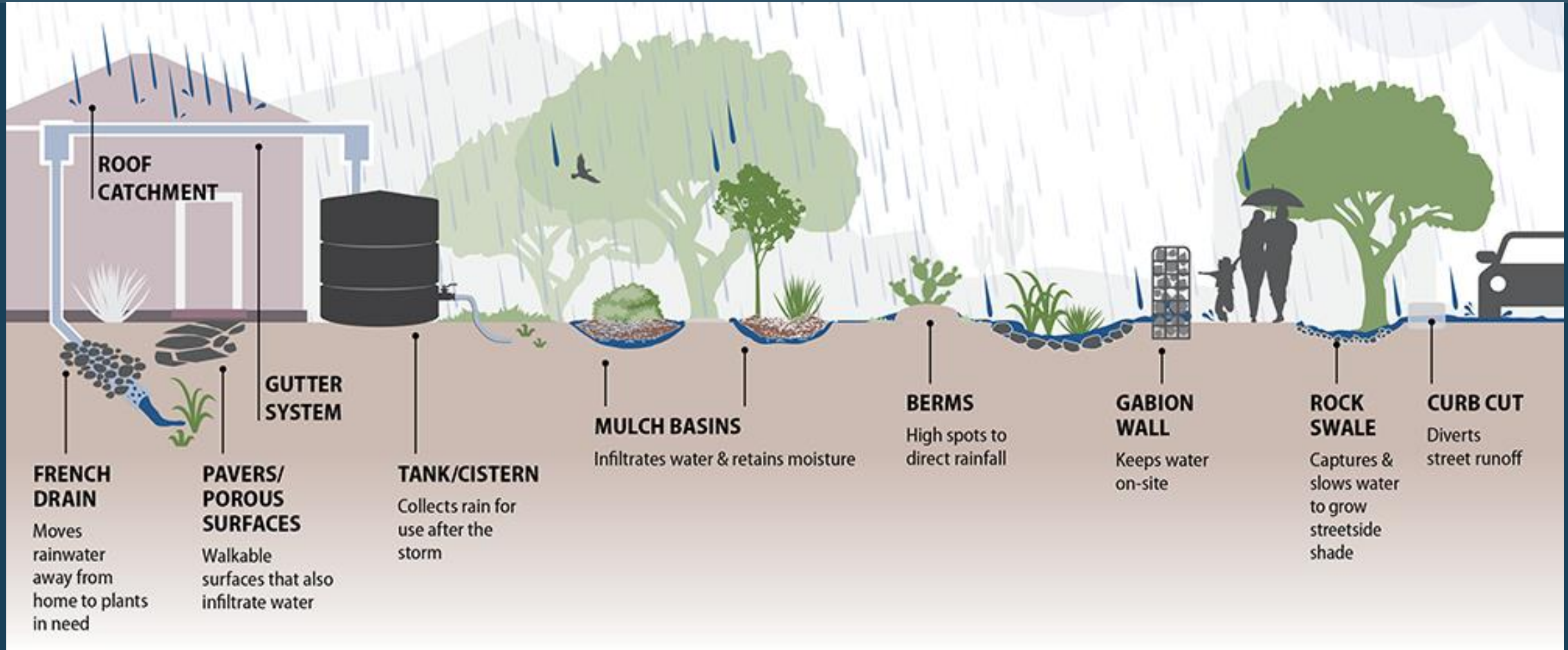


The average Arizonan uses 146 gallons of water per day

Ways to Harvest Rainwater



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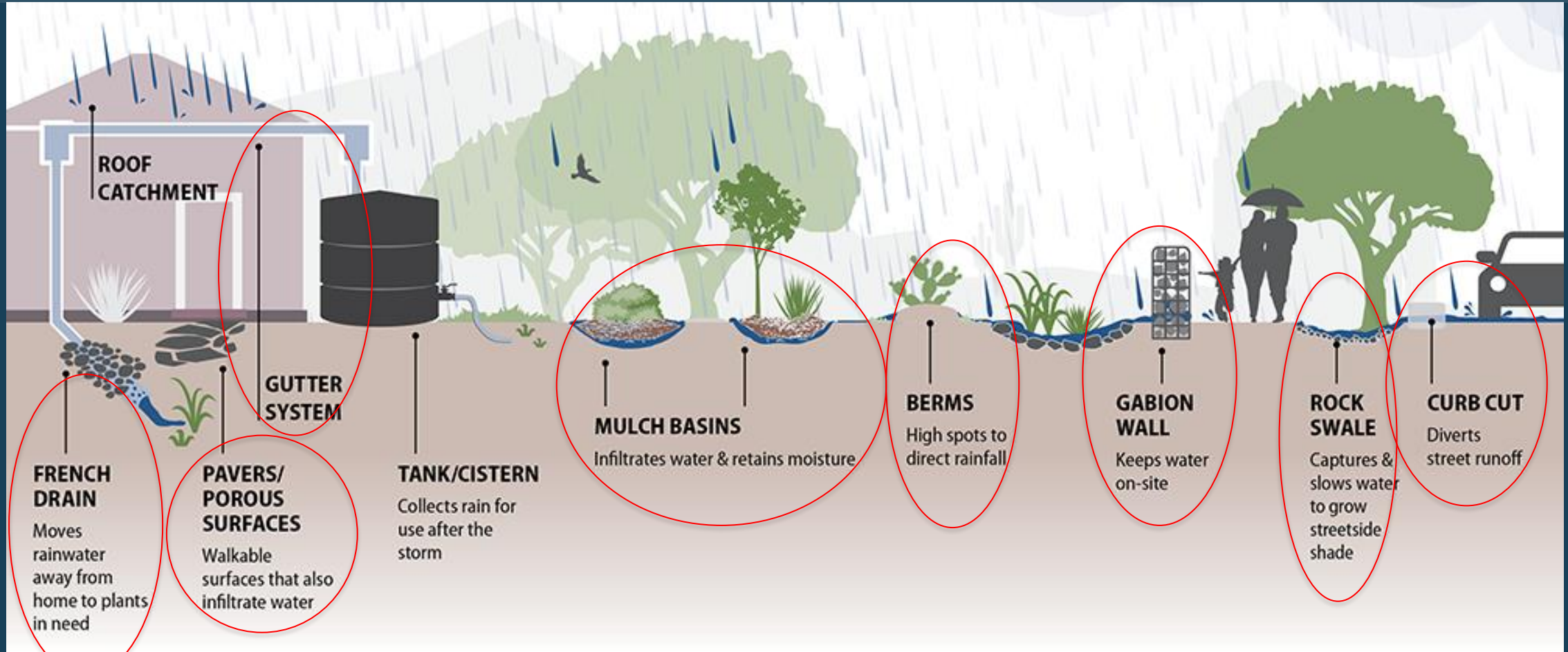
Actively or Passively

Which of these methods are active, and which are passive?

Passive Rainwater Harvesting



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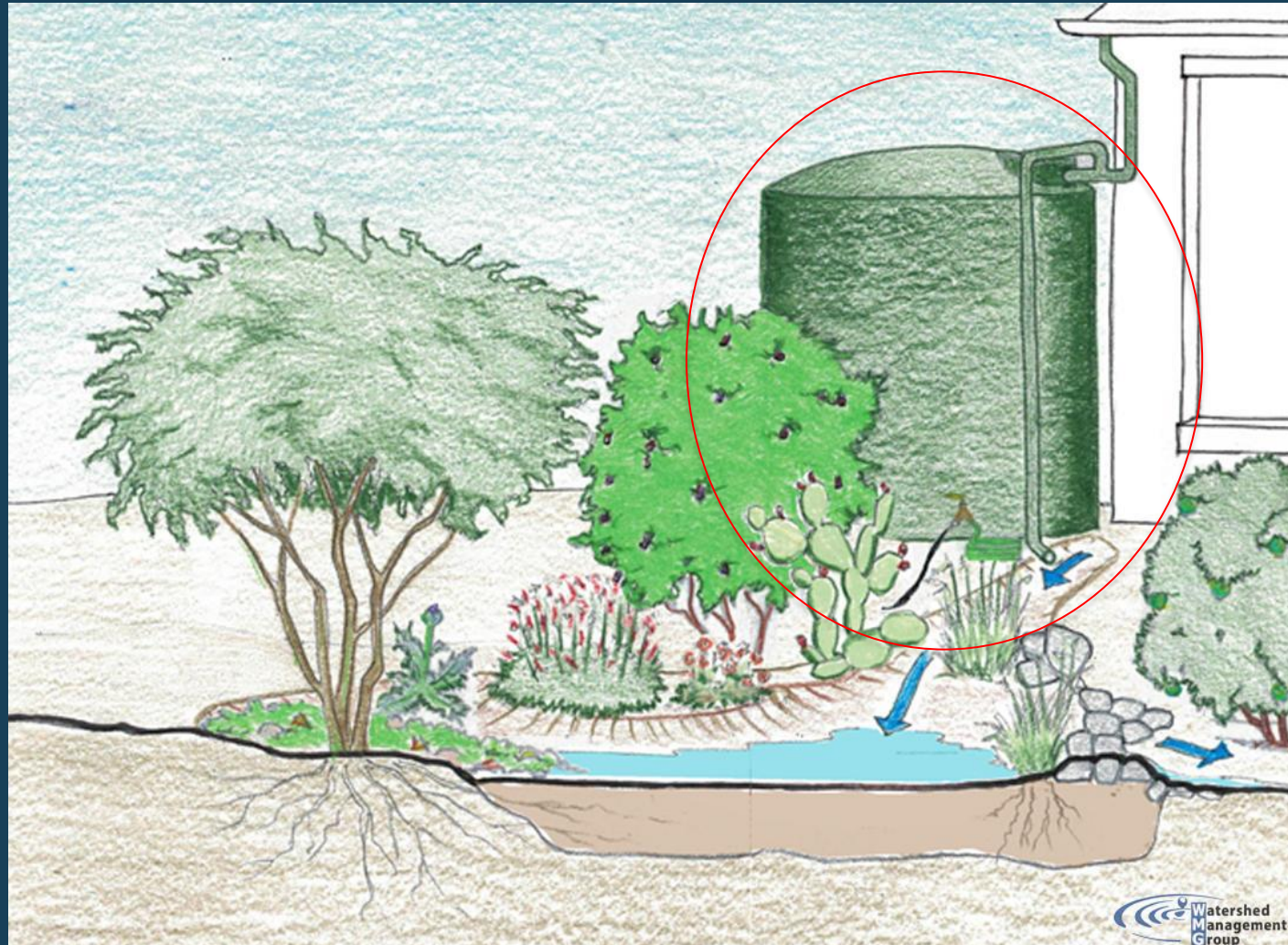


Shaping the earth or directing rainwater so it naturally goes where you it's needed

Active Rainwater Harvesting



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Storing water in tanks for on-demand use

Passive Rainwater Harvesting

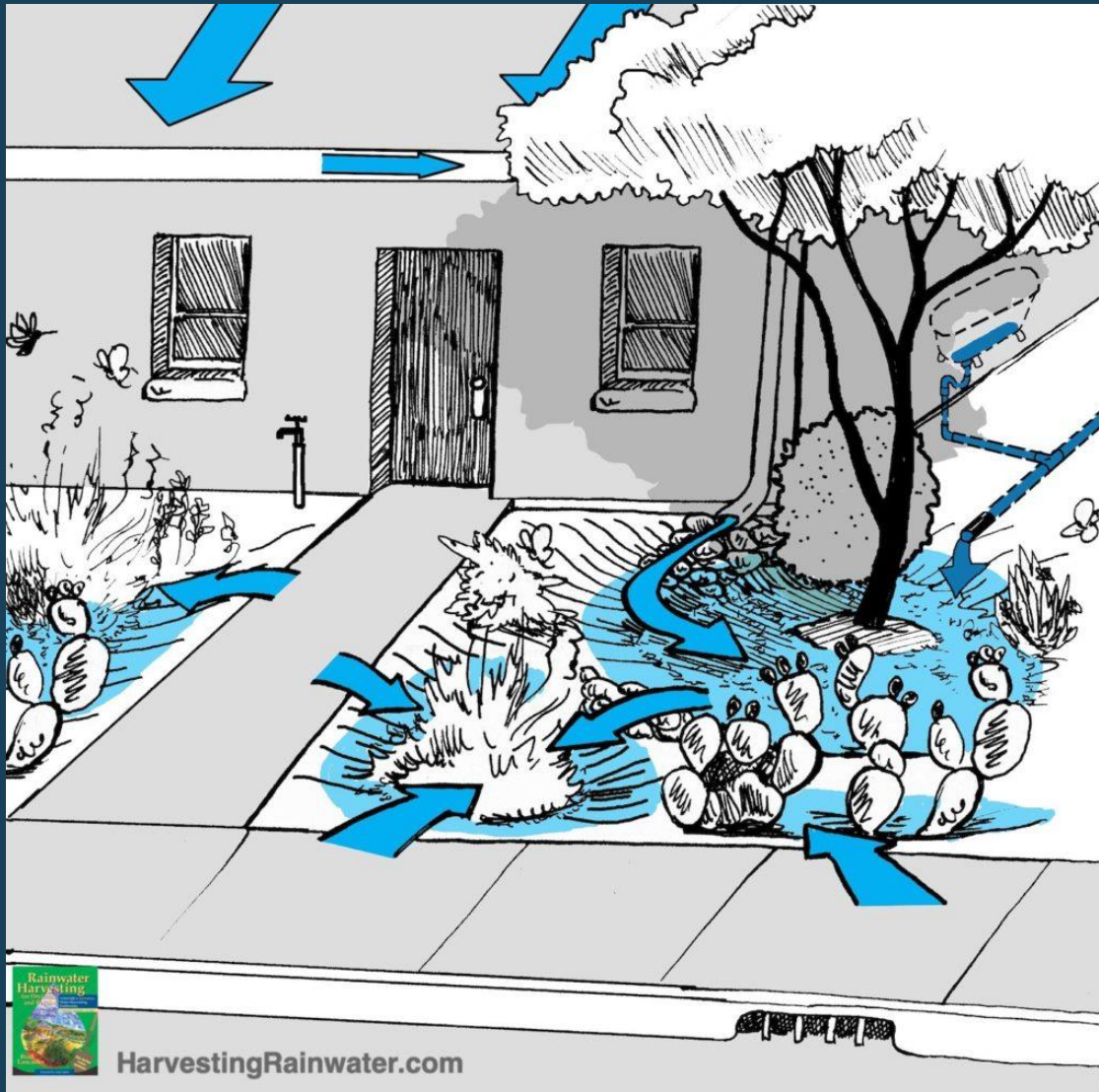


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Sources of rainwater:

- Roof
- Sidewalk
- Landscape
- Shower*
- Laundry*
- Hand Sink*

*Which produces the most on a regular basis?



Passive Rainwater Harvesting



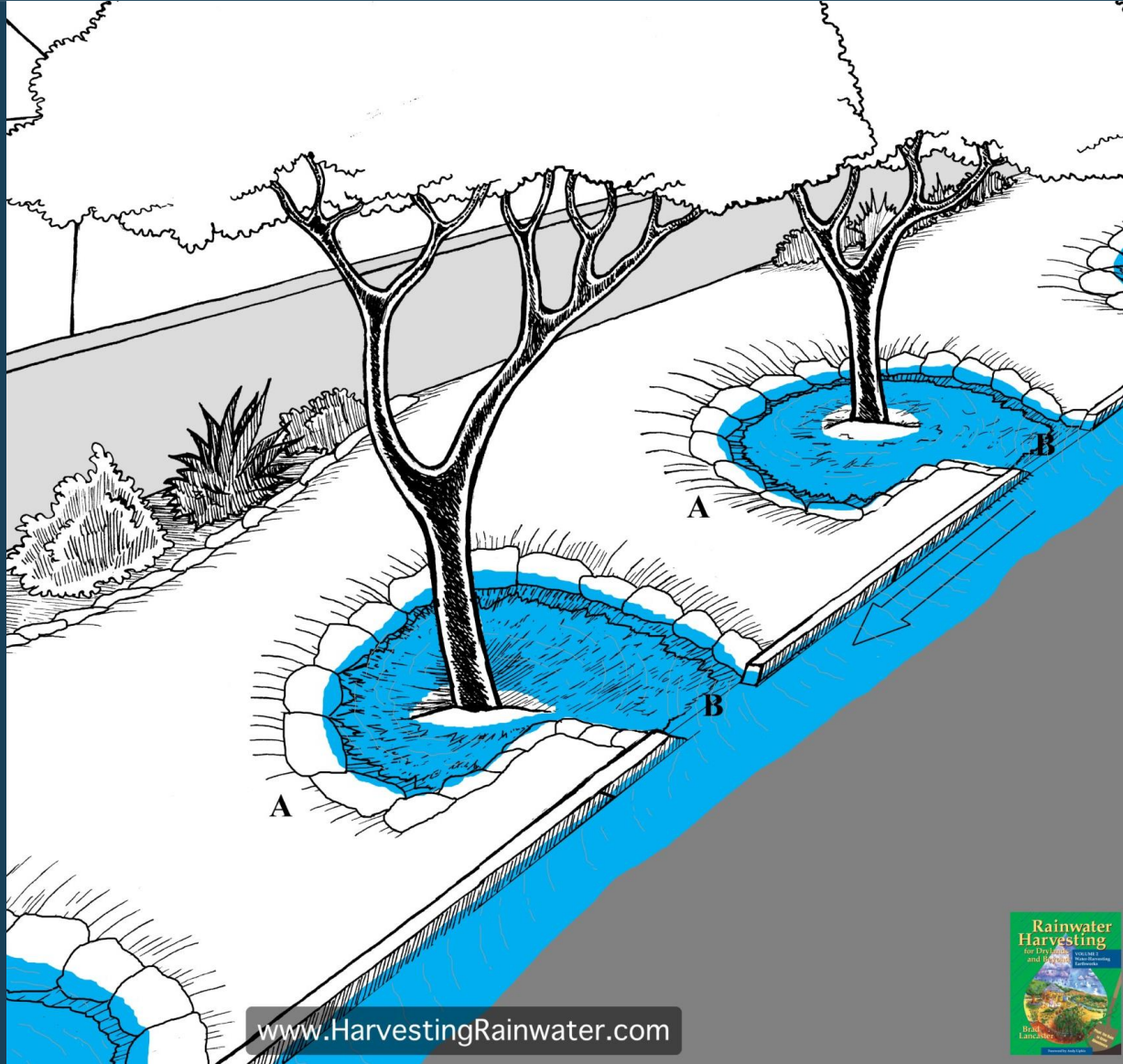
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Passive Rainwater Harvesting

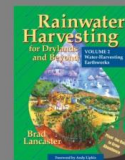


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Sources of rainwater:

- Driveway
- Road



Passive Rainwater Harvesting



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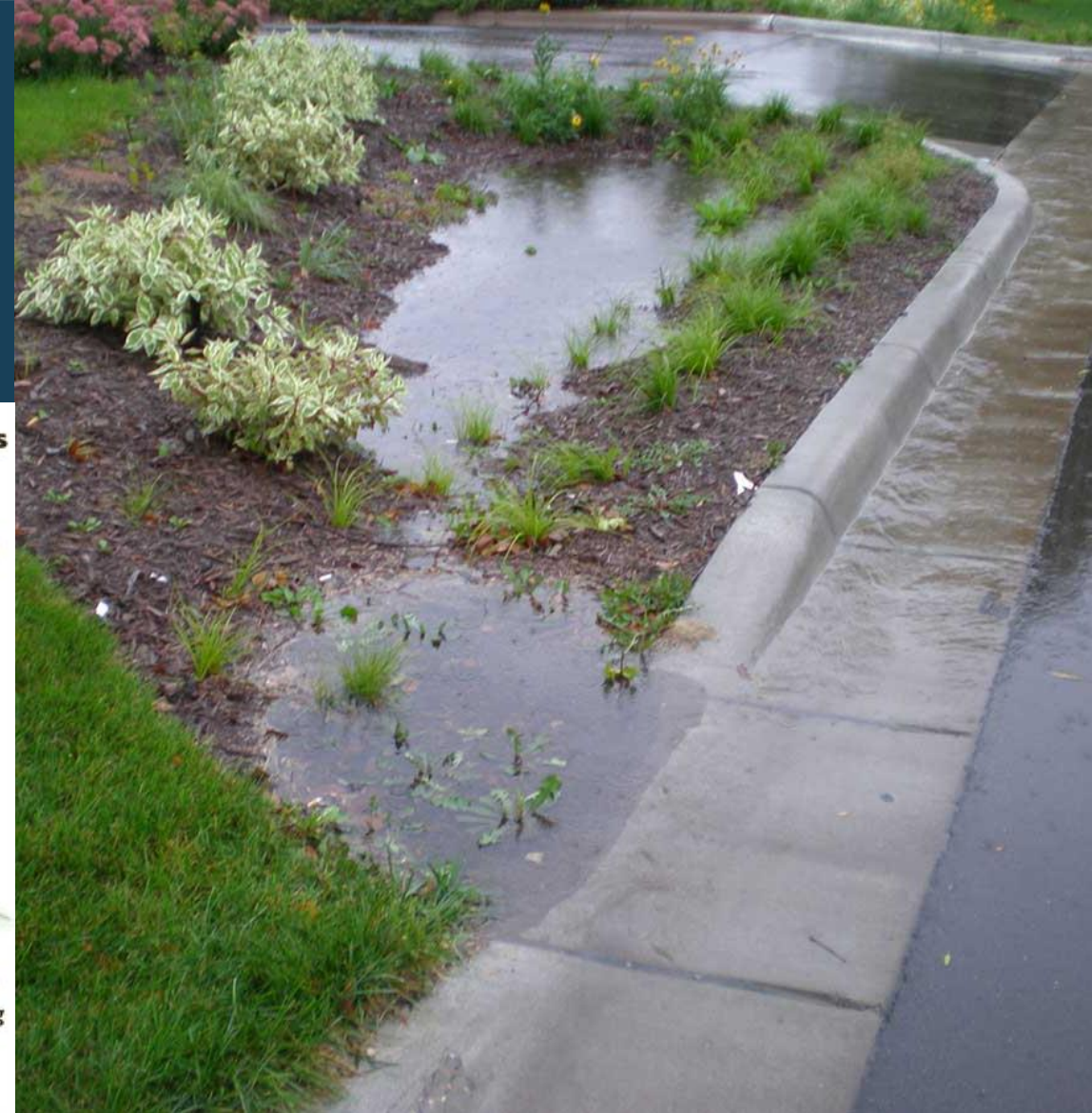
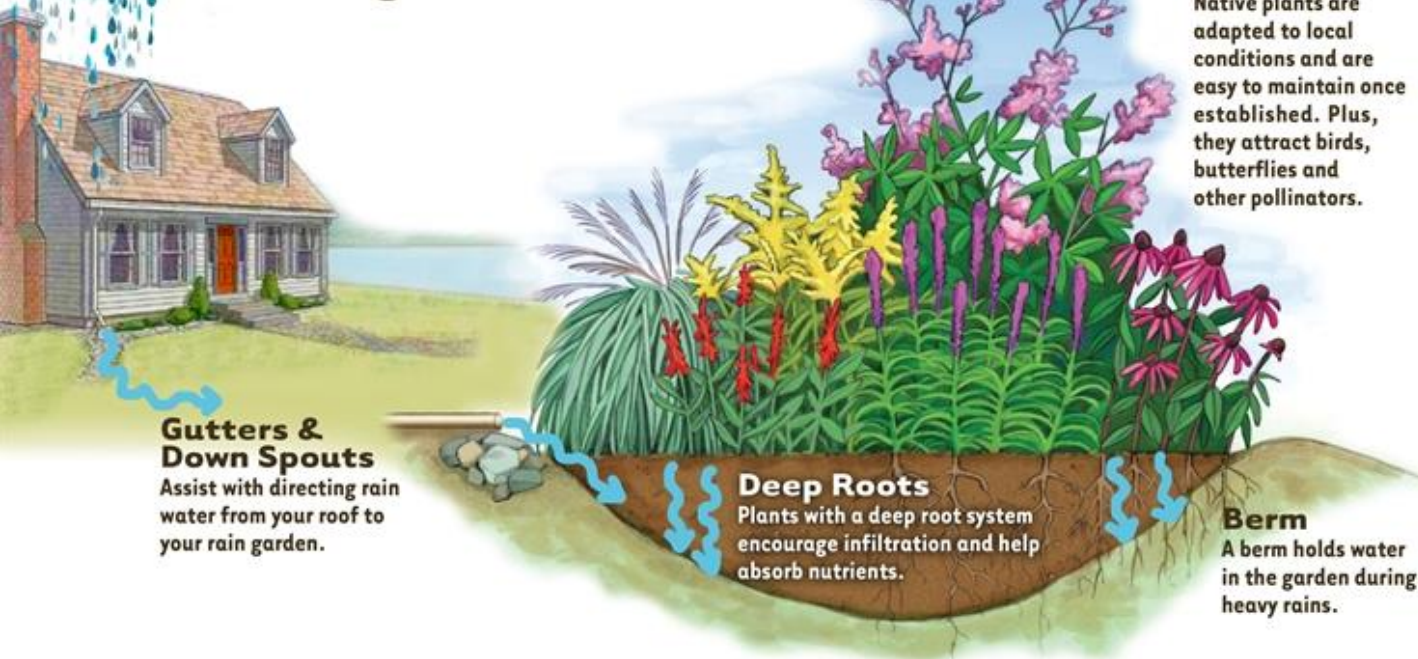
What's a Rain Garden?



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...Sunken rainwater harvesting basin that naturally collects and stores water in the ground

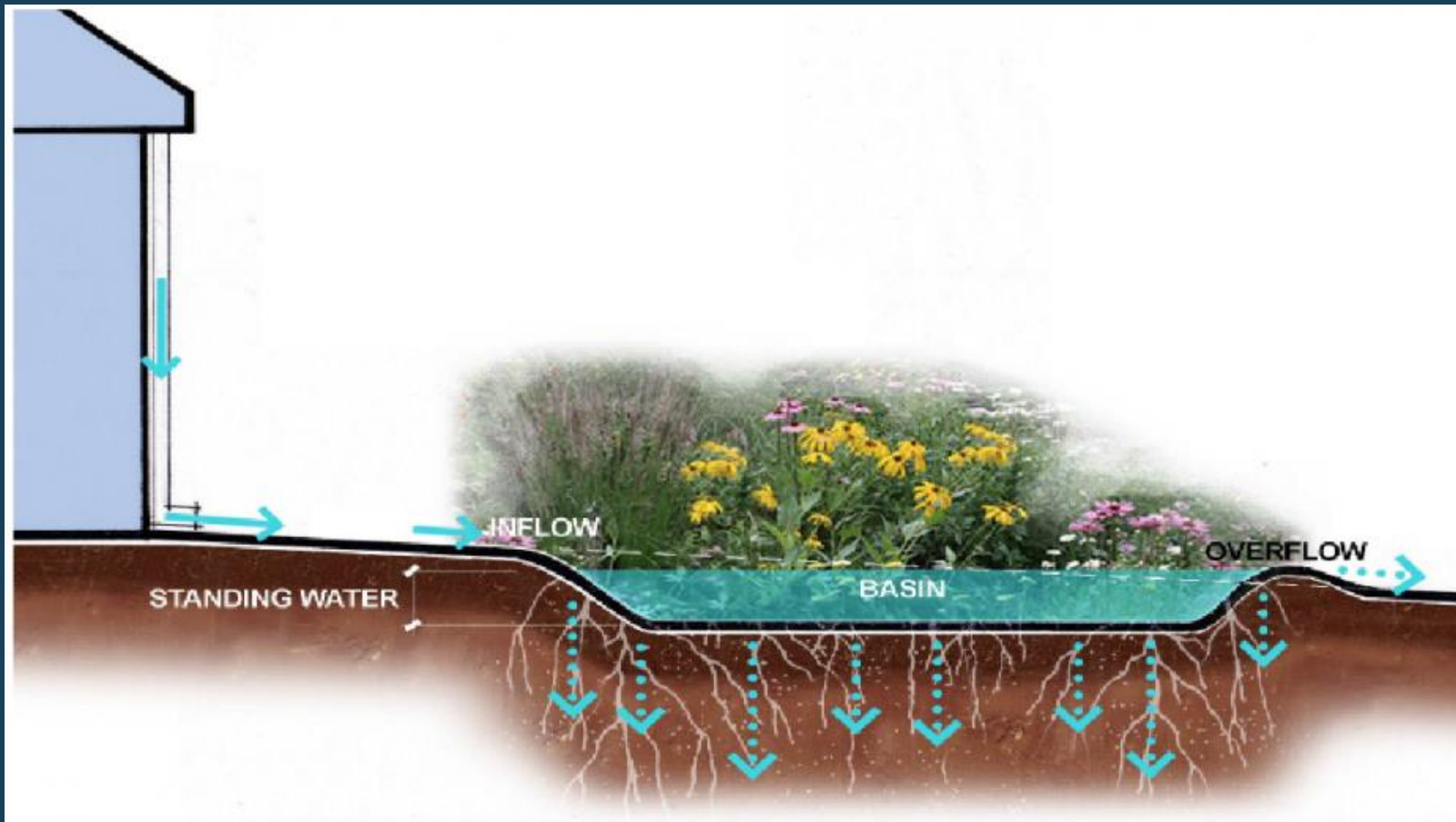
How does a rain garden work?



Why build a Rain Garden?



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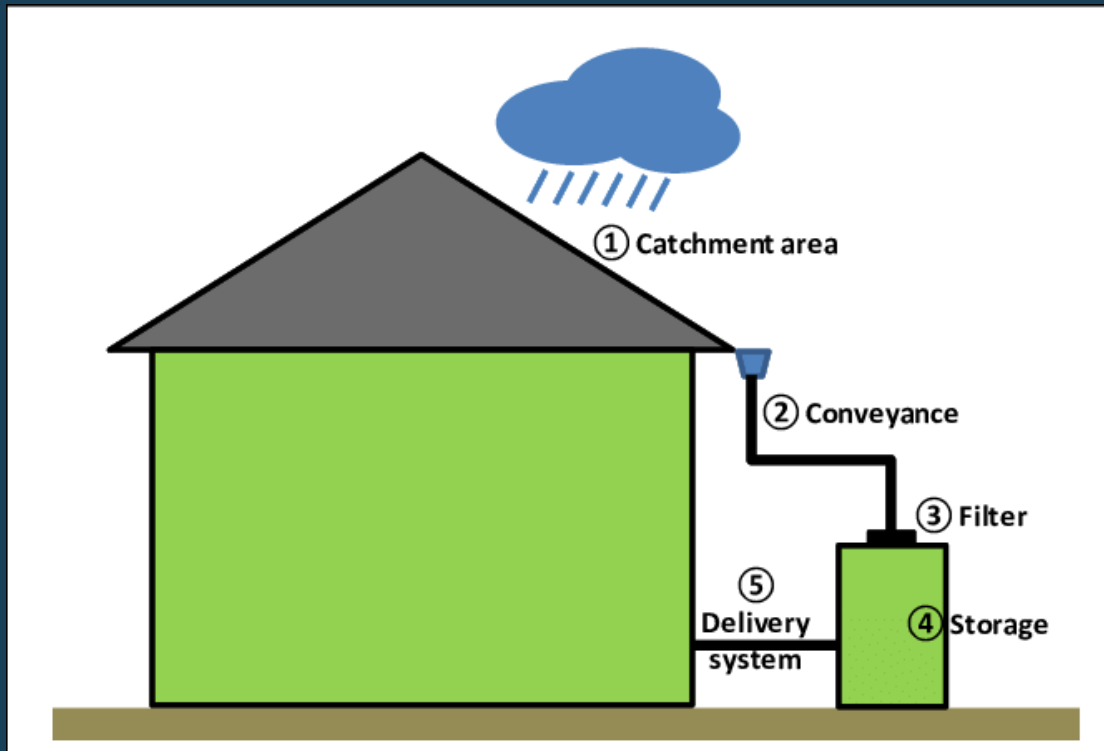
- Replenishes Groundwater
- Filters Water
- Reduces Flooding
- Feeds Plants
- Supports Wildlife
- Sequesters Carbon
- Grows Food
- Reduces Urban Heat Island Effect
- Saves \$\$ (water and food bills)
- Low Maintenance

Locating a Rain Garden



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1. Identify the catchment area



2. Locate the existing path of water from the catchment area



Locating a Rain Garden



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3. Identify suitable location for water to infiltrate



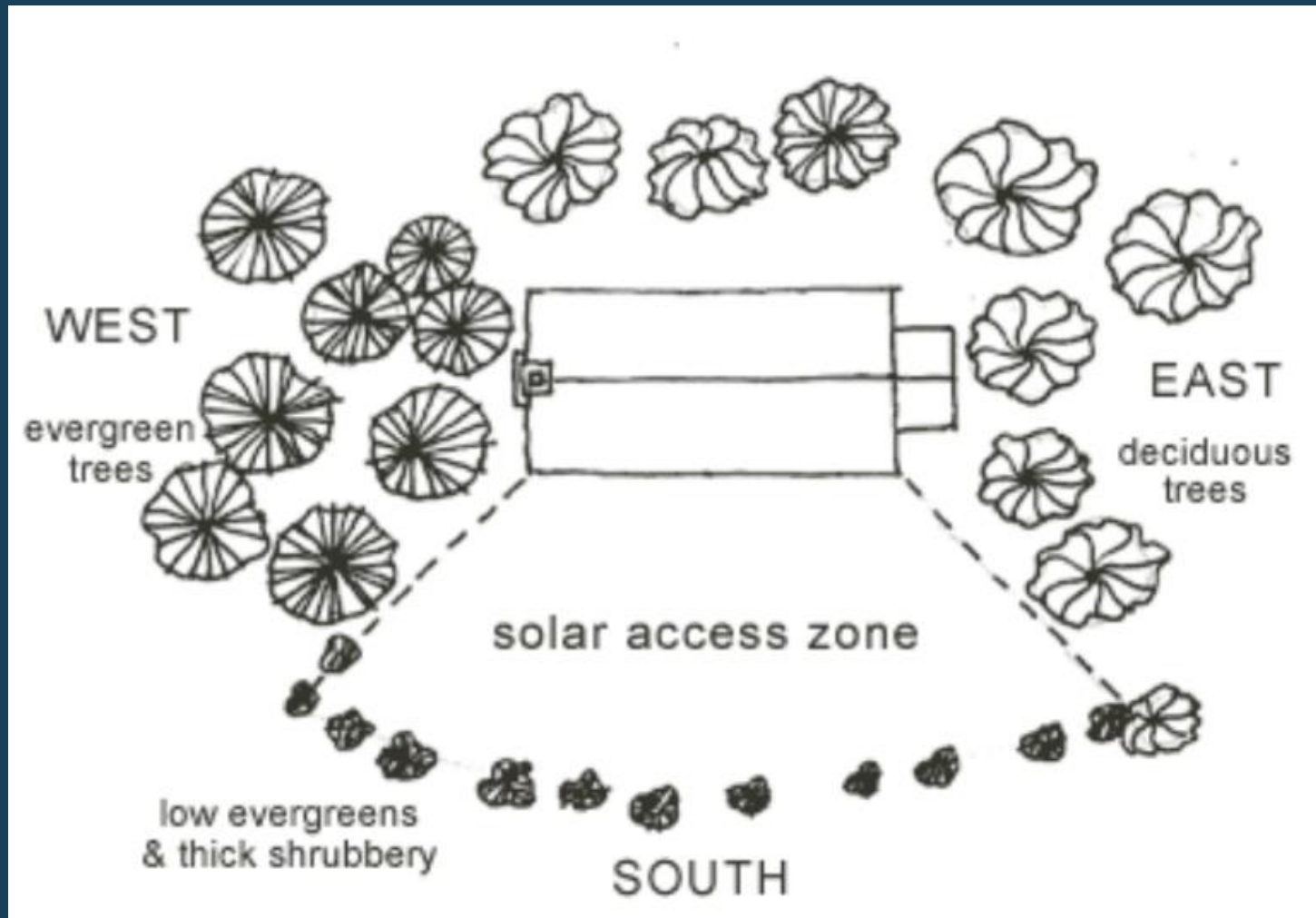
- Relatively flat area near natural path of water
- Away from septic systems & buried utilities
- 10' from foundation of building
- Consider javelina and wildlife predation
- Consider added benefits:
 - Shade on building, parking area, or outdoor space
 - Visually pleasing location
 - Household use (food, medicine, laundry, etc), in which case place closer to kitchen or doors
 - Overflow

Locating a Rain Garden



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Consider passive solar design to cut energy costs



Why Native Plants?



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- Drought-adapted
- Deep-rooted
- Low maintenance
 - Fewer pests
 - No fertilizer/soil prep
 - Less supplemental water
- Better able to filter pollutants
- Support local pollinators & wildlife

Why Native Plants?



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When properly placed around the yard, regionally-appropriate plants can survive and even thrive on passive rainwater harvesting alone



Native plant selection

Consider water needs



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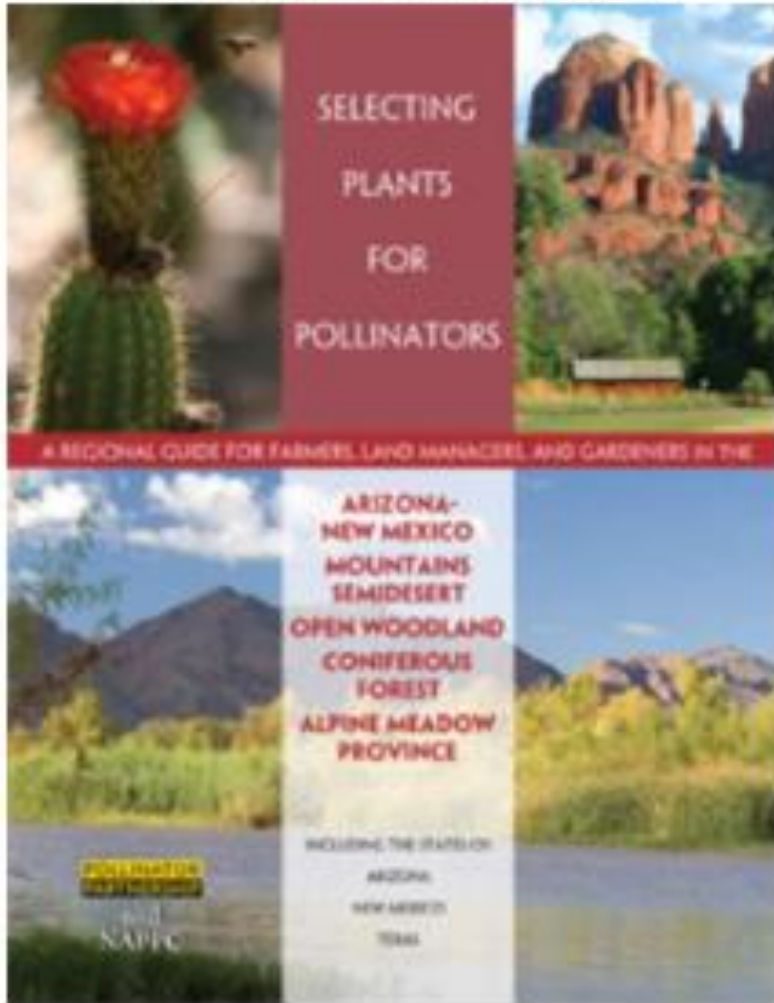
Native plant selection

Consider flowering time



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Arizona - New Mexico



| Botanical Name | Common Name | Color | Height | Flower Season | Sun | Soil | Visitation by Pollinator | Also a host |
|---|--------------------|-----------|--------|---------------|---------------------------|-------------------------|---------------------------------|-------------|
| Trees & Shrubs | | | | | | | | |
| <i>Fallugia paradoxa</i> | Apache plume | white | 3-6' | Apr-Oct | full sun | gravelly alluvium | bees, flies, butterflies, moths | |
| <i>Fendlera rupicola</i> | cliff fendlerbush | white | 3-6' | Apr-Oct | full sun | rocky | bees, flies, butterflies, moths | |
| <i>Dasiphora fruticosa</i> ssp. <i>floribunda</i> | shrubby cinquefoil | yellow | 2-4' | Jun-Jul | full sun | clay to sandy loam | bees, flies, butterflies | |
| <i>Prunus virginiana</i> | chokecherry | white | 6-30' | May-Jun | full sun to partial shade | various | bees, flies, butterflies | |
| <i>Robinia neomexicana</i> | New Mexico locust | rose-pink | 10-30' | Apr-Jul | full sun to full shade | clay to sandy loam | bees, bumblebees | |
| <i>Rosa woodsii</i> | Woods' rose | rose-pink | 2-3' | Jun-Aug | full sun to full shade | clay loam to sandy loam | bees, flies, butterflies | |

pollinator.org/guides

Native plant selection

Eat 'em up!



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Eat Your Yard!

The Desert Can Feed You

Growing an edible food forest offers multiple benefits...

- Produces food for people and wildlife
- Provides clean air, shelter and shade
- Conserves water and energy

Choose native plants with differing fruiting seasons to enjoy food year-round.

Research all plants before harvesting to identify which varieties are edible and safe to eat.

Choose a variety of trees, shrubs, vines and ground cover plants. Plants of varying heights mimic a natural forest.

Group plants in clusters to maximize food production in small urban spaces.

Avoid using herbicides and pesticides to protect people, wildlife and the environment.

GLENDALE
For more information, visit www.glendaleaz.com/WaterConservation

 Funded through the Arizona Department of Forestry and Fire Management and the USDA Forest Service
This institution is an equal opportunity provider

Case Study

Patagonia High School: 2014



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Case Study

Patagonia High School: 2016



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Case Study

Patagonia High School: 2019



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Case Study

Patagonia High School: 2020



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Case Study

Patagonia High School: 2021



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Case Study

Patagonia Home: Before



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Case Study

Patagonia Home: After 1 monsoon



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Case Study

Patagonia Home: After 1 monsoon



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Case Study

Patagonia Home: After 2 monsoons



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Patagonia Home: After 2 monsoons



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Case Study

Patagonia Home: After 2 monsoons



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Thank you!



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