

# Water Resources Research Center

College of Agriculture and Life Sciences, The University of Arizona

## Why the Groundwater Management Act?

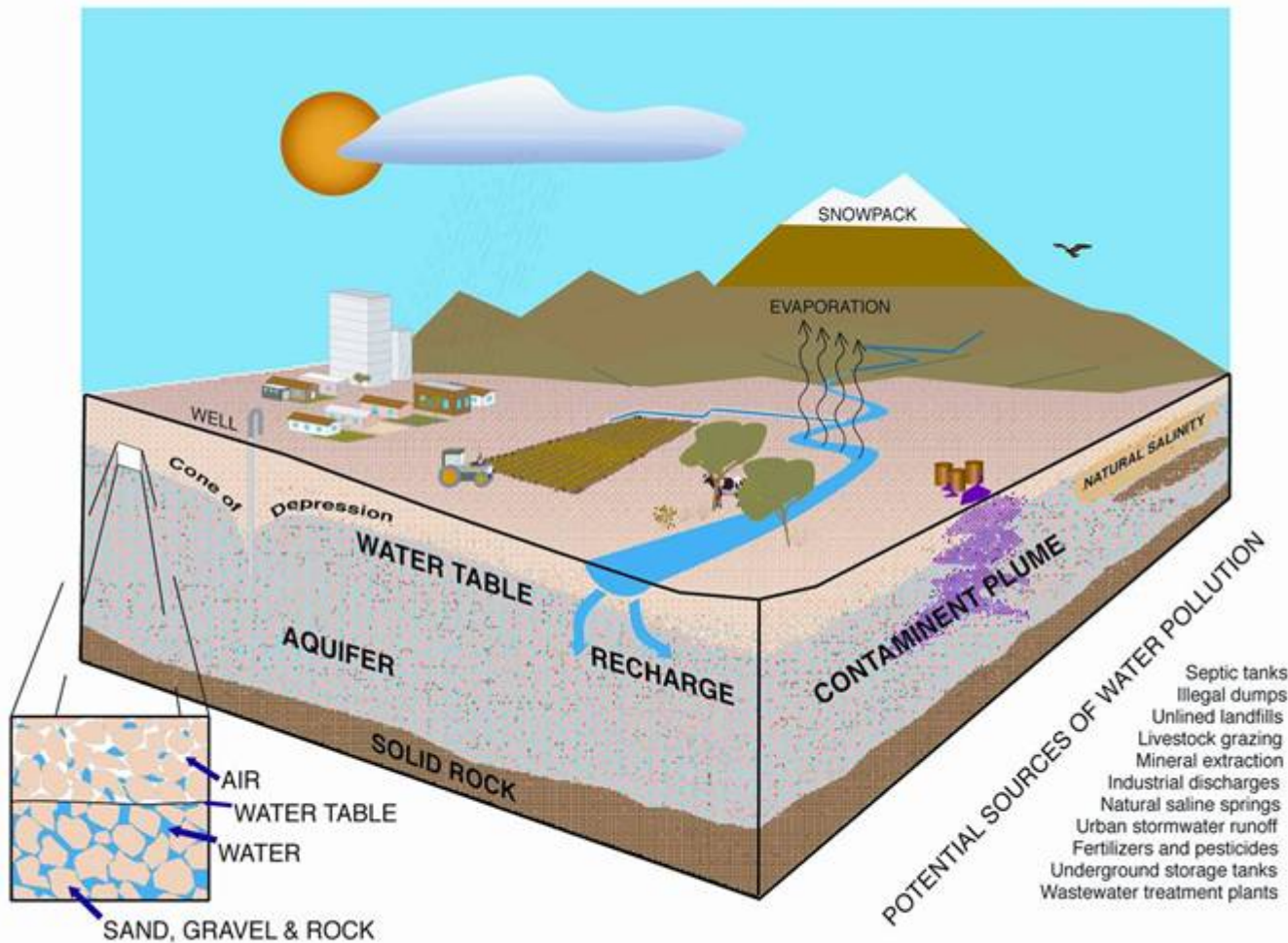


ULI Arizona Water in the West  
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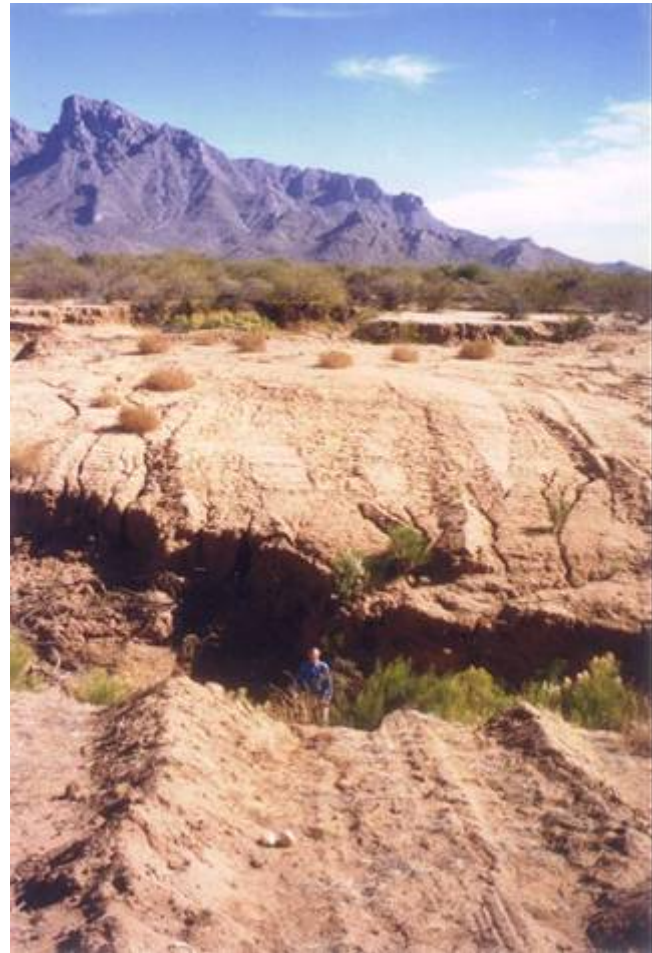
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# Reliance on Groundwater



# Overdraft a Problem

- GW pumped by municipal water providers, mining, agriculture and other industry.
- Groundwater pumped from aquifers faster than it is replenished by nature
- Problem: declining water tables



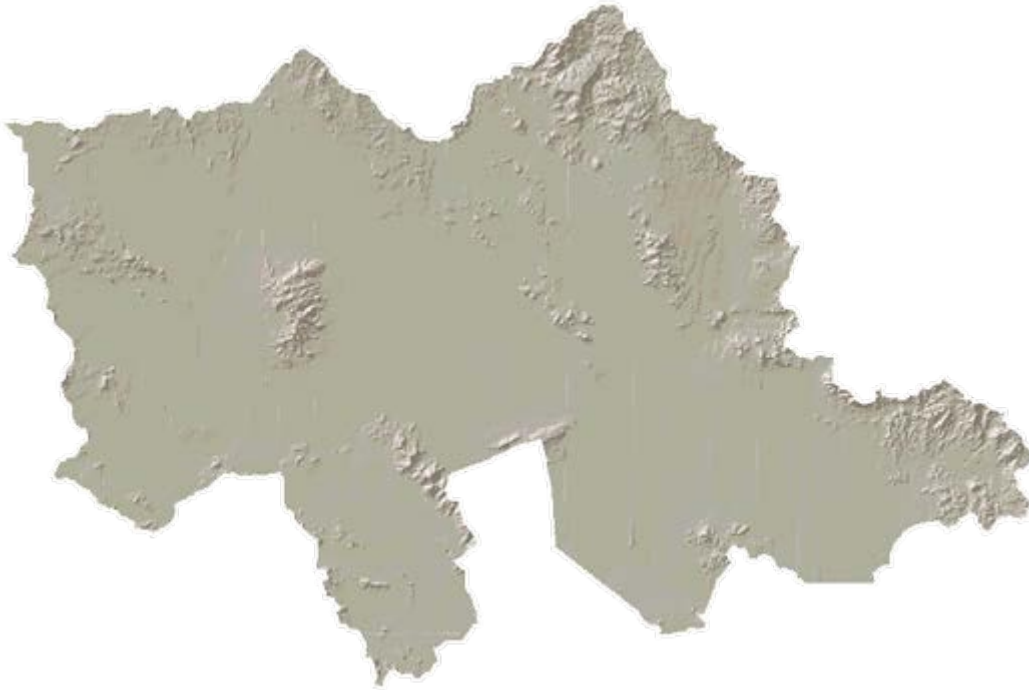
# Groundwater Management Act Adopted in 1980 to Address Overdraft Problem



AMAs and INAs

# AMA Boundaries Based on Watersheds

Phoenix AMA



- 5,600 square miles
- Average annual precipitation 7 to 8 inches per year
- Includes portions of 3 counties
- Includes portions of 3 Indian Communities

# Regulation for groundwater use established in 1980: The Groundwater Management Act (GMA)

- Enacted by the legislature of the State of Arizona after work of a Water Commission.
- Established areas where groundwater management was required – active management areas.
- GMA required the adoption of **Assured Water Supply Rules**, which require growth to depend on renewable supplies.
- Conservation programs for each water using sector and management plans are developed by the Arizona Department of Water Resources every 10 years.
- Amendments to the law provided for recharge (storage) of water and recovery

- **Safe Yield Goal:** To achieve and thereafter maintain a long-term balance between the annual amount of groundwater withdrawn in an active management area and the annual amount of natural and artificial recharge in the active management area.

#### Water Use is Measured in Acre Feet

One acre foot is 325,851 gallons of water. An acre foot of water is the amount that covers one acre of land with one foot deep water

# Where We Stand Relative to Safe Yield Overdraft in Acre Feet

	1995	2025
Phoenix	250,693	146,400 - 278,900
Pinal	194,154	267,606
Prescott	11,646	12,993
Tucson	160,195	50,400 - 53,300
Santa Cruz	-10,573	(612) - 31,811



Water supply decisions made by sub-state entities.  
Multiple political jurisdictions and private water providers involved in water management decisions. Management plans establish regulatory framework, but the decisions how to meet the regulations are made by the water user/water supplier.

Many different water users/providers

Boundaries often different from political subdivision boundaries

Private and Public Municipal Water Providers

Ag

Industrial

Indian Users

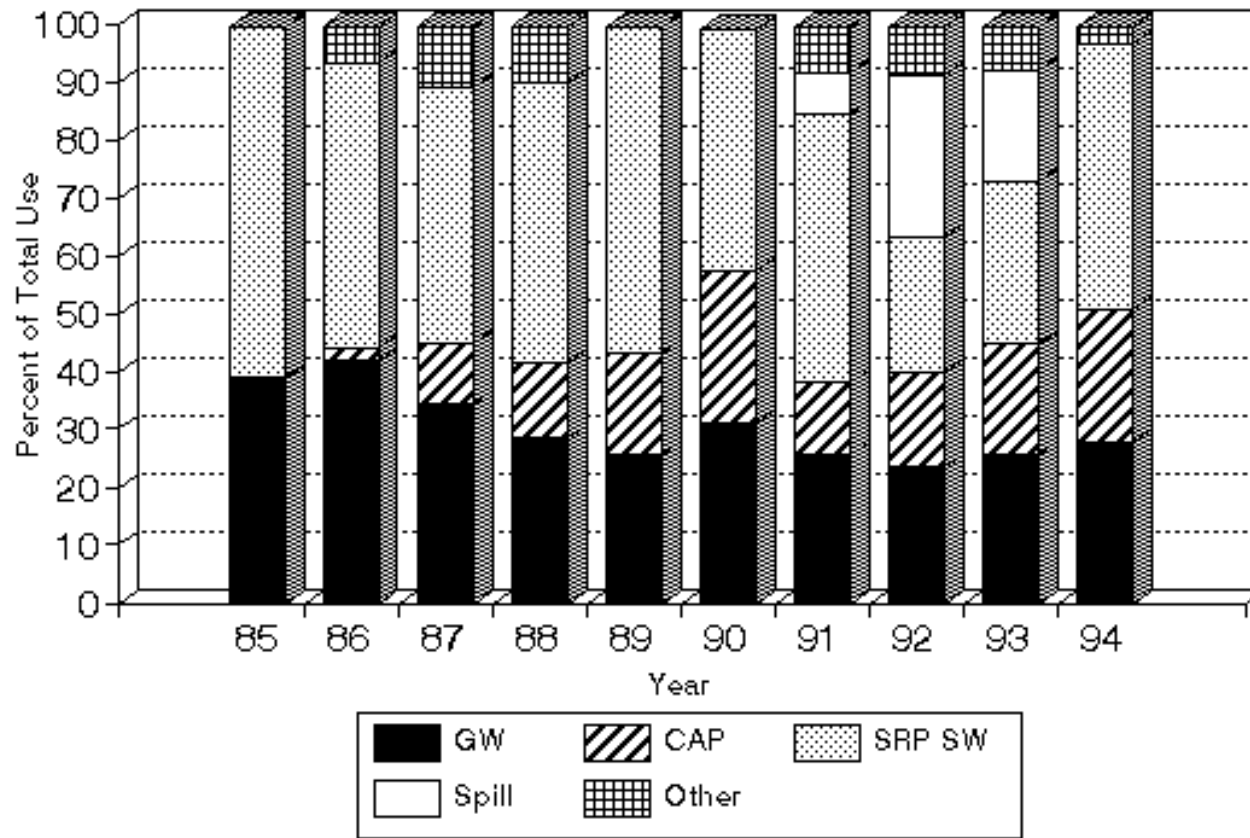
Owners of Individual Wells

# Importance of Renewable Supplies

- Salt River Project
- Central Arizona Project
- Effluent
- Storage and recovery
  - Arizona Water Banking Authority
  - Central Arizona Groundwater Replenishment District
  - Water Users

# Phoenix Municipal Providers

Phoenix AMA Large Municipal Providers  
Historic Water Use



# Salt River Project

## SRP WATERSHED AREA



Dr. Lawrence A. Baker  
WATERSHED STUDIES

# SRP Operates Seven Dams



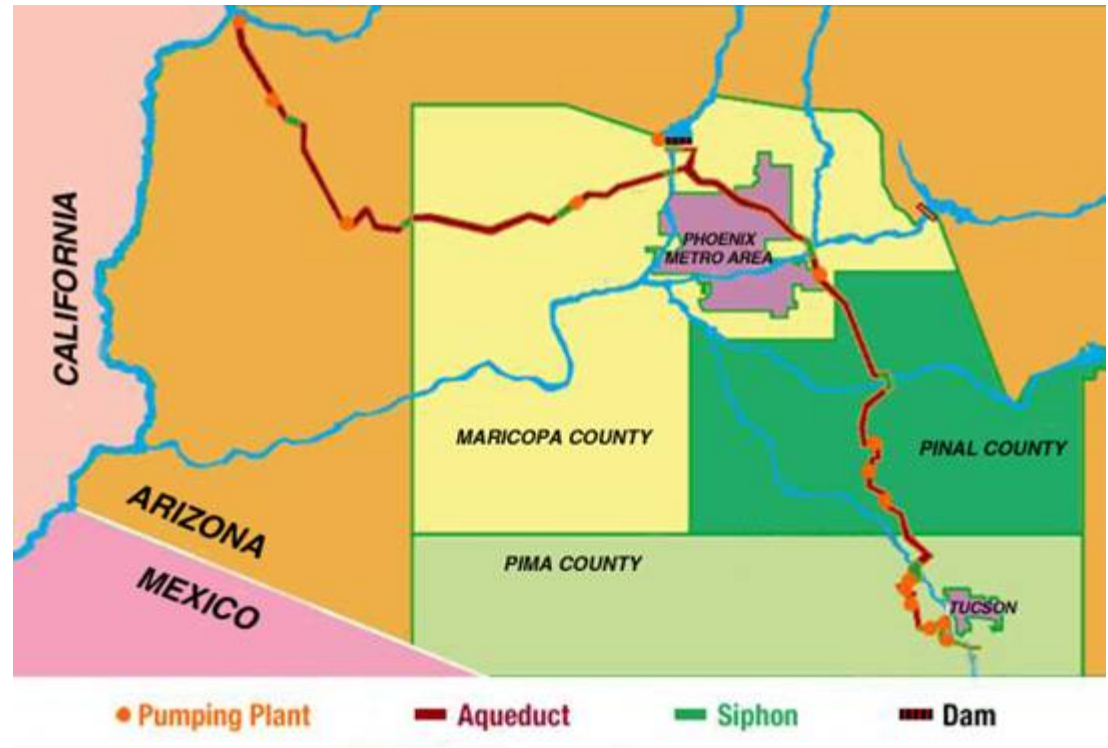
Roosevelt Dam



Horseshoe Dam

# Central Arizona Project

- completed October 1, 1993
- cost \$3.6 billion
- 336 miles in length
- Extends 14 miles south of Tucson
- 1.5 million acre-feet average use
- 2.2 million acre-feet capacity
- average annual loss at 7%



# The Central Arizona Project has changed the desert's landscape



# Recharge and Recovery





# Agua Fria Recharge Project



# Effluent



# Concluding Remarks

- When the well's dry, we know the worth of water. – *Benjamin Franklin, Poor Richard's Almanac, 1746*
- The frog does not drink up the pond in which he lives. – *American Indian Proverb*

