

#### **9**

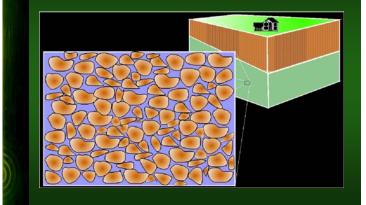
#### Overview

- What is groundwater?
  - How much groundwater is there?
  - How fast does groundwater move?
  - How do we measure groundwater?
- Where does groundwater come from and where does it go?
- How do Californians use it?
- Groundwater management and groundwater quality

#### What is Groundwater?

- An underground lake?
- A network of underground rivers?
- A rectangular network of pipelike water arteries?
- A giant sponge?

## Groundwater = Water completely filling Pores/Fractures

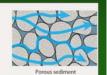


## Groundwater in Different Sediments and Rocks

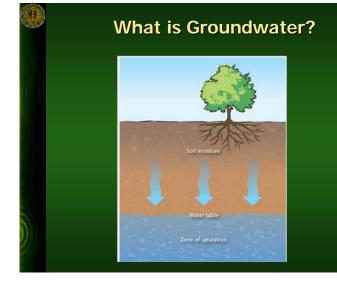


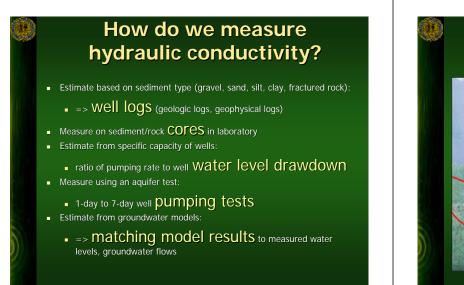






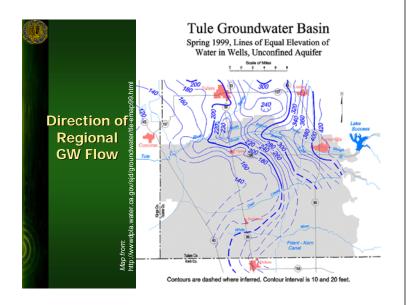


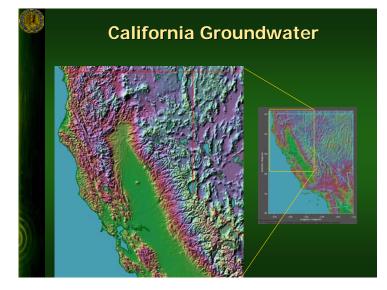


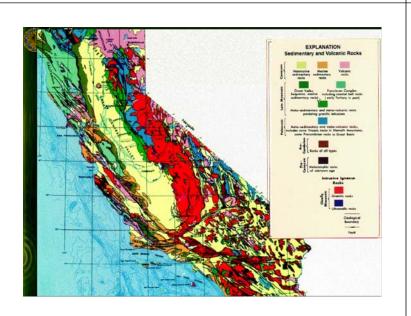


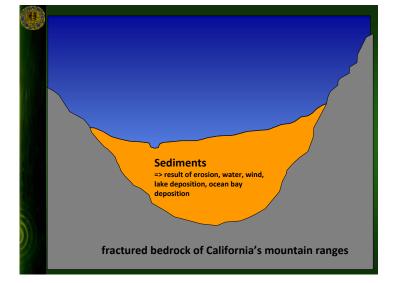
# **Direction of Groundwater Flow?**

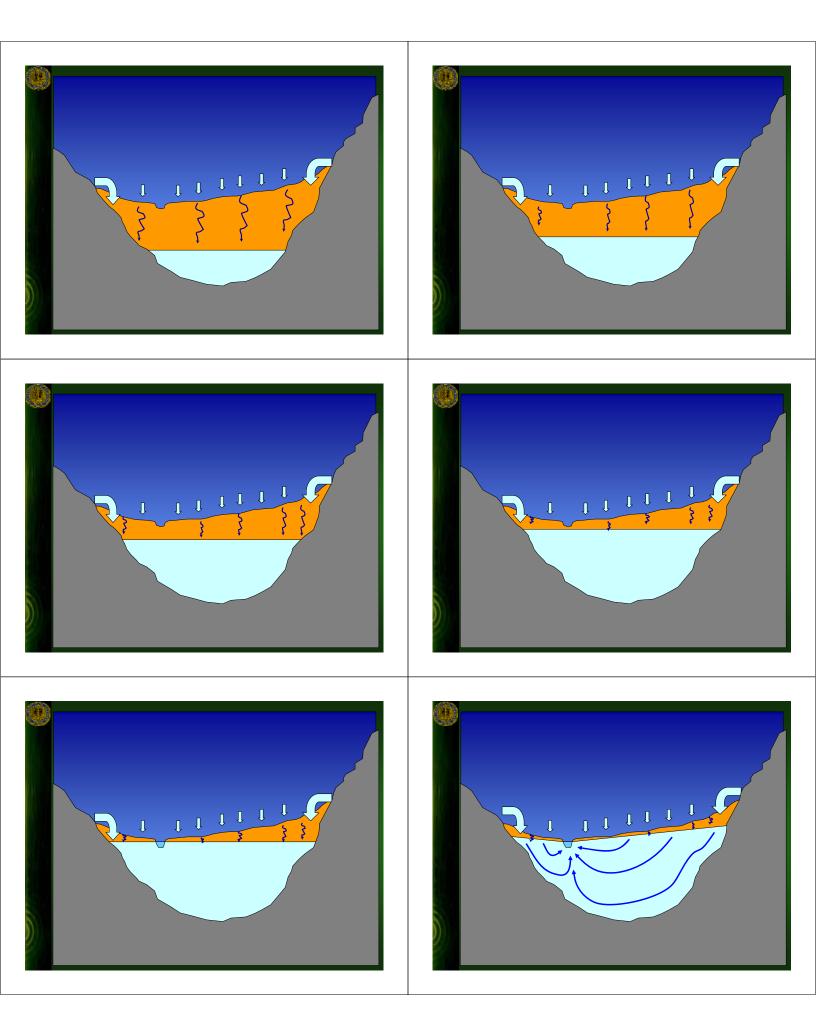


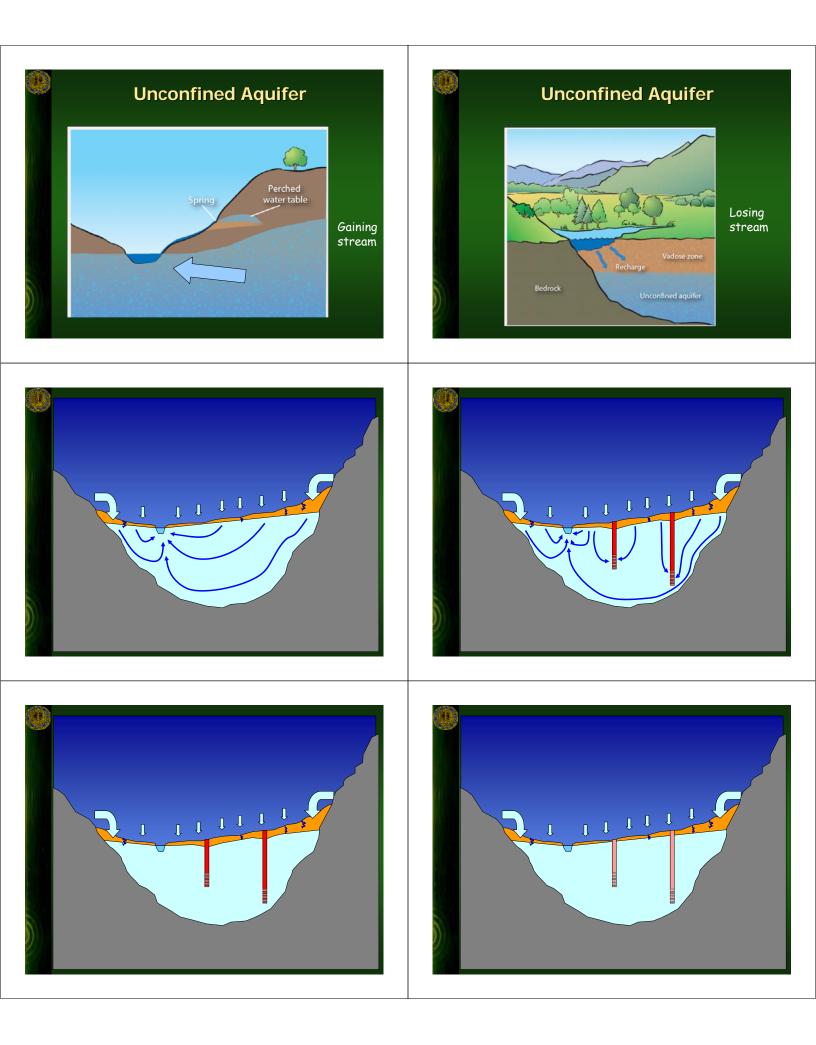


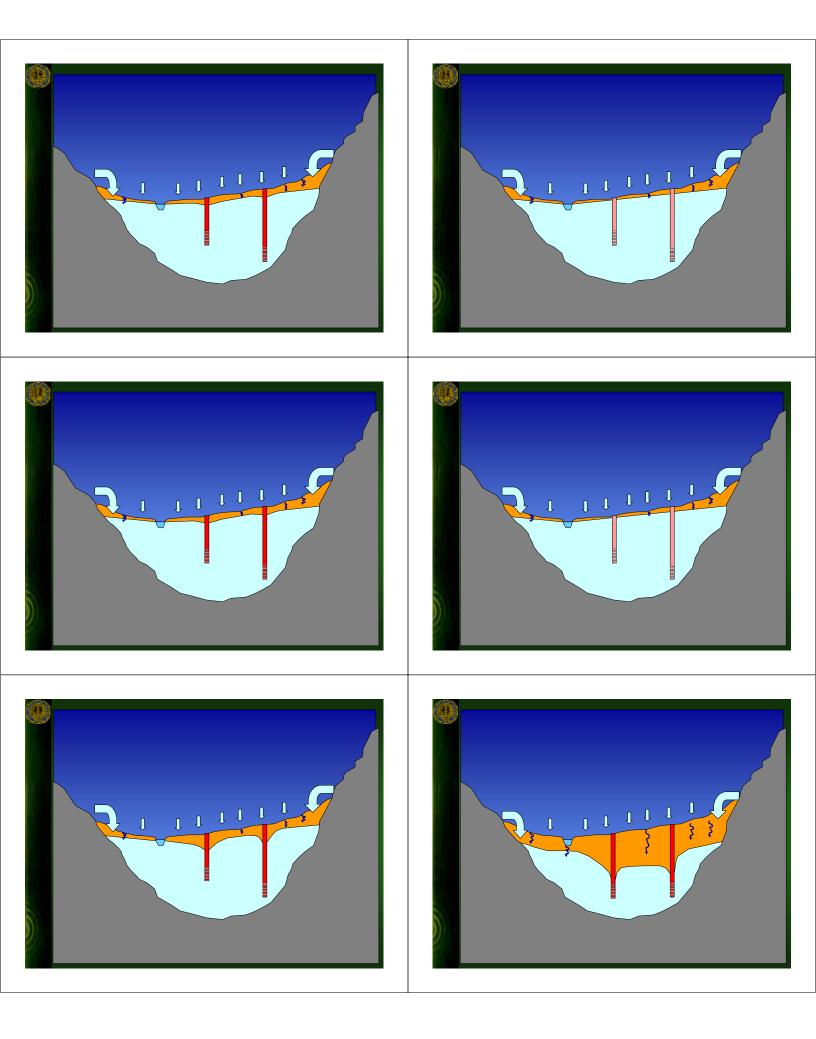


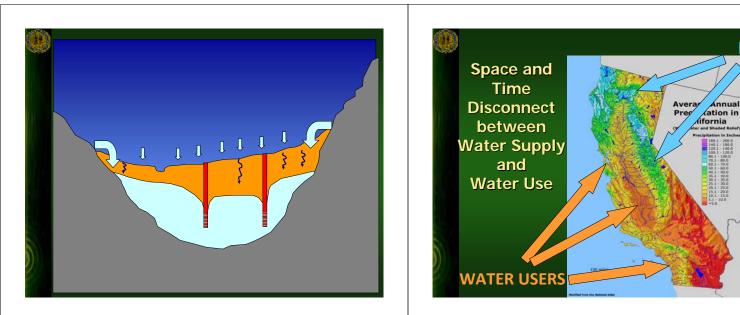


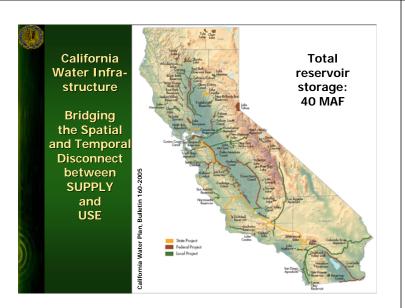




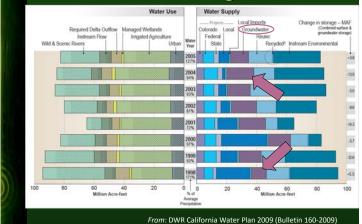


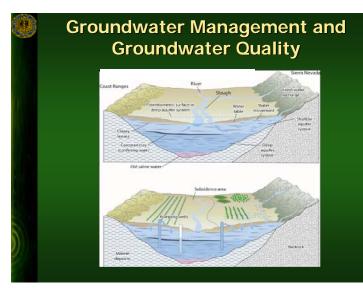






### Groundwater Use in California: The Invisible Storage Reservoir





### **Integrated Regional Water Management Planning**



 $\Rightarrow$  toward Integrated Resource Management Planning •Groundwater •Surface Water •Air Soil quality

RAIN

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•Energy / Carbon •Landuse planning

(Courtesy: Sarge Green, CSU Fresno)