California WATER COMMISSION

California Water Storage Workshop 2

Panel 2 - Groundwater Storage, Remediation and Conjunctive Water Management

October 25, 2011 – California Automobile Museum

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Parker Groundwater, Inc.

"When the well's dry, we know the worth of water."

Benjamin Franklin, Poor Richard's Almanac 1746

Groundwater Resources Association of California *is dedicated to resource management that protects and improves groundwater supply and quality through education and technical leadership*

- Founded in 1991
- 1300 groundwater professionals
- 15 Directors, Exec Officer, Committees
- Five Branches
- Educating the GW Industry
  - 10-12 events per year
  - Legislative Symposium
- Legislative effort
  - Provide groundwater information
- Scholarships
- David Keith Todd Lecture Series
- Contemporary Groundwater Issues Council
- California Groundwater Management book

www.grac.org

California
GROUNDWATER COALITION

- Founded in 2007
- Formed at the urging of state and local elected officials to increase efforts to educate and inform policymakers on groundwater resources
- Includes 15 water agencies, members and GRA

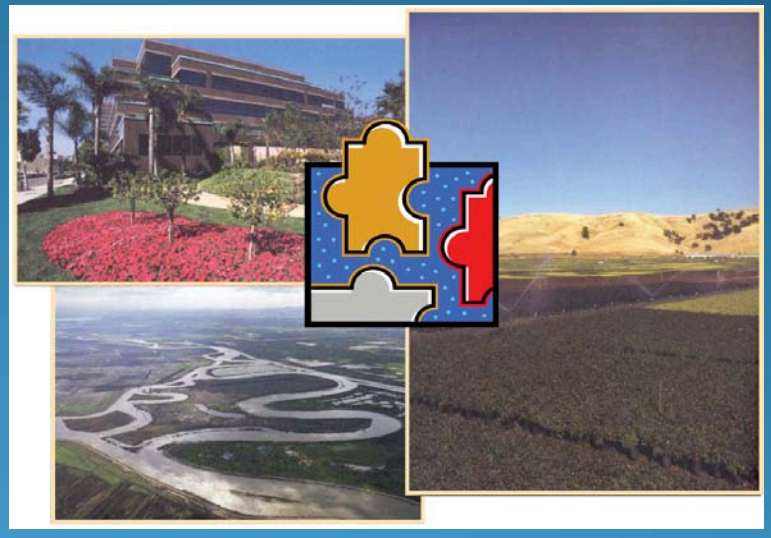
- Mission
  - Educate policymakers about groundwater
  - Represent groundwater interests and promote the benefits of sustainable groundwater management in policy arenas
  - Promote funding for statewide groundwater programs

Groundwater is a Key Piece of the State's Water Puzzle

Groundwater is one of the State's most important natural resources

•Drinking water for nearly half of our citizen's

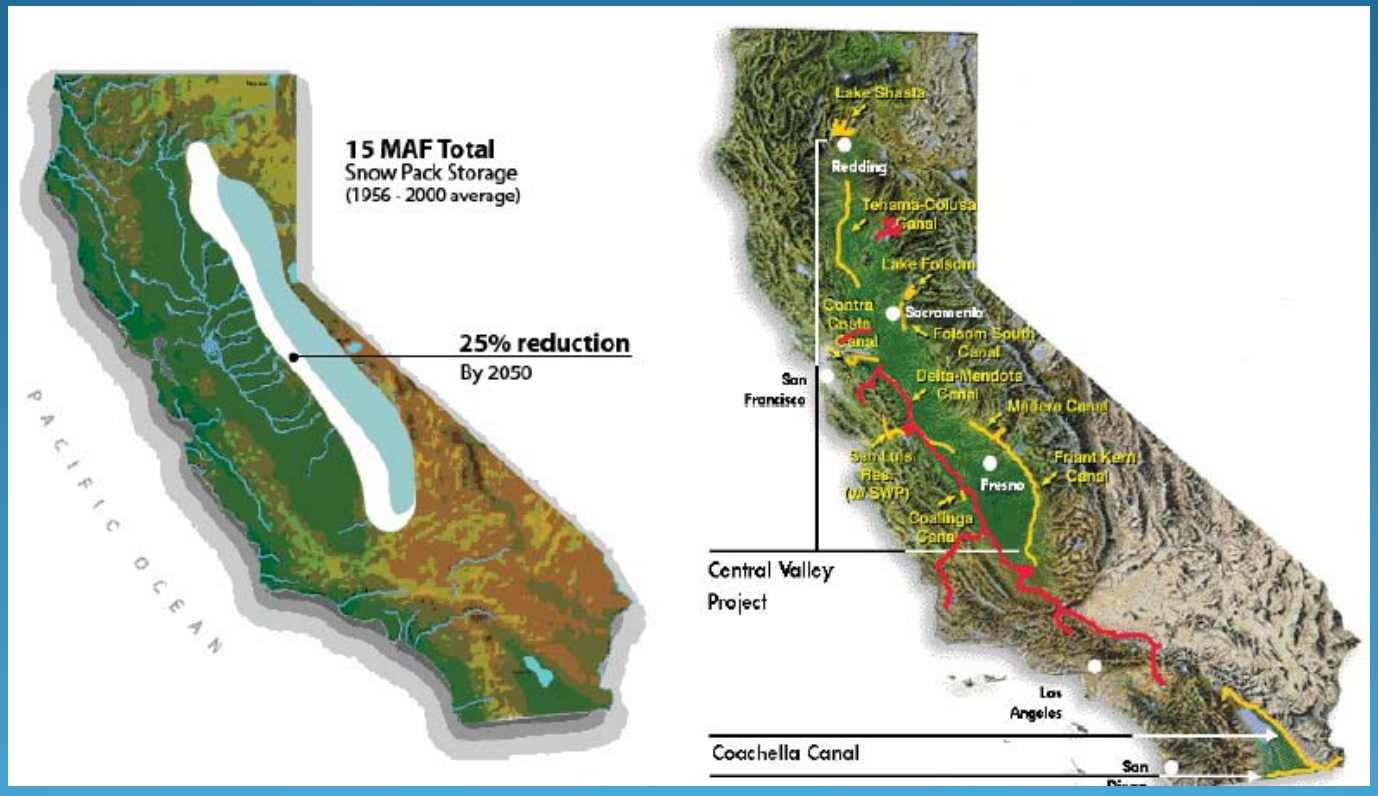
•Water for agriculture and environment



- Meets 30% of California's water needs in average year
- Meets 40-50% or more during droughts
- Groundwater storage potential greater than surface reservoirs

Climate Change

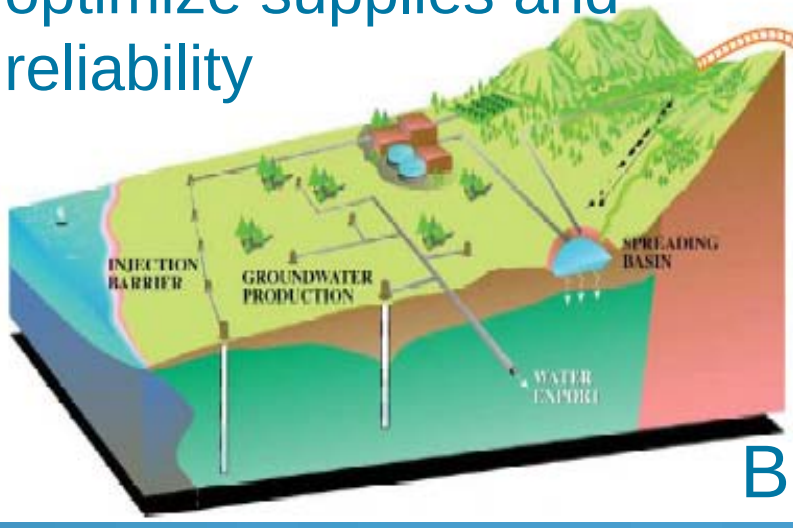
Climate models and data indicate a loss of snowpack, warmer weather and more winter flooding, and less spring runoff

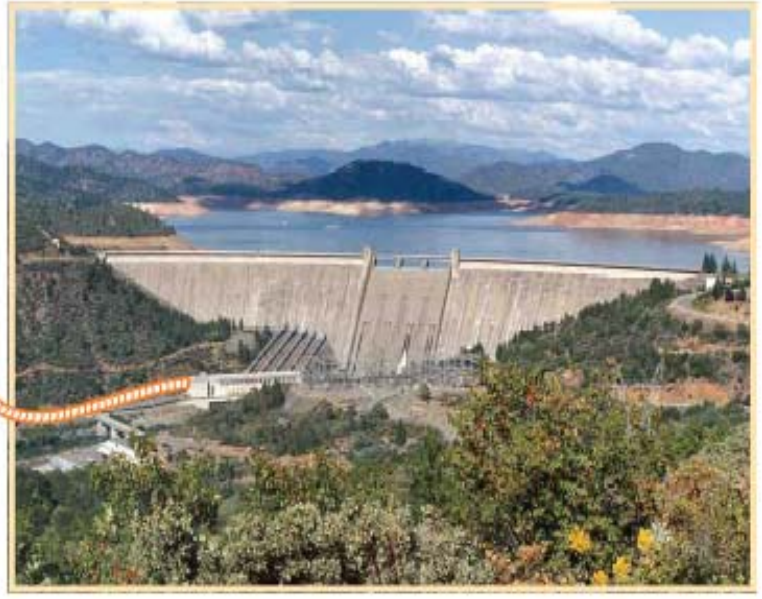


Changes are needed to expand the water management and delivery system, groundwater storage and conveyance facilities.

Conjunctive Use

Coordinated management of surface water and groundwater resources to optimize supplies and reliability

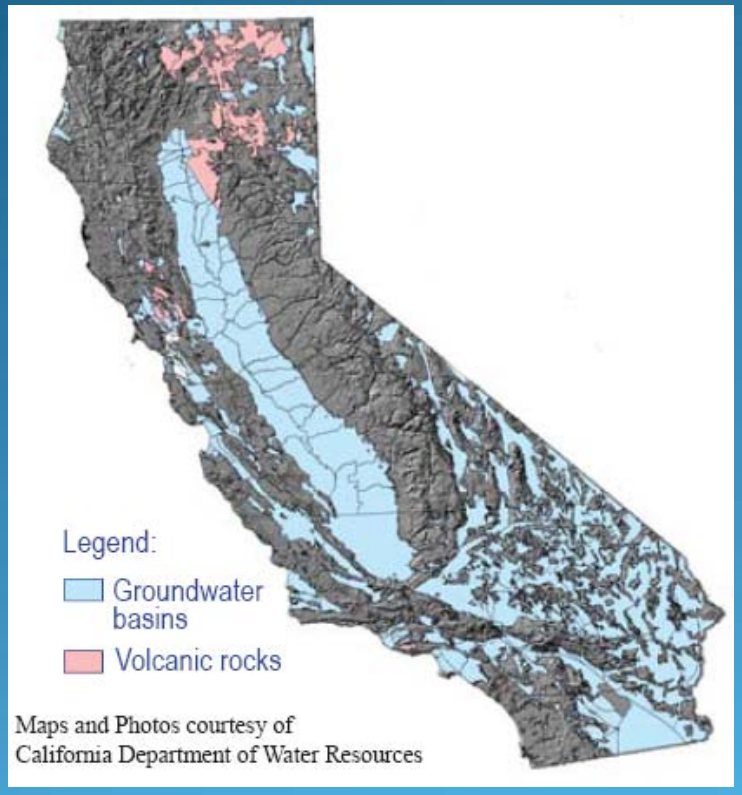




Benefits include:

- Environmental enhancements = increased flows, improved habitats, groundwater dependent ecosystem resiliency
- Reduced overdraft, subsidence and saline intrusion

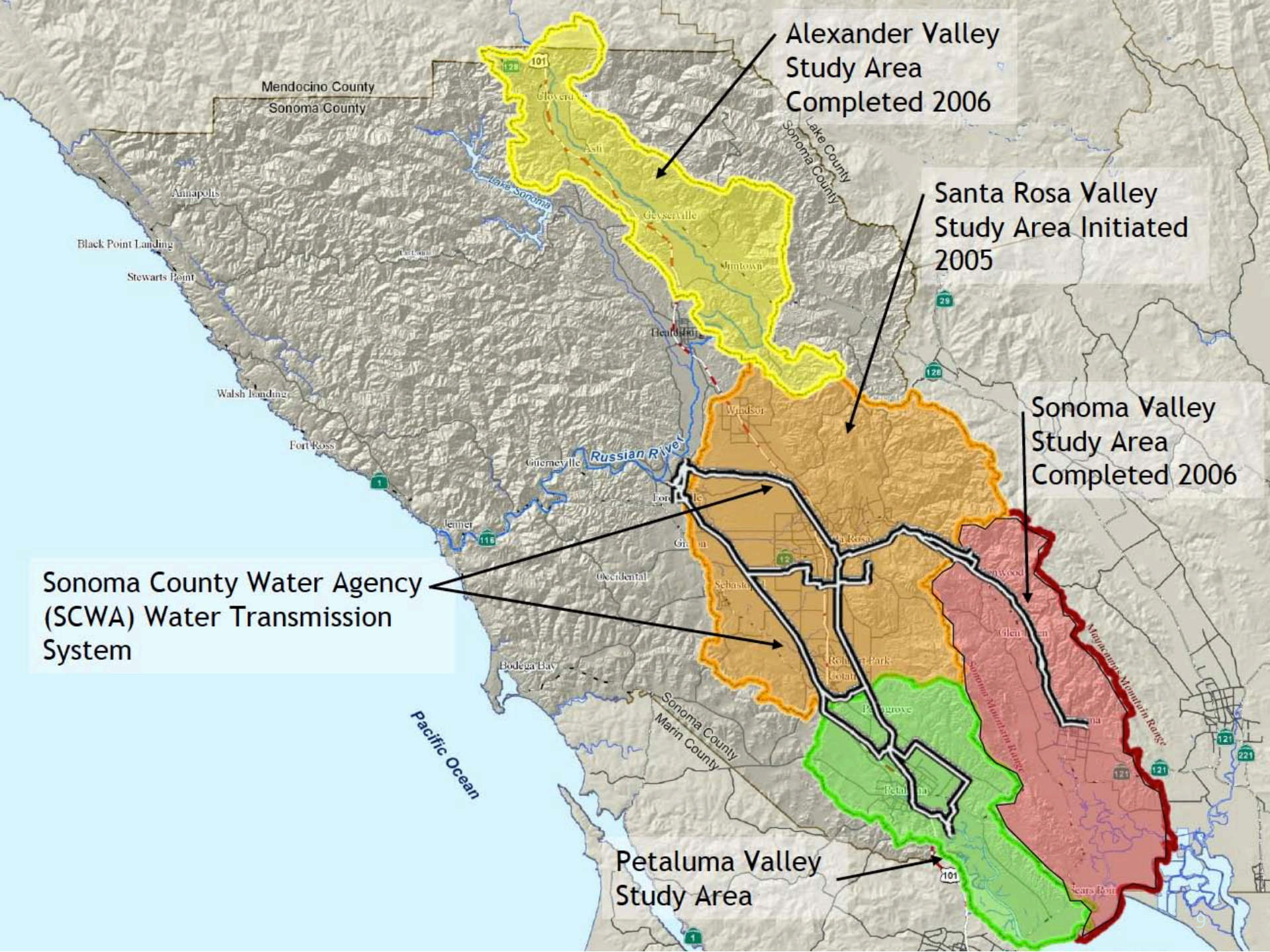
Groundwater Basins Can Provide Storage and Increased Water Supply



- Conservative estimates
  - Increase deliveries by 0.5 MAF
  - 9 MAF new groundwater storage
- More aggressive estimates
  - Increase deliveries by 2 MAF
  - 20 MAF new groundwater storage

Groundwater Storage

- Not difficult to implement
- Environmentally friendly
- Establish institutional and legal framework
- Develop stakeholder consensus
- Need studies to assess capacity and potential water quality complexities


Alexander Valley Study Area Completed 2006
Santa Rosa Valley Study Area Initiated 2005
Sonoma Valley Study Area Completed 2006
Sonoma County Water Agency (SCWA) Water Transmission System
Petaluma Valley Study Area
Mendocino County
Sonoma County
Lake County
Sonoma County
Marin County
Pacific Ocean
Russian River
Lake Sonoma
Annapolis
Black Point Landing
Stewarts Point
Walsh Landing
Fort Ross
Jenner
Guerneville
Occidental
Bodega Bay
Windsor
Healdsburg
Geyserville
Jimtown
Asti
Cloverdale
Sonoma Mountain Range
Mayacamas Mountain Range

Groundwater Quality and Remediation
Prevention is the Best Practice

- Anthropogenic
  - Agricultural (e.g. nitrate)
  - Industrial contaminants (PCE, TCE, perchlorate)
- Naturally occurring
  - Inorganic (As, Cr)
  - Radiological (radon)
- Naturally occurring dissolved solids (salts) in arid zones
- Seawater intrusion in coastal areas
- Groundwater quality and treatment costs highly variable
- Effective $$$ technologies available for treating water
- Aquifer remediation very difficult, 10's to 100's years

Need Better Statewide Data and Information Availability

- Inventory of groundwater management, basin health*
- Inventory groundwater recharge & storage operations*
- Recordation of extractions needed for water balance
- Make information available - state web portals
- Public funds should be tied to reporting

What Have We Learned and How Can We Apply It?

- Summary of groundwater management programs and conditions, basin health
- Summary of groundwater storage projects and metrics
- Set the bar on groundwater management program results - sustainability
- Establish flexible standards for groundwater storage
- Tie funding eligibility to data and information reporting and transparency

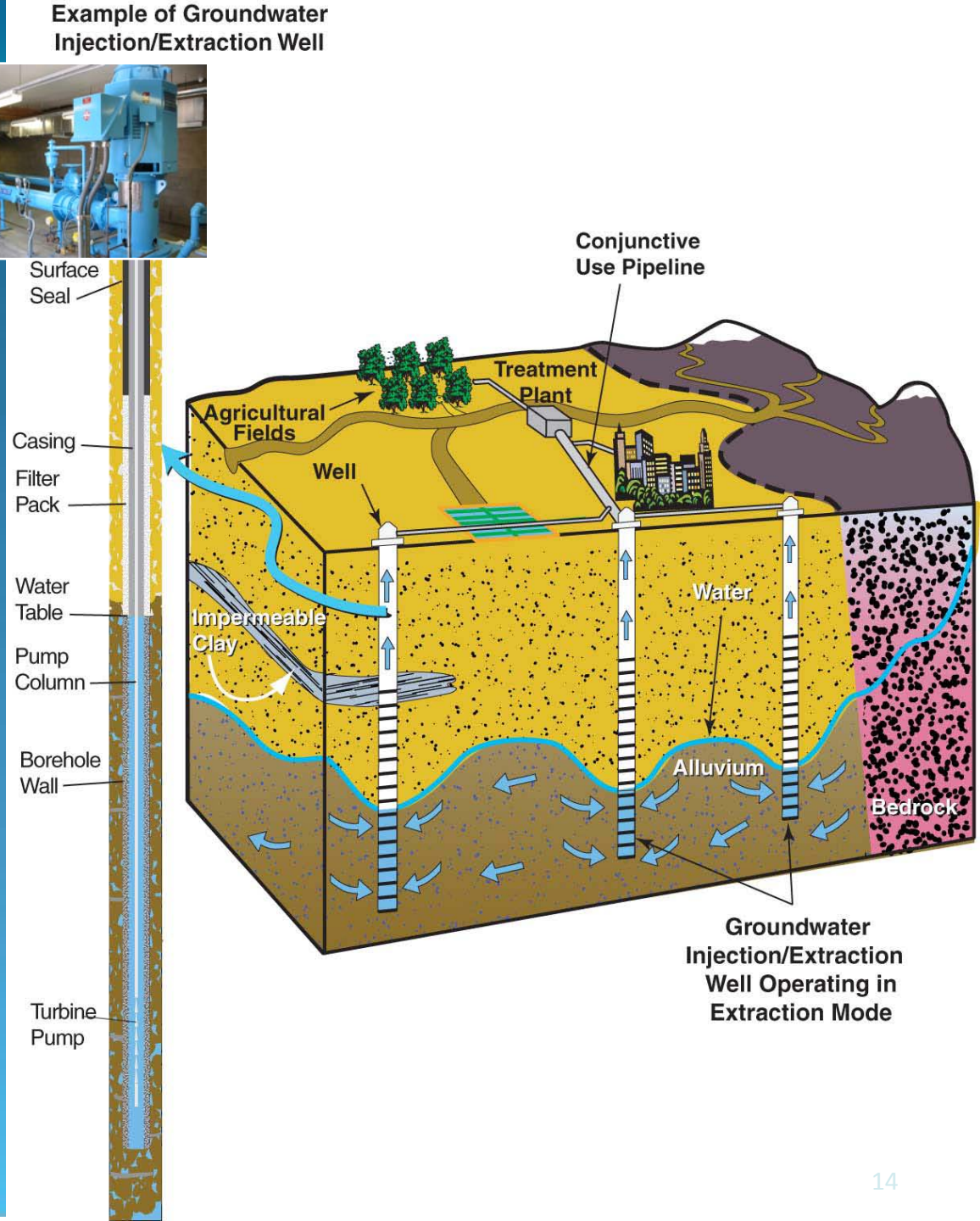
Challenges to Increasing Storage?

- Water (and groundwater) are undervalued
- Many areas with groundwater storage space have chronic groundwater level declines, creating uncertainty in managing and securing stored supplies
- Time difference between groundwater and surface water storage and conveyance projects permitting
- Policy issues and constraints

Roseville ASR

To fully exercise storage options

- ASR – direct recharge and recovery of treated drinking water
- Already doing in-lieu recharge
- Investigating spreading too



Conclusions
Groundwater Storage

- An effective tool for increasing water supply and reliability
- Environmentally friendly and can be implemented relatively quickly
- Comprehensive information on statewide groundwater storage projects would be useful for next funding cycle
- Flexible standards and requirements to qualify for state funds for new groundwater storage projects would also be useful
- With adequate funding, California's groundwater basins can play a critical role in helping to meet the State's long-term demands for a reliable water supply