

# Water Recycling

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Dave Smith

Managing Director,  
WaterReuse California

[dsmith@watereuse.org](mailto:dsmith@watereuse.org)

916 669-8401



# Overview

- WaterReuse Association
- Water recycling
- Groundwater recharge
- Regulations

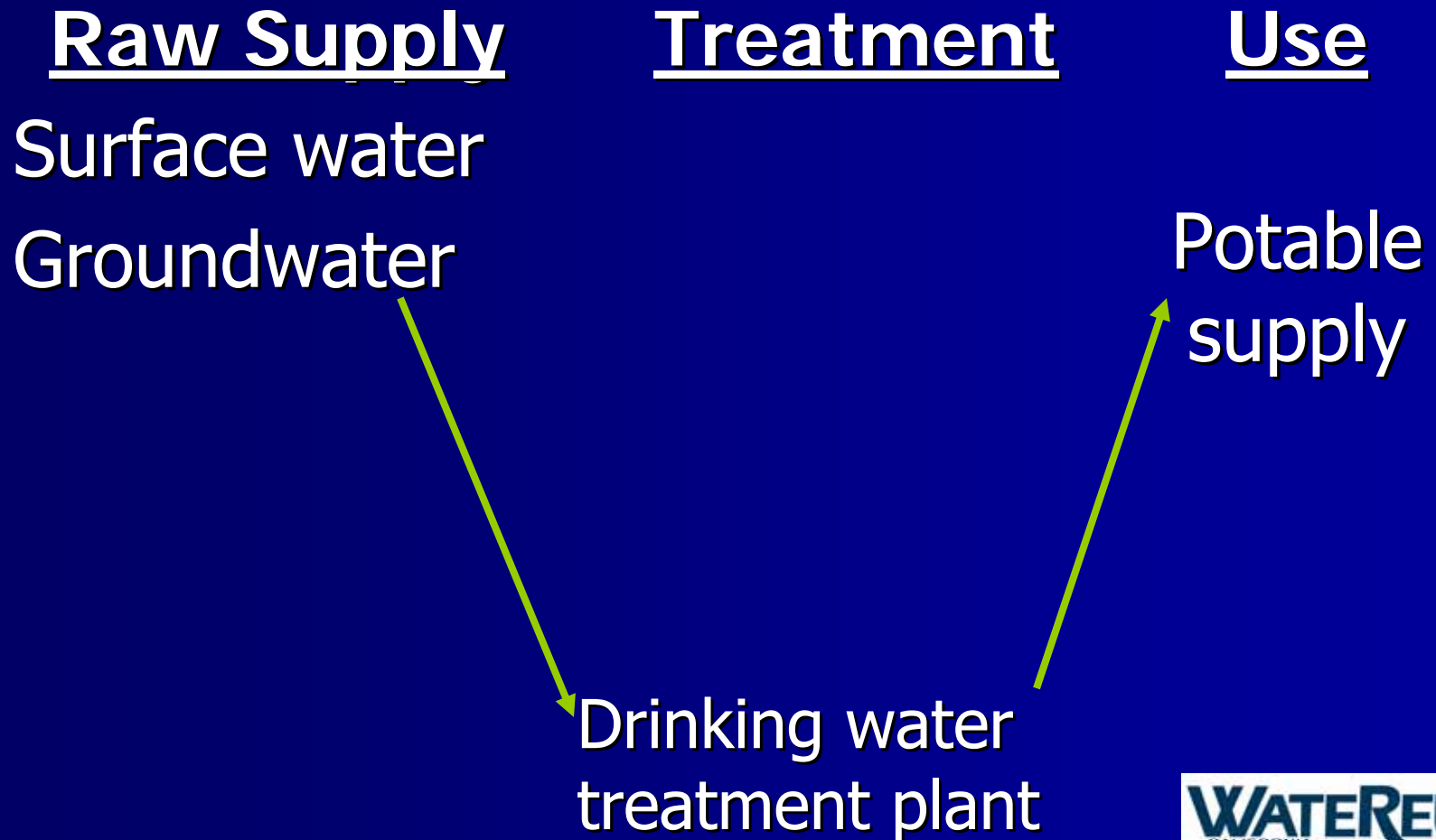
# WateReuse Association

- Recycling and desalination advocacy at national and State level
  - Regulations for safety and efficiency
  - Funding for research and projects
  - Influence national & State water policy
- Research (through WateReuse Research Foundation)
- Education & Outreach (Publications, Conferences)

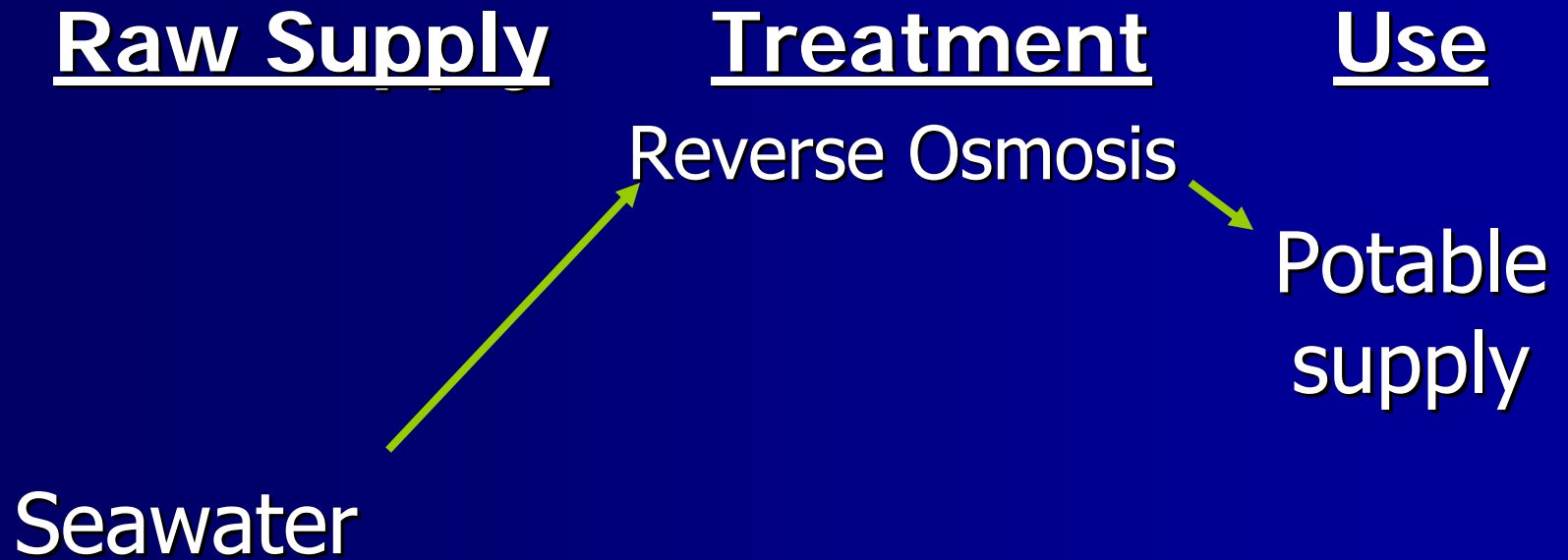
# Membership

- Evolved from California to National to International Association
- Total Membership >380
  - ~180 Water Agency Members
  - Major Consulting Engineering Firms
  - Major Equipment Suppliers
- Membership Growth 10%/Year

# Relationship of recycled water to other supplies



# Relationship of recycled water to other supplies



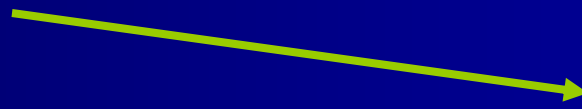
# Relationship of recycled water to other supplies

Raw Supply

Treatment

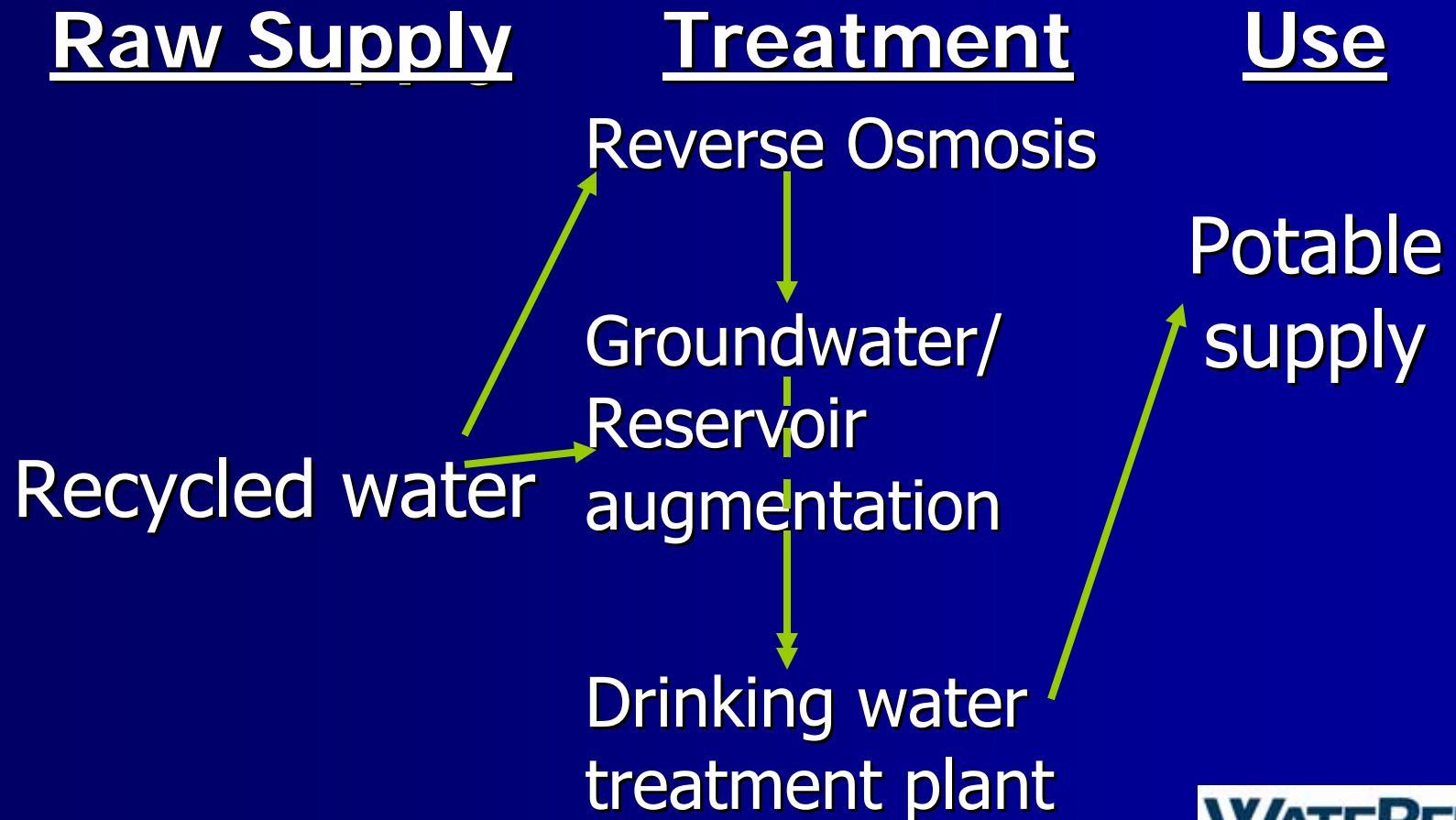
Use

Recycled water

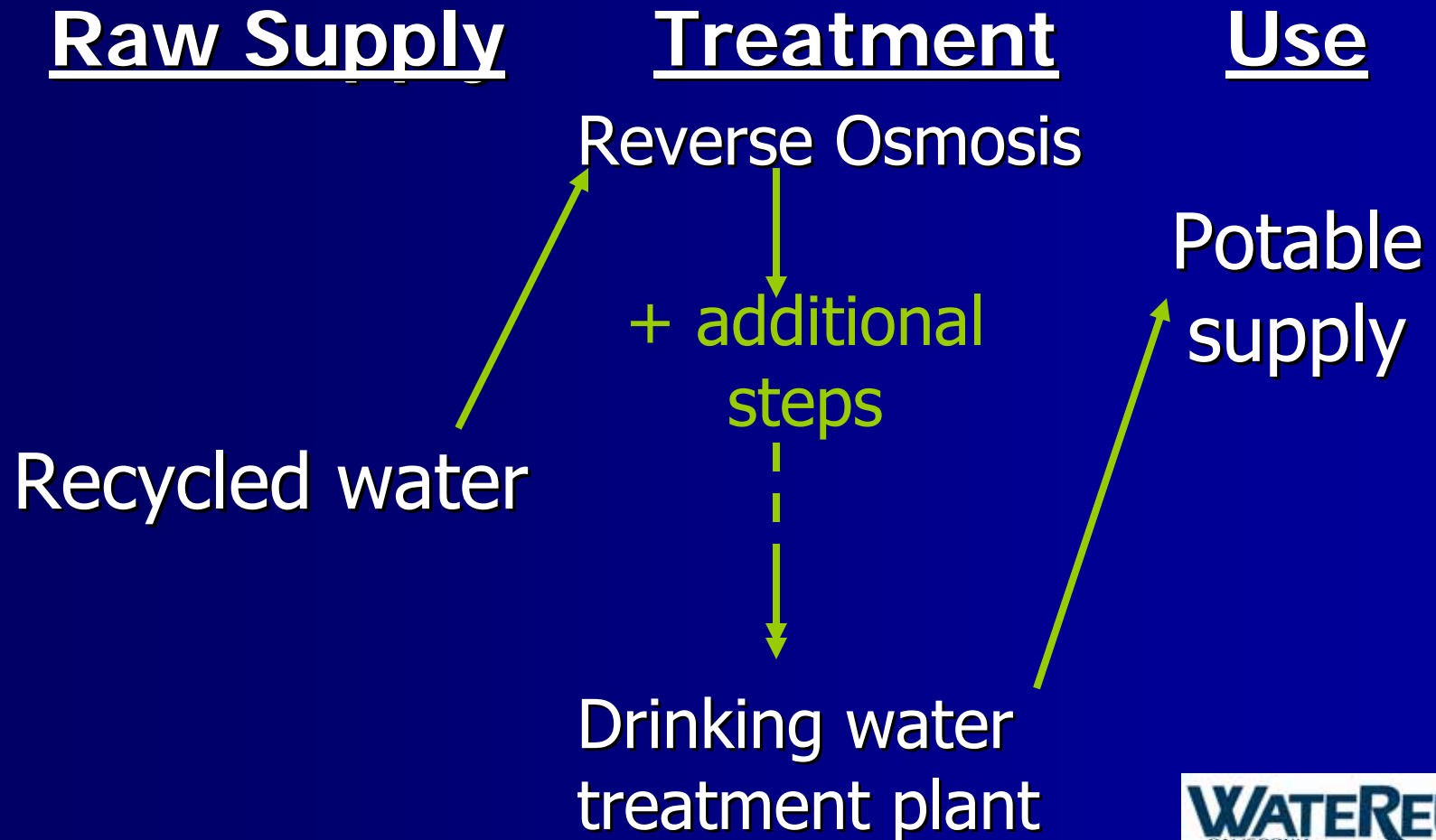


Non-potable  
supply

# Relationship of recycled water to other supplies



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# Relationship of recycled water to other supplies

Raw Supply

Treatment

Use

Rainwater  
Greywater

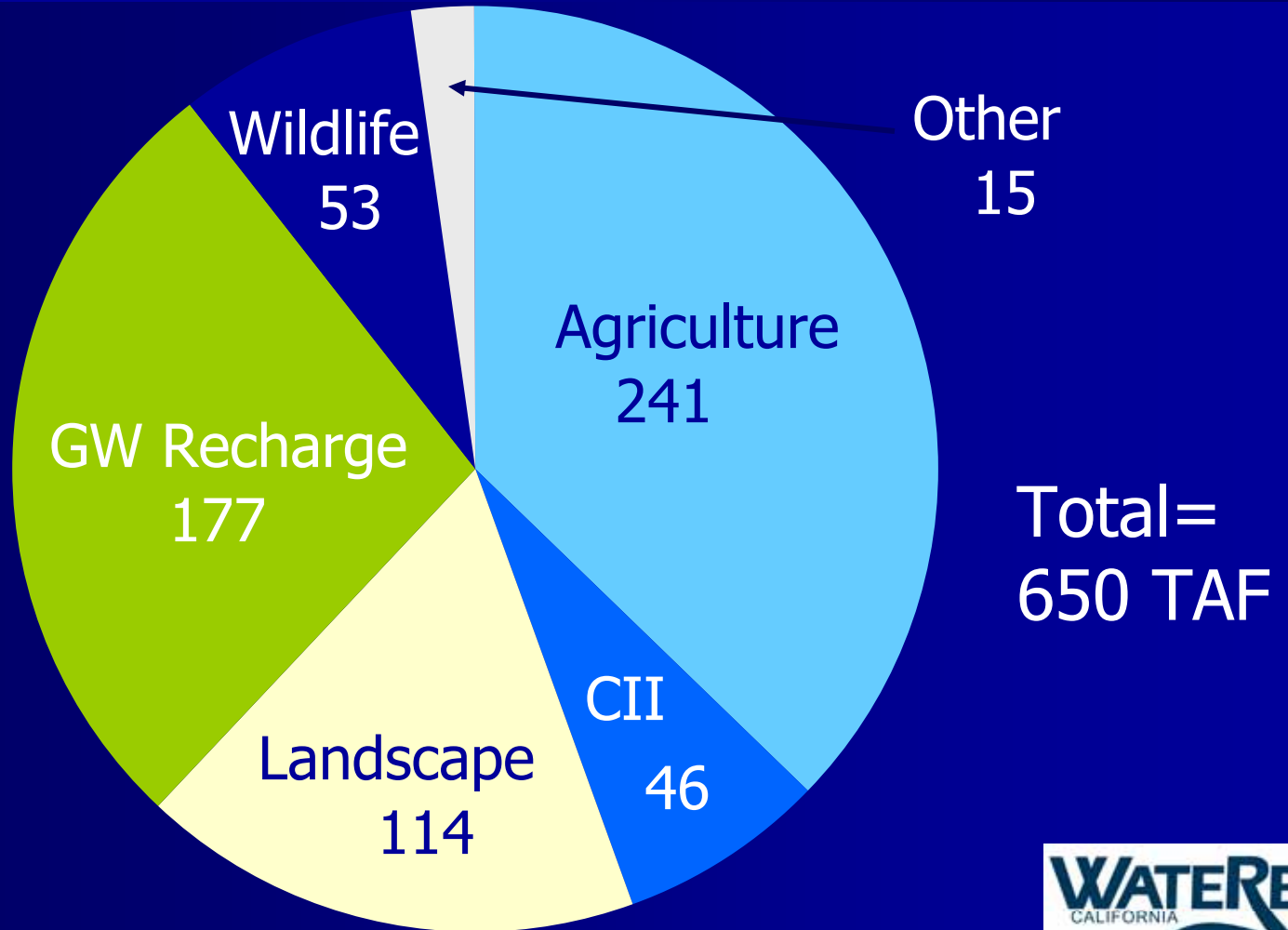


Non-potable  
supply

# Recycled Water Uses in California

- Landscape irrigation
- Dual-plumbed
  - Commercial
  - Indoor residential
- Geothermal power
- Indirect potable supply
- Concrete
- Cooling
- Carpet dyeing
- Composting
- Commercial laundry
- Car Wash

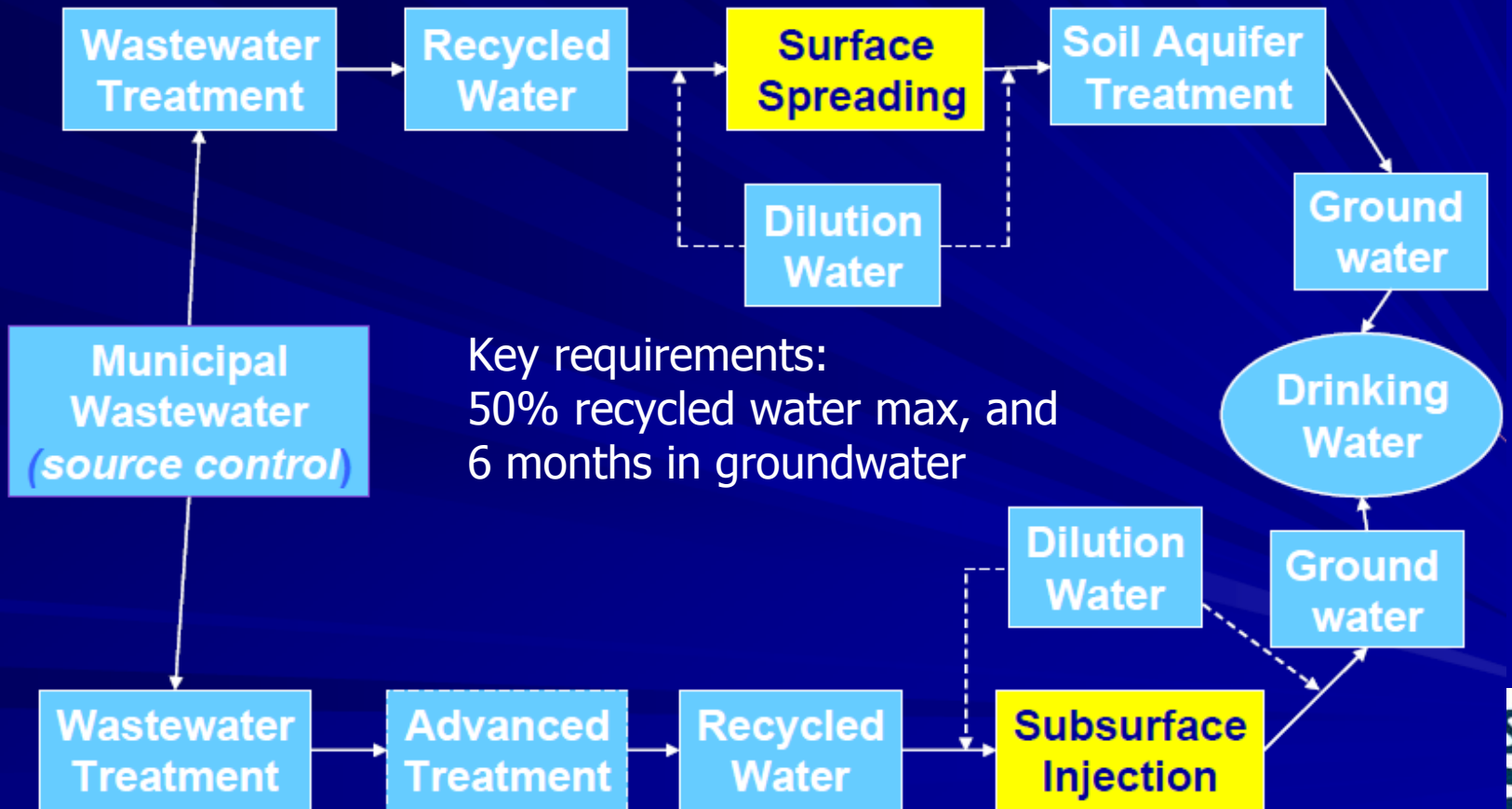
# Recycling in California (2008 data in TAF)

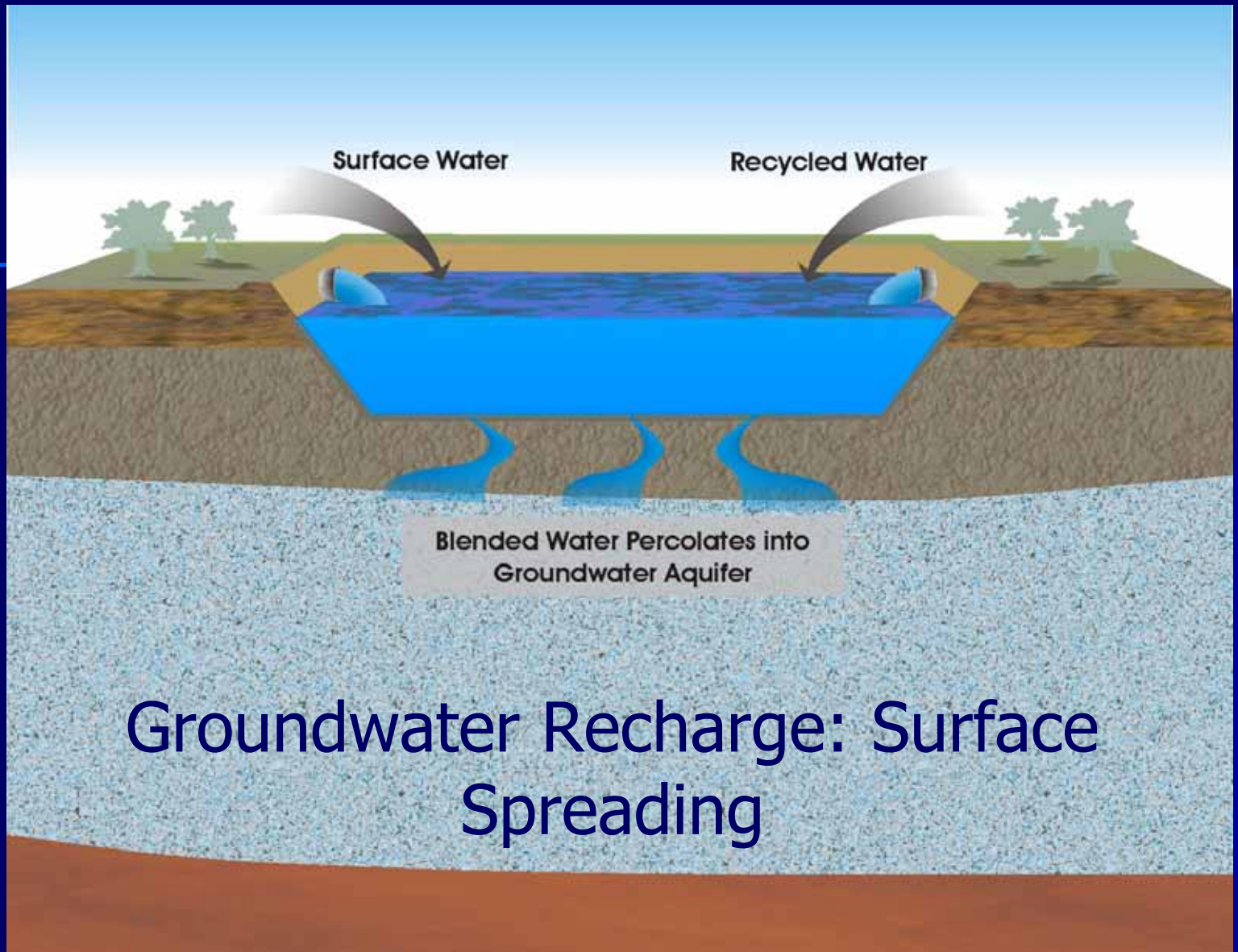


# Current Water Recycling Regulations

- Title 22-treatment requirements for
  - Groundwater recharge
  - Reservoir augmentation
  - Landscape irrigation
  - Cooling towers
  - Etc
- Recycled water policy and WDRs

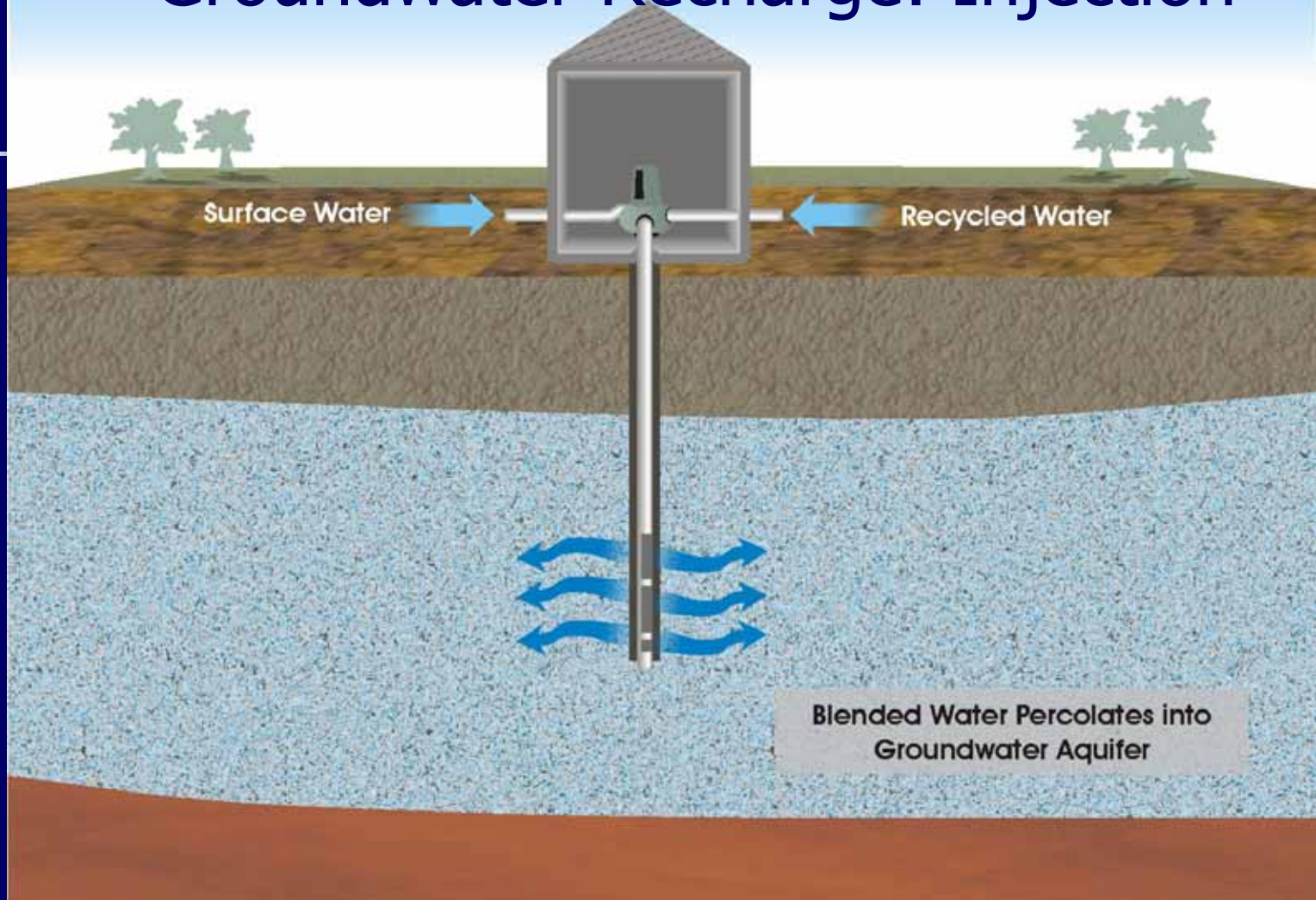
# Draft Groundwater Recharge Regulations



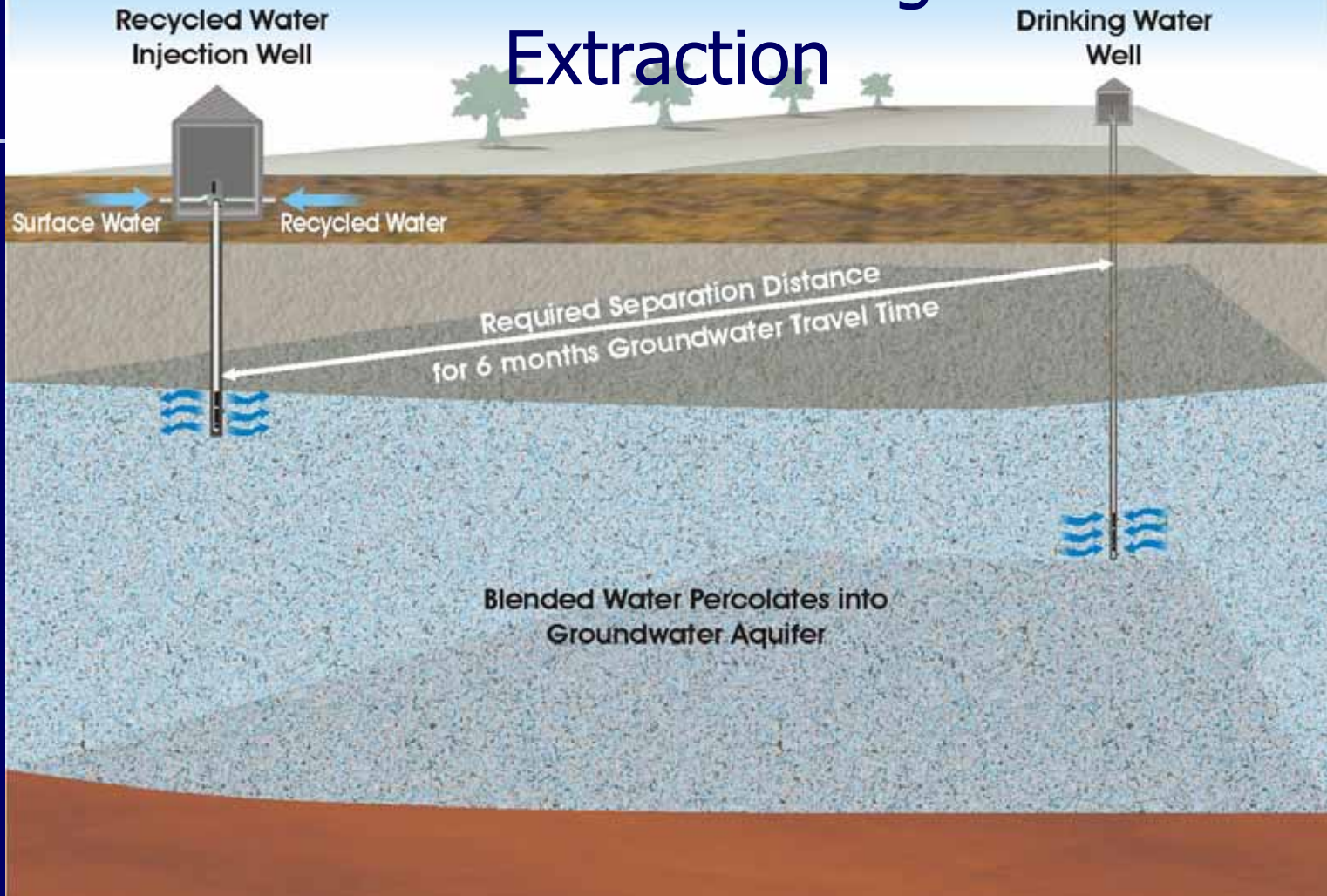


## Groundwater Recharge: Surface Spreading

# Groundwater Recharge: Injection



# Groundwater Recharge and Extraction



# Groundwater Recharge Projects in California

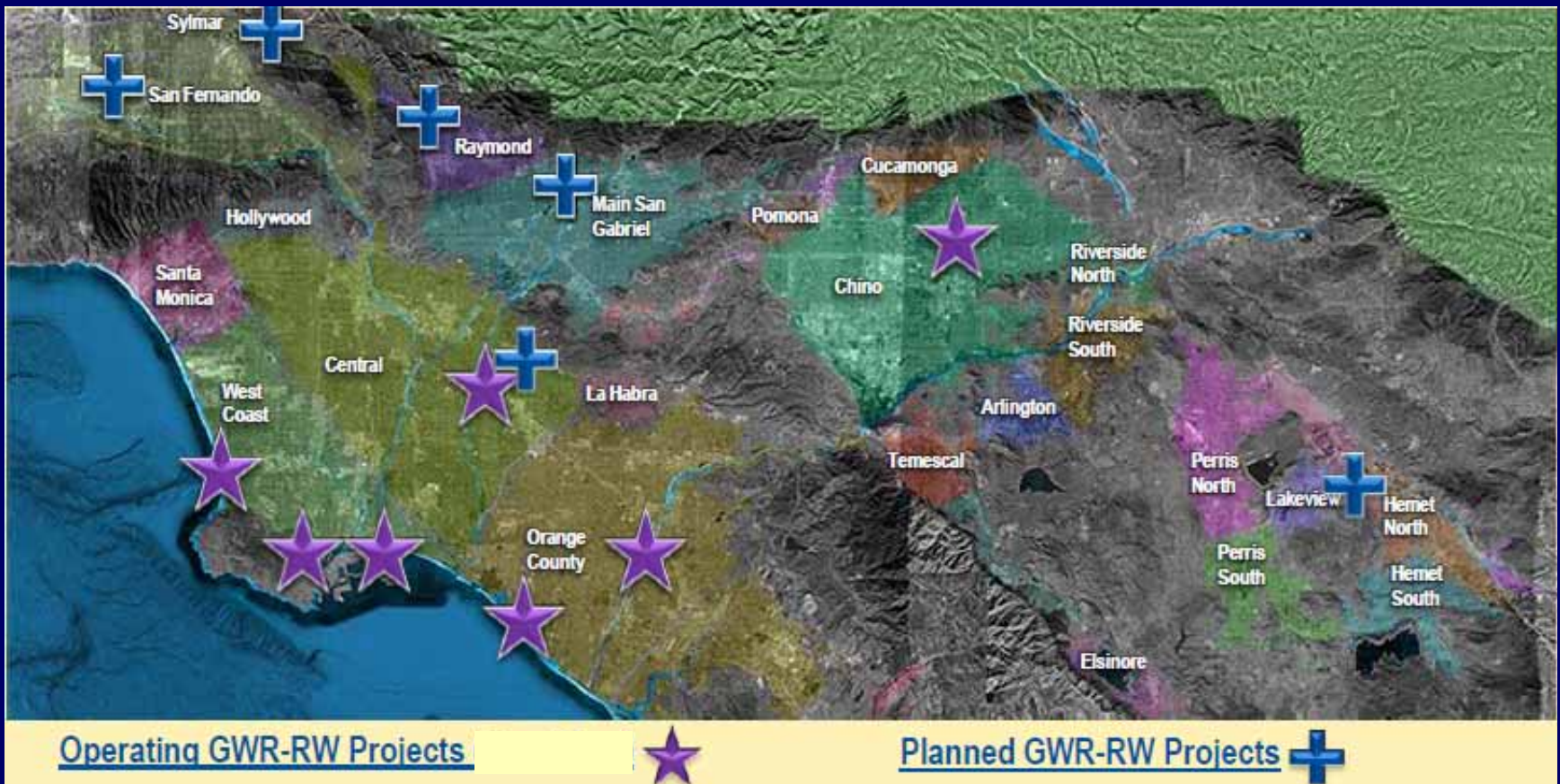
## Surface Application

- Montebello Forebay (LCASD)
- Inland Empire Utilities Agency
- Groundwater Replenishment System (OCWD)

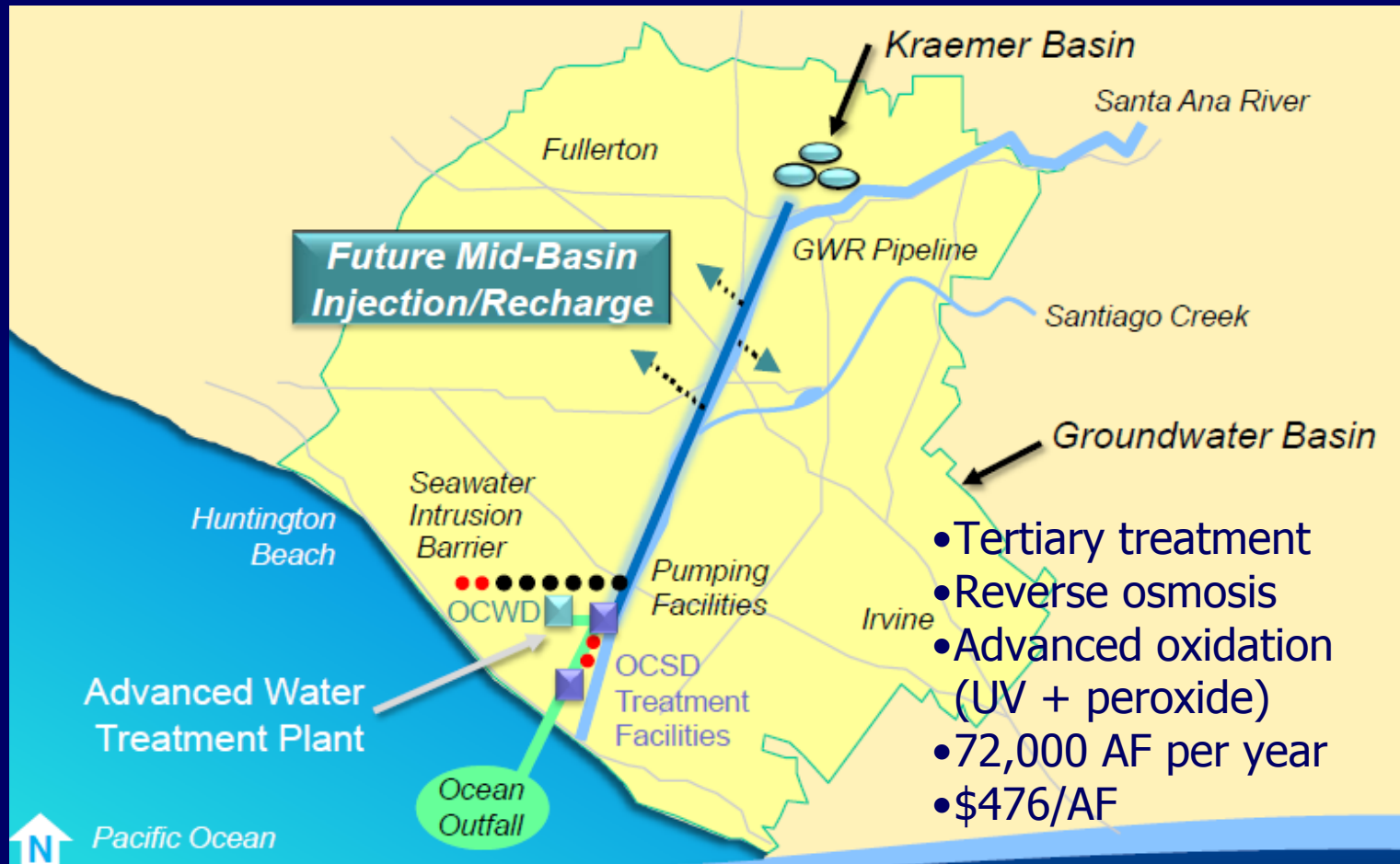
## Subsurface Application

- West Basin MWD
  - Harbor Recycling Project
  - Alamitos Barrier
- Groundwater Replenishment System (OCWD)

# Groundwater Recharge Projects in California



# Orange County's Potable Reuse Project



# What are some general limitations with reuse?

- Major limitation to direct potable reuse
  - CA regulations do not allow recycled water directly into a potable water distribution system
- Potential major limitation to indirect potable reuse
  - Compliance not feasible for all
    - Wrong geology
    - Insufficient surface storage capacity
    - Poor quality diluent or insufficient supply
- Major limitation to purple pipe systems (for irrigation)
  - Expensive
  - Disruption

# Regulations Coming to a Water System Near You

- Study “emerging contaminants” in recycled water
- Recycled Water Inspection Program
- Recycled water storage ponds
- Potable reuse
  - Clarify indirect potable regulations
  - Study direct potable, draft regulations (5 yrs)
- Reverse osmosis brine disposal
  - California Ocean Plan review
  - Desal and some recycled water

## Sustainable Solutions ... for a Thirsty Planet.

Communities are finding new and innovative ways to extend the life of our world's water resources every day.



↔ LEARN MORE

Dave Smith  
[dsmith@watereuse.org](mailto:dsmith@watereuse.org)  
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SEARCH



Adopt a Drop



Our Water Cycle

In a world where only one percent of our water is available to drink, we must find new and innovative ways to extend the life of our water resources. By using proven and safe methods for water reuse and desalination, we can ensure that our world's water is safer, cleaner, and more sustainable today—for our generation, and generations to come.

For more information: [www.athirstyplanet.com](http://www.athirstyplanet.com)