LOS ANGELES COUNTY SANITATION DISTRICTS

Converting Waste Into Resources

Building Water Reuse from the Ground Up:

Lessons Learned over 4 Decades

Earle Hartling

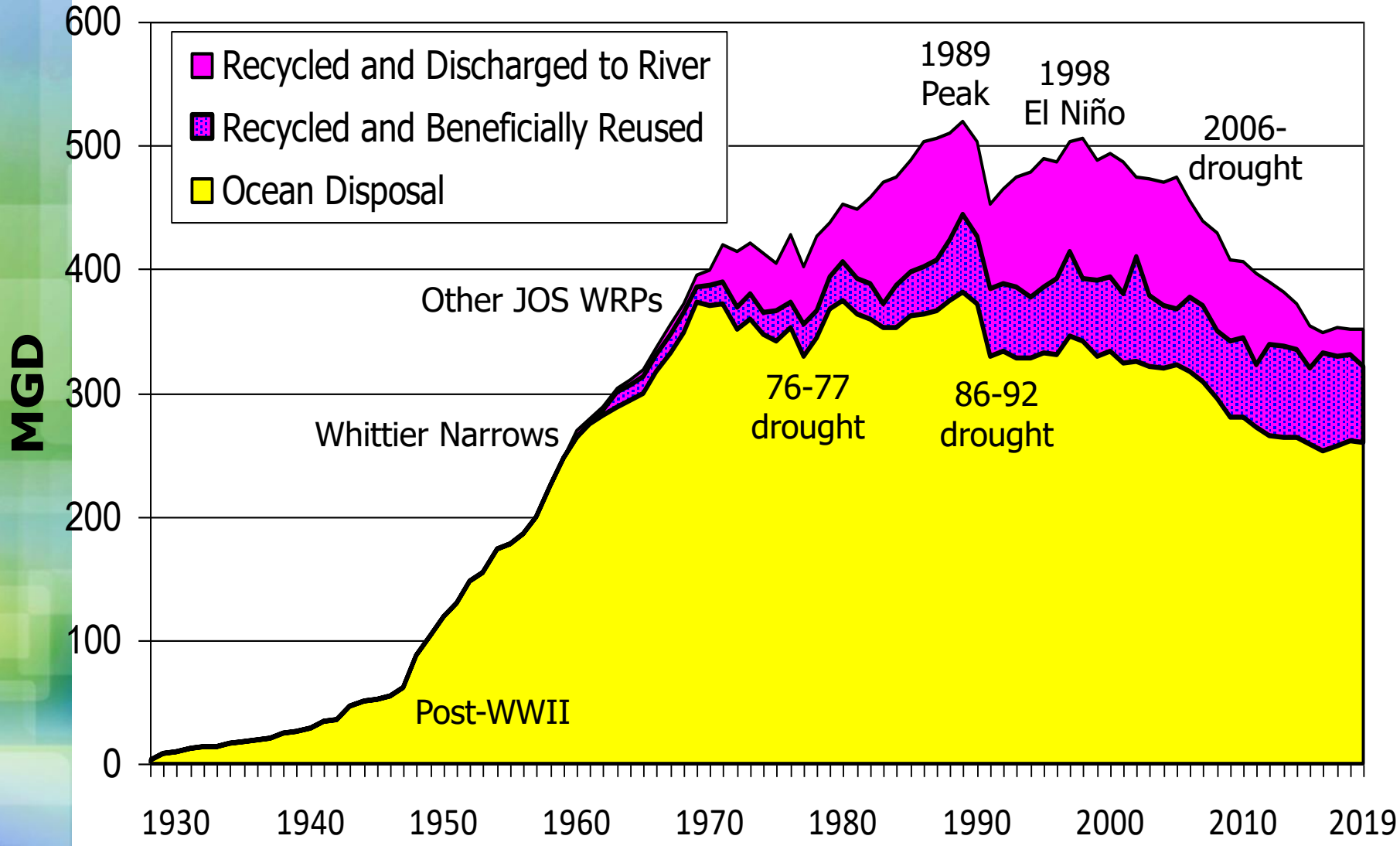
Water Recycling Coordinator

Los Angeles County Sanitation Districts

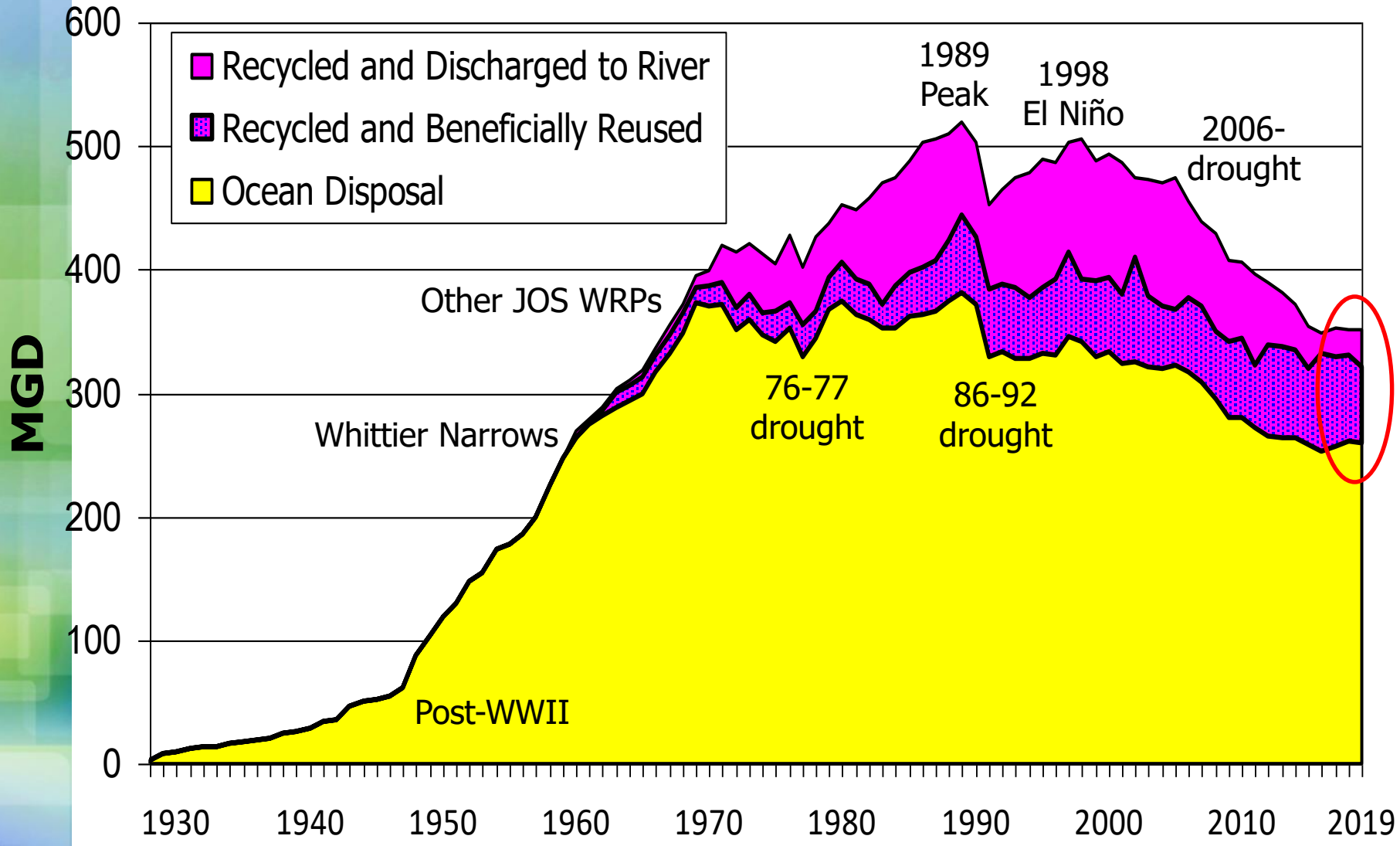
- Serving 5.6 million people in 78 cities
- One ocean disposal facility
- 10 water reclamation plants

Los Angeles County Sanitation Districts

Recycled Water Program – Where we came from

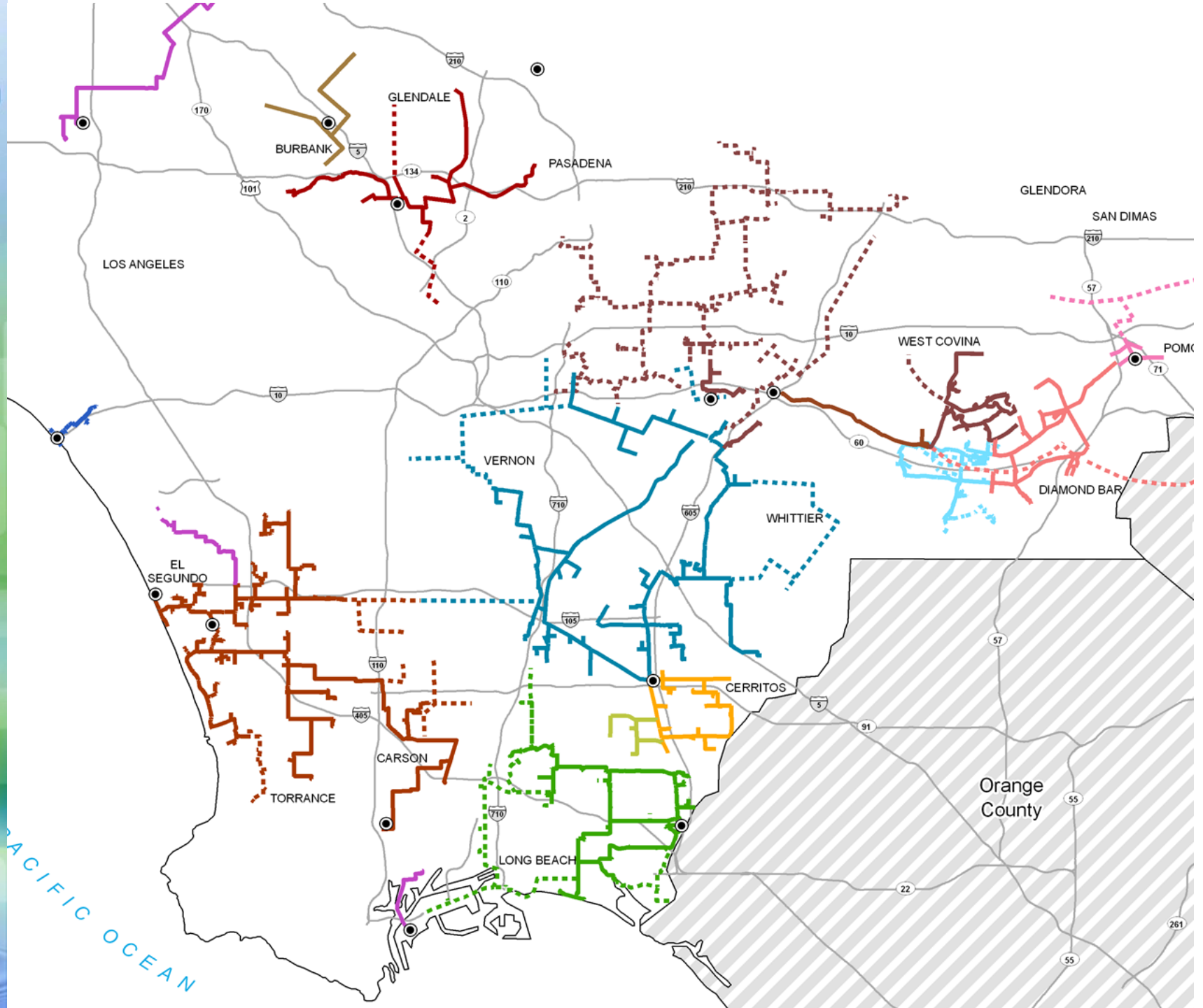


Recycled Water Program – Where we came from

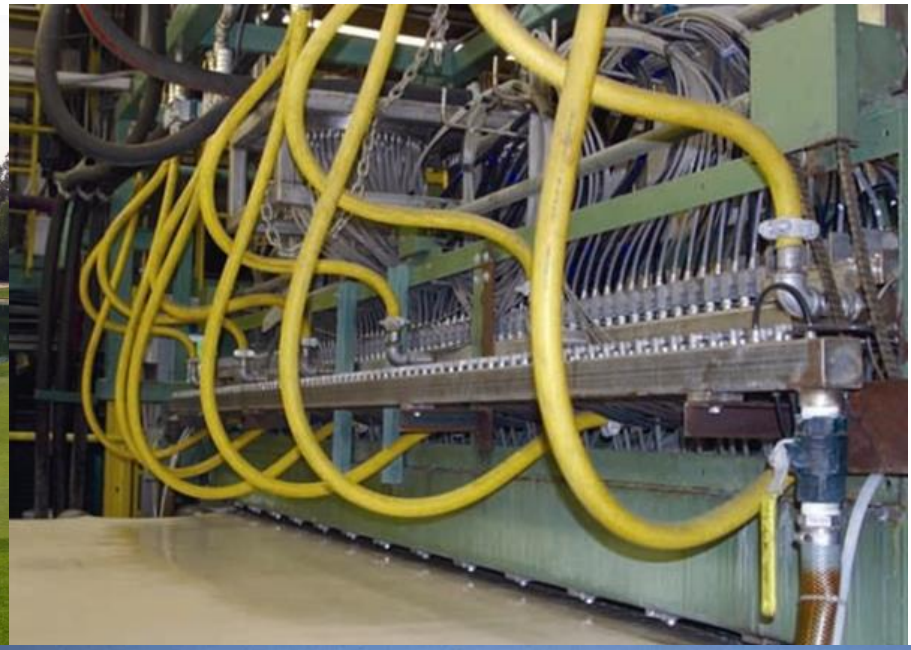


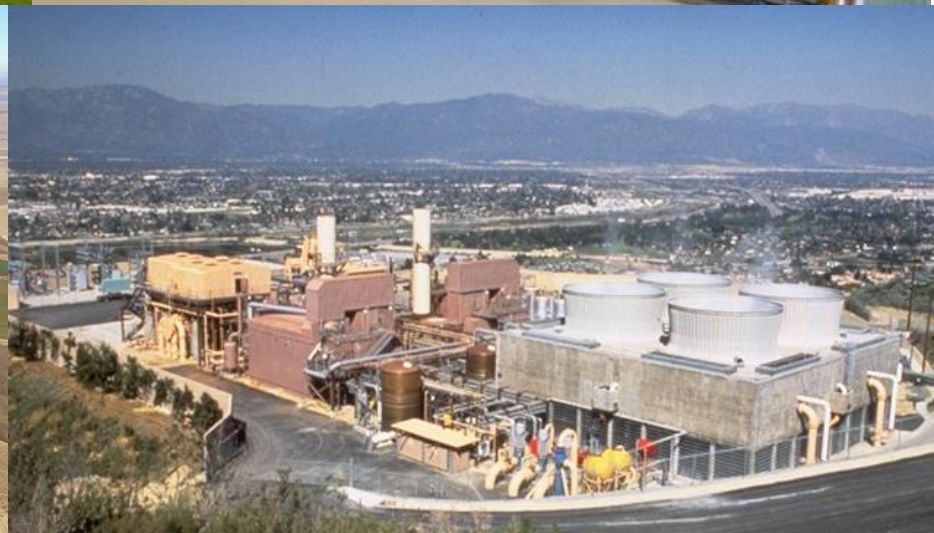
Recycled Water Program – Where we are now

- High quality recycled/reclaimed water
- 100,000 acre-feet/year beneficially used
- 950 individual sites
- Over 20 distribution systems


GLENDALE
BURBANK
PASADENA
GLENDORA
SAN DIMAS
LOS ANGELES
WEST COVINA
VERNON
DIAMOND BAR
WHITTIER
EL SEGUNDO
CERRITOS
CARSON
TORRANCE
LONG BEACH
Orange County
PACIFIC OCEAN

Direct Nonpotable Uses





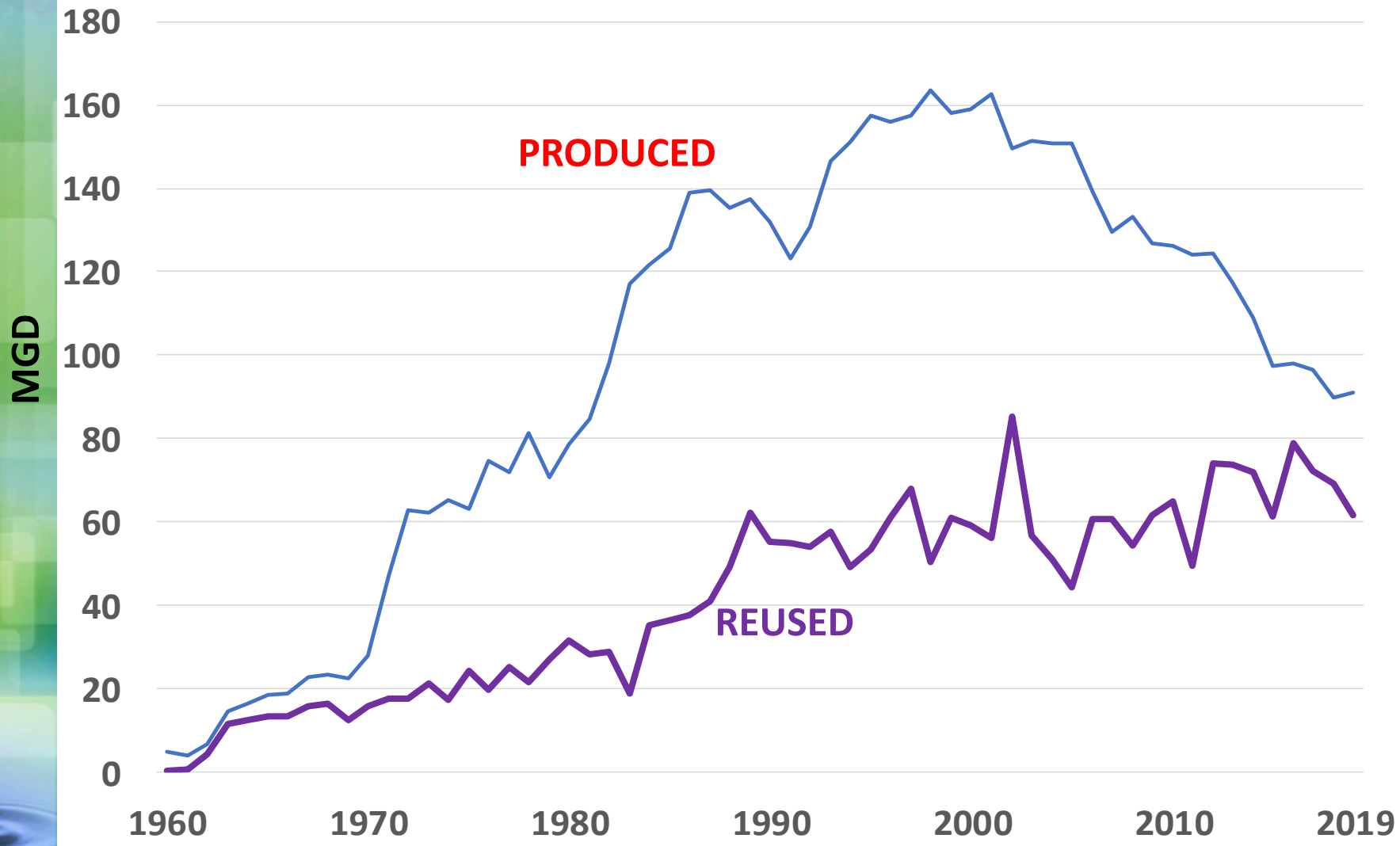
1995 Beneficial Plan

- Physical Issues
- Regulatory Compliance
- Institutional Arrangements
- Monetary Considerations
- Public Acceptance

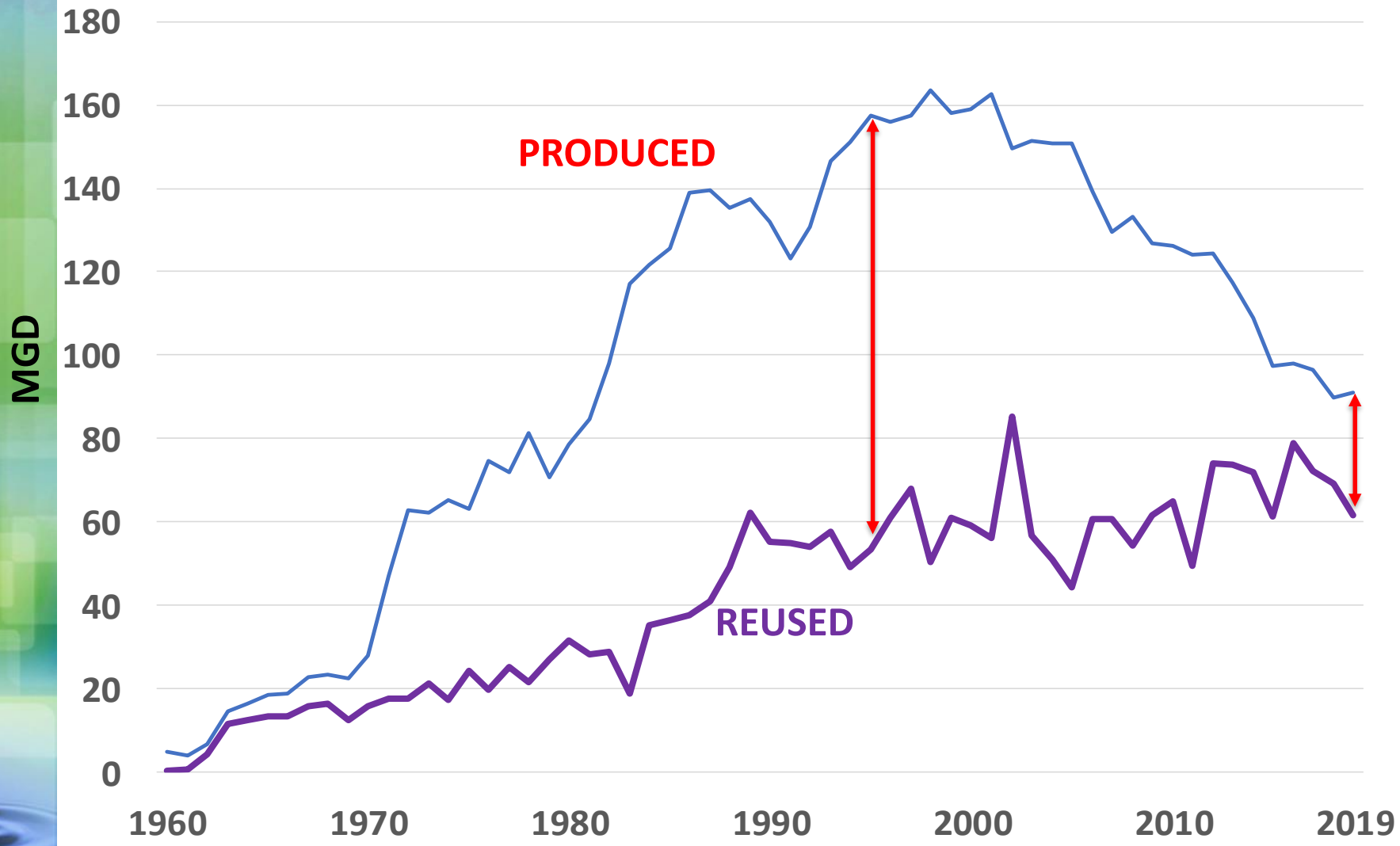
Physical Issues

- Have technical/engineering solutions
- Generally deal with either:
  - Quantity
  - Quality

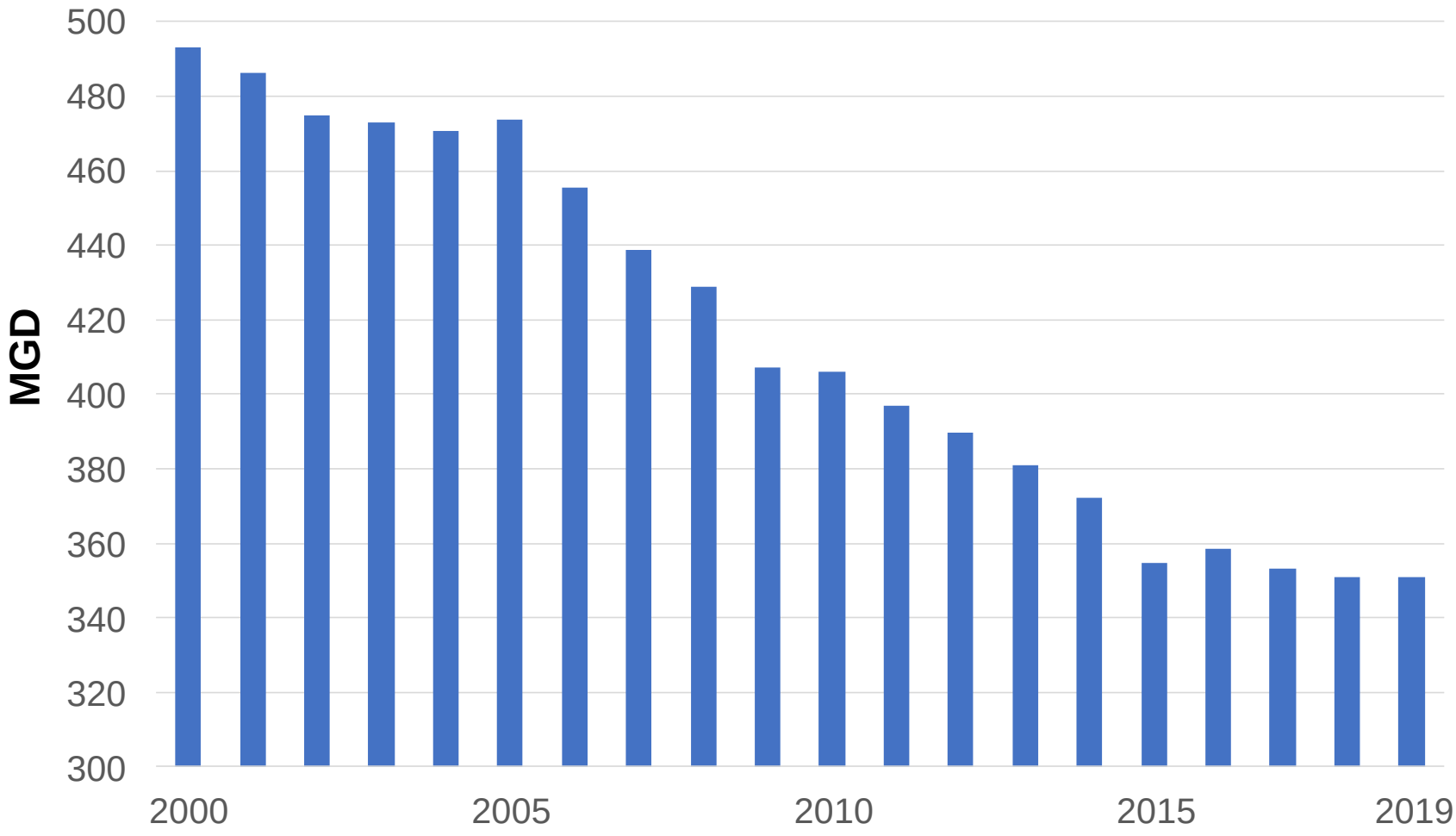
Recycled Water Supply vs. Demand



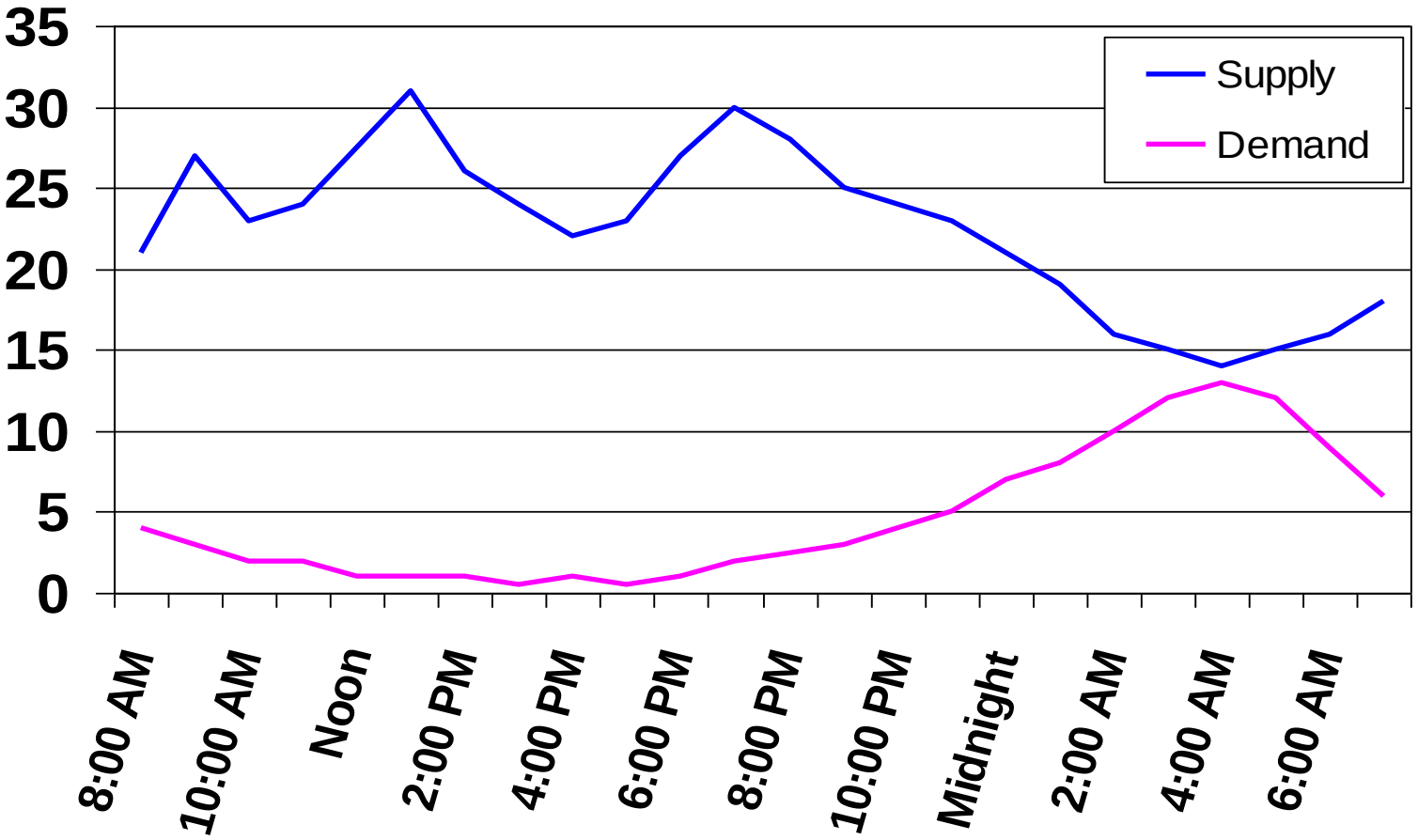
Recycled Water Supply vs. Demand



JOINT OUTFALL SYSTEM
Annual Average Effluent Flows



Problem – Daily Supply/Demand Offset



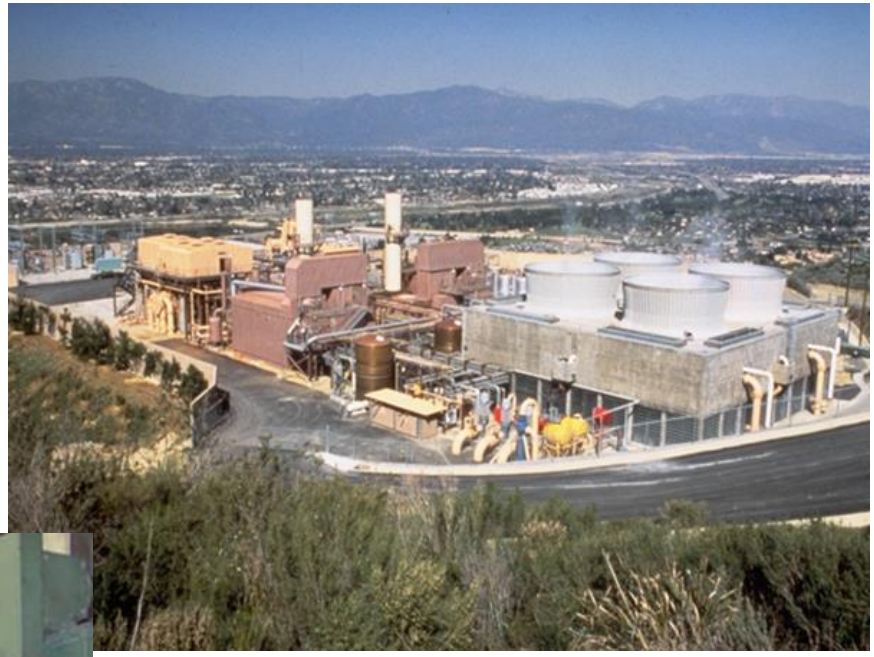
Theoretical WRP vs.
Hypothetical Reuse System

Solutions – Demand Side

Daily Operational Storage

Solutions – Demand Side

Daily Demand Shift



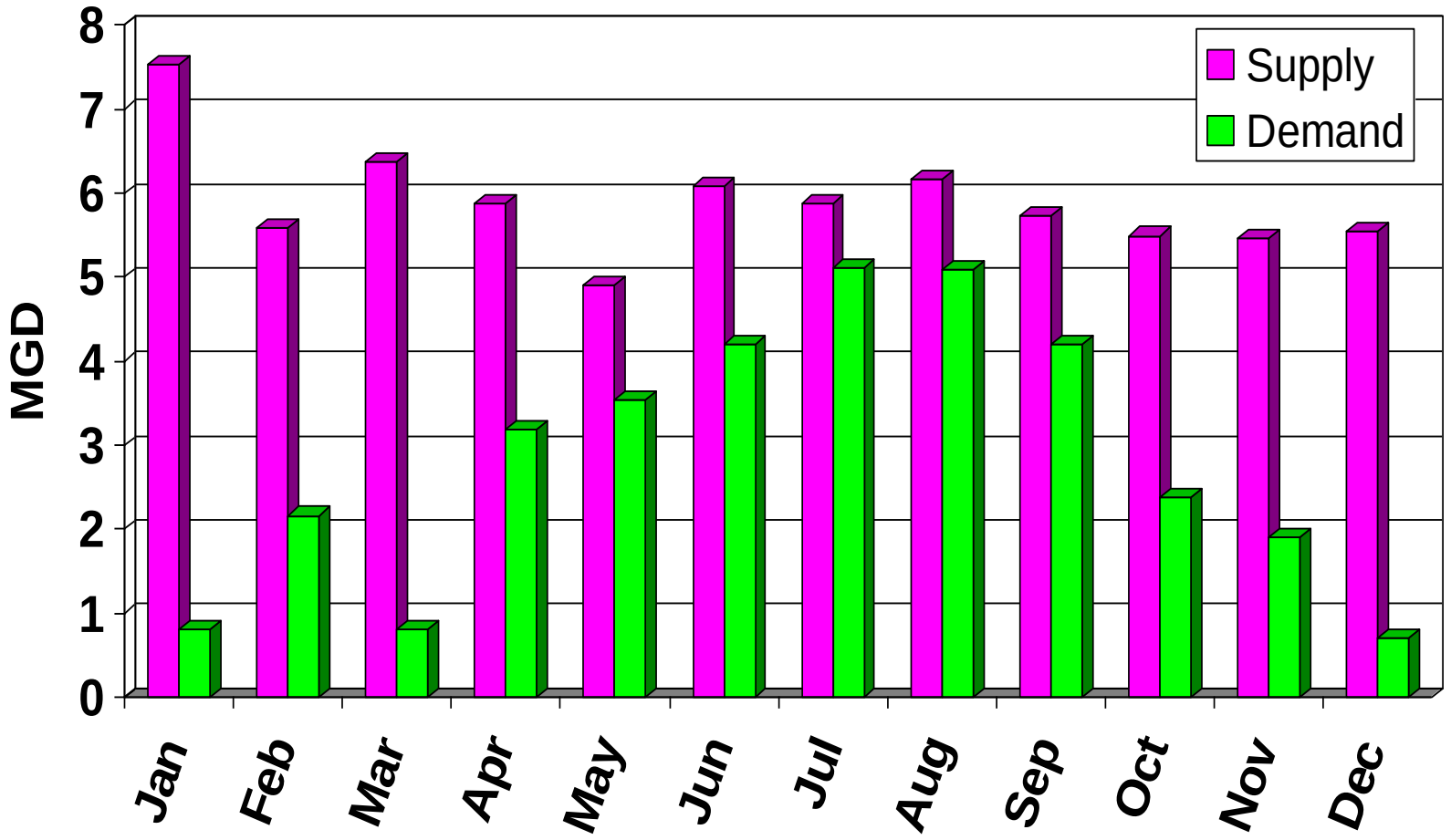
Solutions – Supply Side

Flow Equalization

Solutions – Supply Side

Flow Equalization

Problem – Seasonal Supply vs. Demand



Pomona WRP – 2018 Flows

Solution – Seasonal Storage

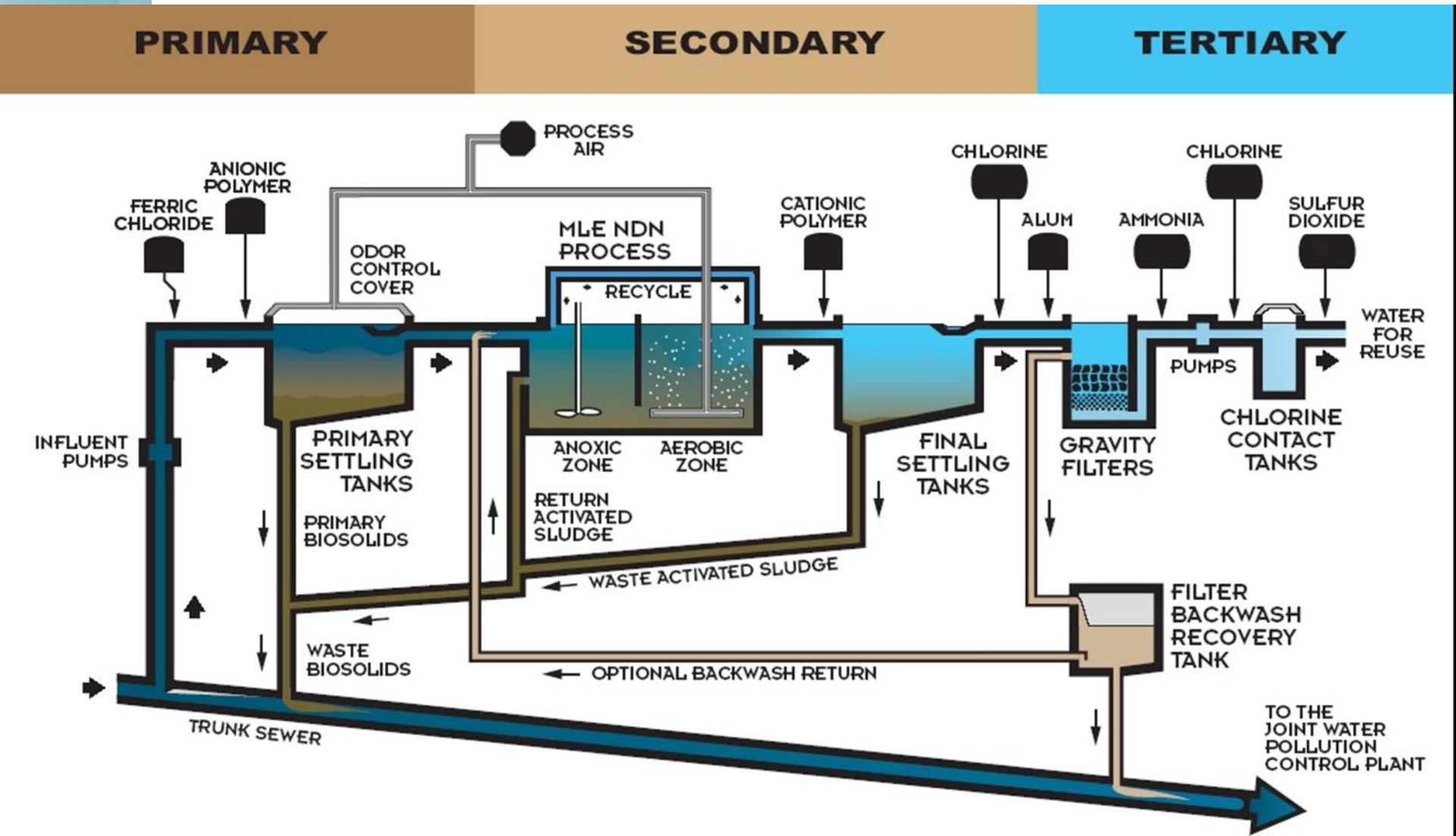
Solution – Seasonal Storage

Solution – Groundwater Recharge

Problem – Recycled Water Quality

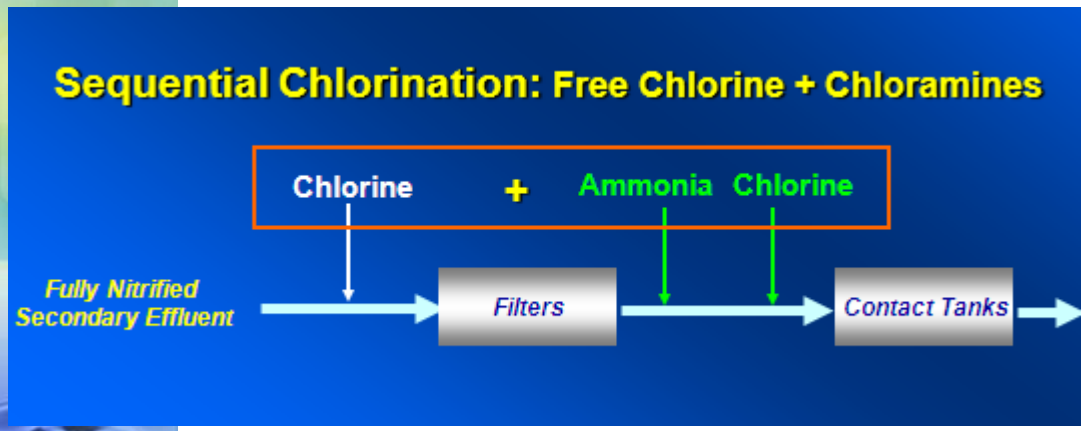
- Minimum treatment levels
- Microbial levels
- Maximum Contaminant Levels (MCLs)
  - Chemicals of Emerging Concern (CECs)
- Salinity

Solution – Minimum Treatment Level



Solution – Microbial Quality

- Generally 90% total coliform non-detects
- 7-day median total coliform < 2
- No viable Giardia or Cryptosporidium
- 3 virus in 1,152 samples, 1.6 million liters



Solution – MCLs

- Drinking water standards
- All Primary MCLs are met:
  - Heavy metals
  - Trace organics
  - Radioactivity
  - Minerals
  - Nitrogen
- Secondary MCL for turbidity

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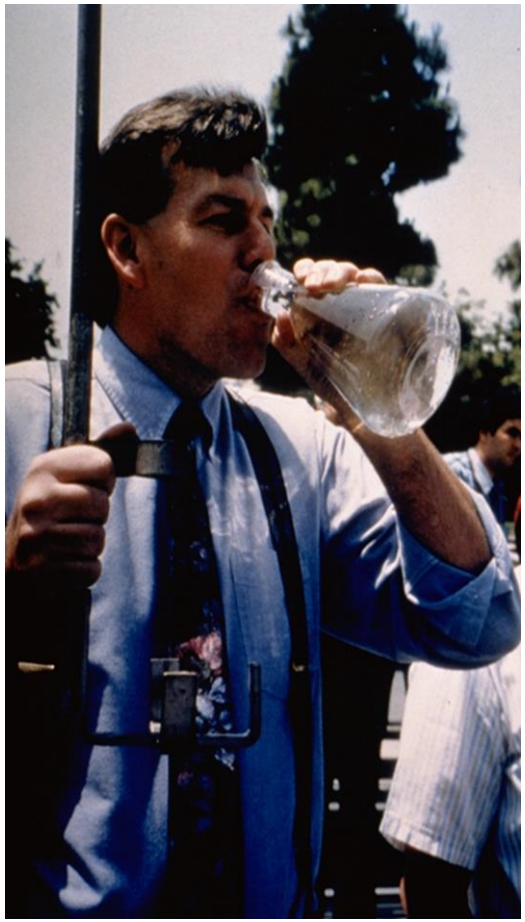


Solutions – Salinity Demand Side

- Reconfigure landscape plants
- Modify irrigation schedule
- Apply soil treatments
- Rebalance cooling tower chemicals

Solutions – Salinity Supply Side

- High TDS sewage diverted around WRPs
  - 500-800 mg/L TDS at WRPs
  - 1,500 mg/L TDS at ocean disposal plant
- Industrial waste pretreatment
- Advanced treatment via RO

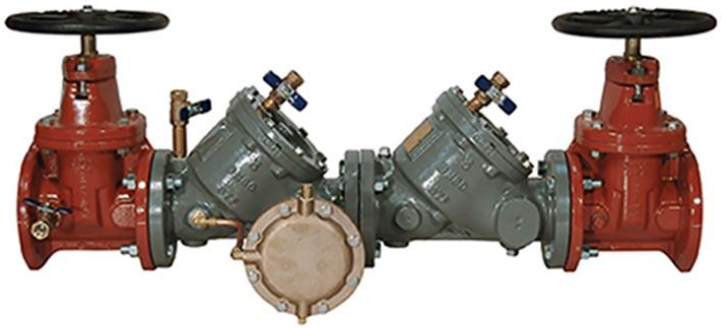
Regulatory Compliance

- Most recycled/reclaimed regulations originated in California – Title 22
- Treatment levels and effluent quality
- On-site requirements

Regulatory Solutions – Facilities Identification

Regulatory Solutions – Best Practices

Regulatory Solutions – Supplemental Water

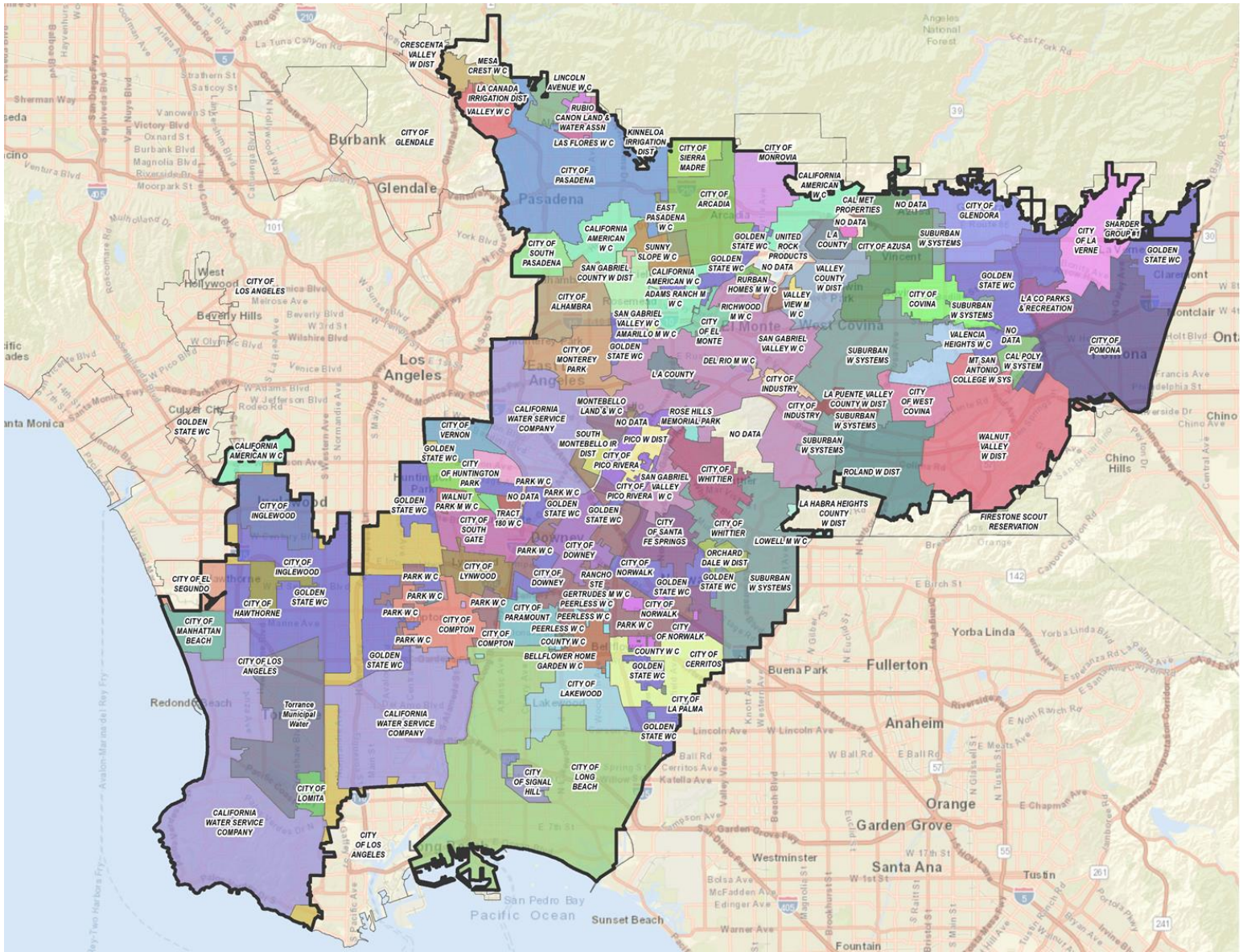


Institutional Arrangements

Highly segmented and complex water supply hierarchy in Southern California

- City water departments
- Municipal water districts
- Mutual water companies
- Investor-owned utilities

Institutional Arrangements



Institutional – Solutions

- Easements

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- Easements
- Shared facilities


Forest Lawn
Cemetery
Cal Poly,
University

Institutional – Solutions

- Easements
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- Interagency coordination
  - Service duplication
  - “Stay in your lane”

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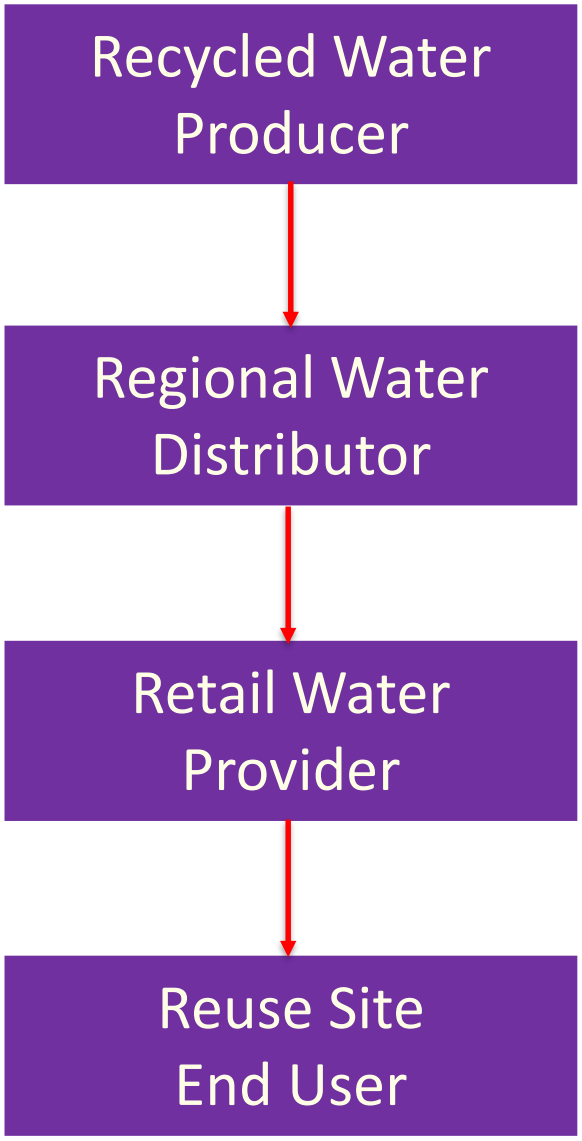

Monetary Considerations

- Economic Analysis – Should it be done?
- Financial Analysis – Can it be done?

Monetary Considerations

- Water pricing
- Future water costs
- Alternative financing
  - Parcel charges
  - Low interest loans/grants
  - Strategic partnerships

Public Acceptance – Problems

- Perceived health risks – “yuck” factor
- Growth inducement
- Special interests

'Toilet to tap' water plan under fire

Project faces more delay

IRWINDALE

Miller Gives $11,000 to PAC Fighting Use of Reclaimed Water

MAKING WAVES

12/12/94

Brewery finds allies in opposing sewage water recycling project

Mountjoy bill would impede San Gabriel Valley Water Reclamation

Miller Brewing fights use of reclaimed water

By Tony Knight
Daily News Staff Writer 11-6-95

Miller Brewing Co. officials were horrified when a San Gabriel Valley water district proposed pumping reclaimed sewage water into sandy basins in Irwindale within a mile of the brewery's water wells.

The water district wanted to increase drinking water supplies by letting the water seep into the aquifer. But the prospect of having ene of Bottled Beers" with Miller executives

Reclaimed water use opposed

Brewer's win could doom water project

Major battle brewing over purification

Miller challenging methods used in water recycling

Sewage-to-Drinking-Water Plan Hits Snag

Public Acceptance – Solutions

- Accessible technical information
- Public “information”, not “education”
- Qualified expert testimony
- Outside allies
- Community supporters

Public Acceptance – Solutions

- Project website
- News media
- Social media
- Speakers bureau
- Facility tours


Questions?
NO DIVING
FROM
BRIDGE