Integrating Water Reuse into a Regional Approach to Water Management

David L. Sedlak

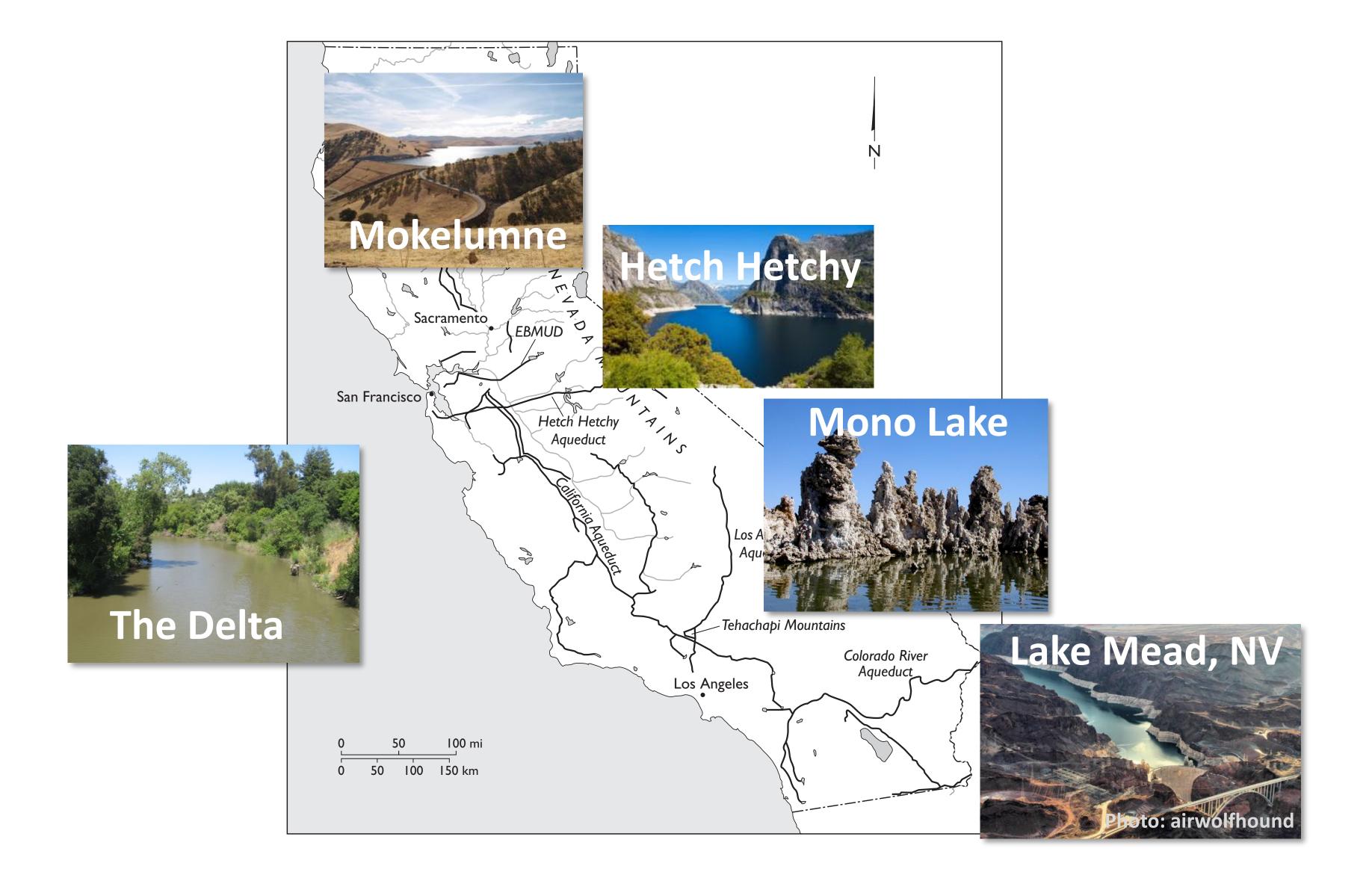
Department of Civil & Environmental Engineering
University of California, Berkeley
Bay Area One Water Network Water Reuse
December 17, 2019







California's Imported Water Supply

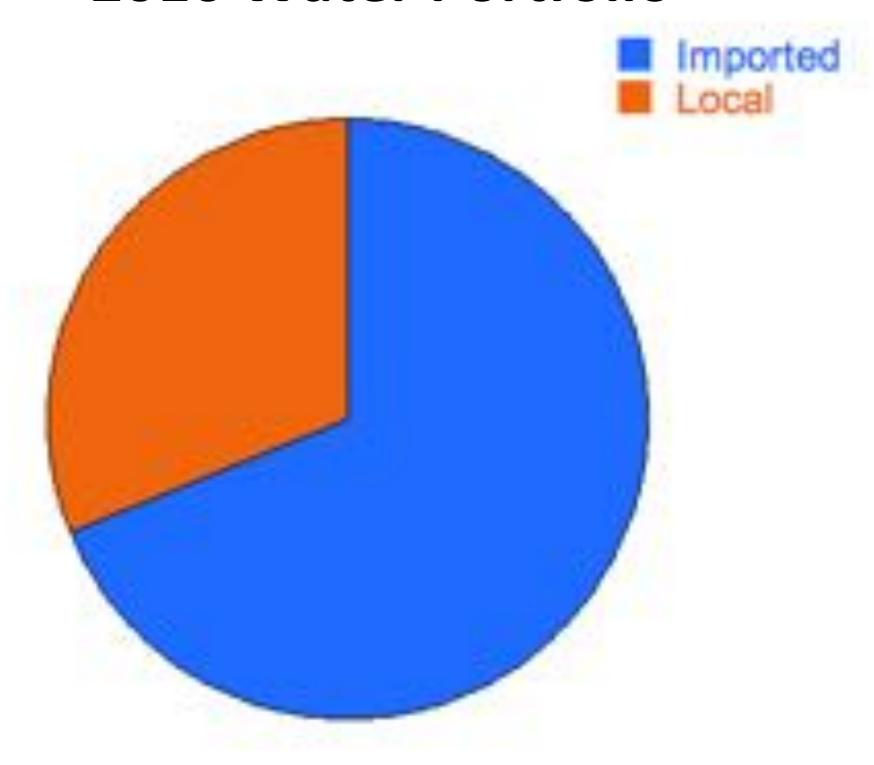






The Bay Area's Water Portfolio

2016 Water Portfolio



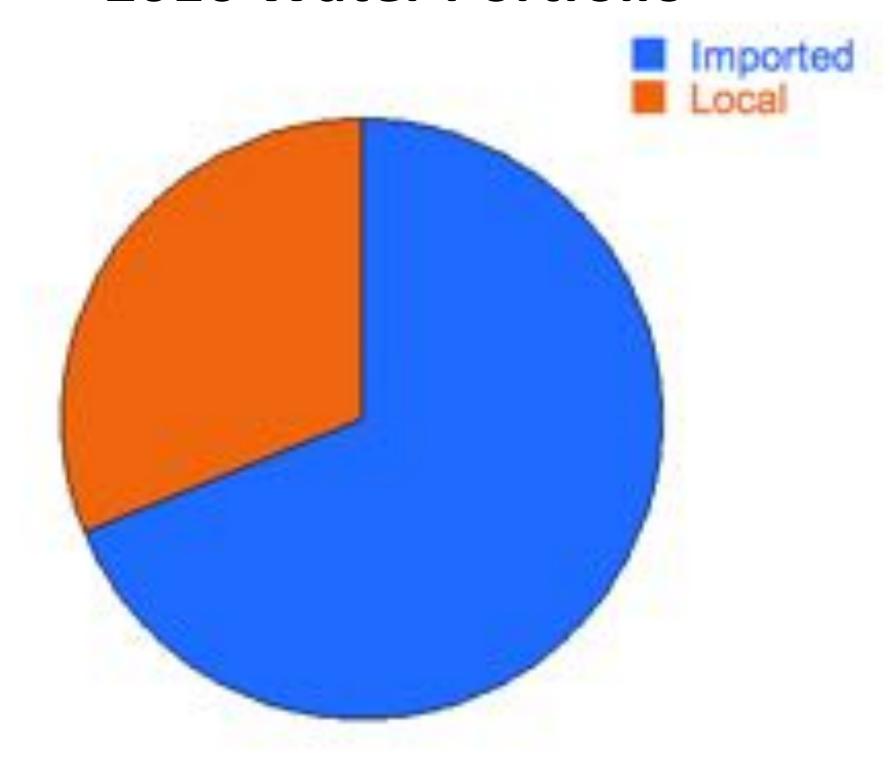
Total = 1.3 billion gallons/day





The Bay Area's Water Portfolio

2016 Water Portfolio



Total = 1.3 billion gallons/day







Local Supplies



Demand Management



Water Reuse



Desalination





Water Reuse to the Rescue

SENATE BILL NO. 332

SB 332, also known as the Local Water Reliability Act, promotes the development of local water supplies by requiring wastewater treatment facilities to reduce the volume of treated wastewater discharged into the ocean annually by 50% in 2030 and 95% by 2040.

An act to add Section 13557.5 to the Water Code, relating to water.

LEGISLATIVE COUNSEL'S DIGEST

SB 332, as amended, Hertzberg.

Silicon Valley Leaders Tout \$612 Million Plan to Convert Toilet Water to Drinkable Water

How can we help? About Mayor Garcetti Meet the Team Our Work. Press Room

Mayor Garcetti: LOS ANGELES WILL RECYCLE 100% CCITY'S WASTEWATER BY 2035

By Bay City News
Published Apr 27, 2015 at 8:53 PM | Updated at 11:30 AM POT on Apr 28, 2015

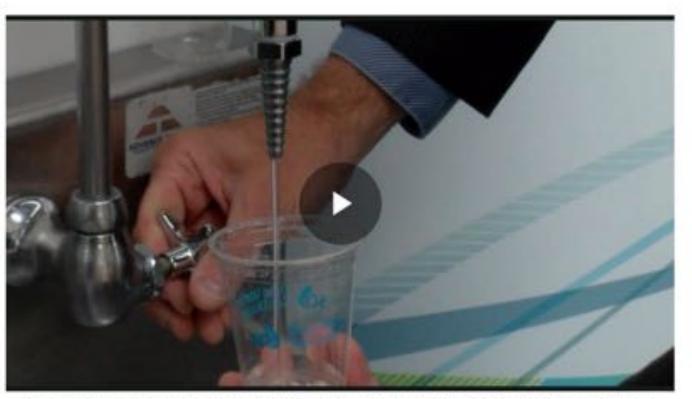


From tollet to tap: On Monday, Silicon Valley leaders announced plans to expand a water recycling plant. The goal is to eventually turn sewer water into drinking water. Marianne Favro reports. (Published Monday, April 27, 2015)

The San Diego Union-Tribune

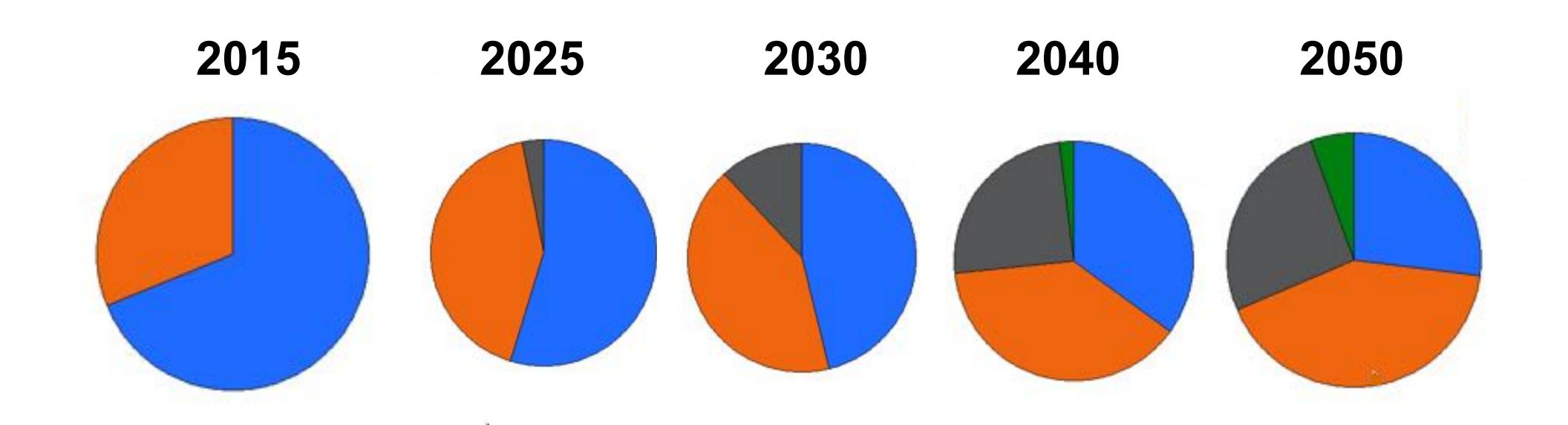
NVIRONMENT

Focus: San Diego will recycle sewage into drinking water, mayor declares



The Pure Water project is expected to break ground next year and ultimately generate a third of San Diego's drinking water by 2035.

Water Portfolio Diversification

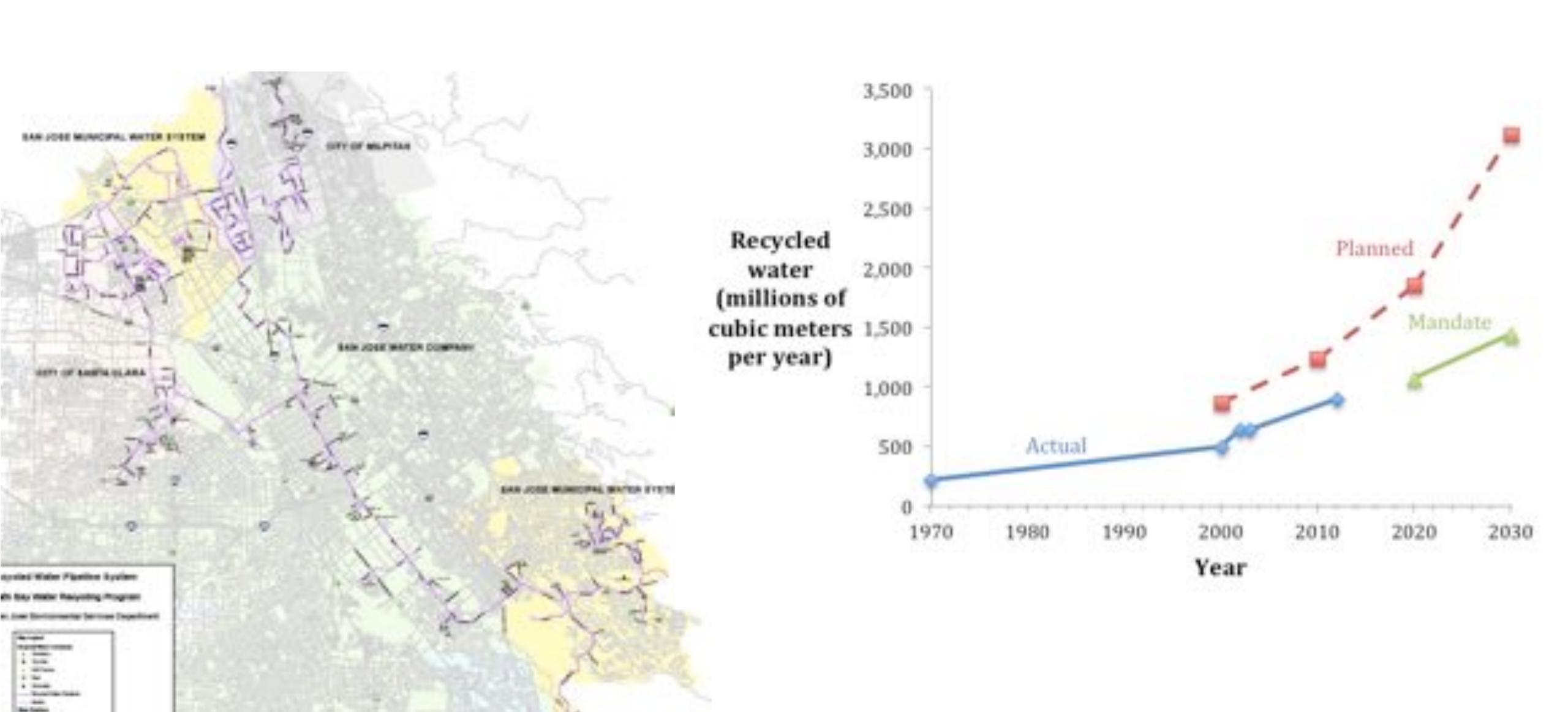




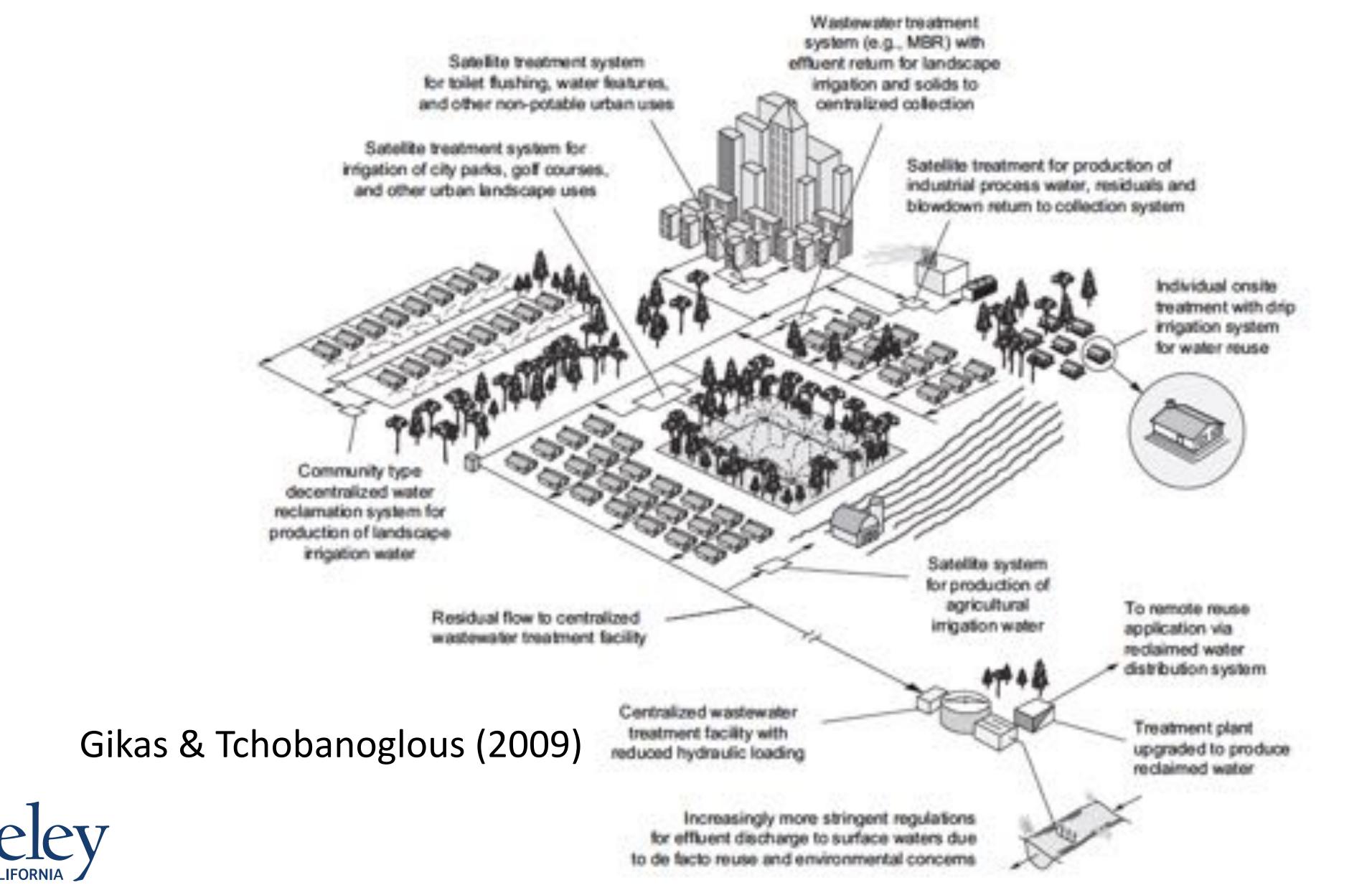




Centralized, Non-Potable Water Reuse



Localized Non-Potable Water Reuse



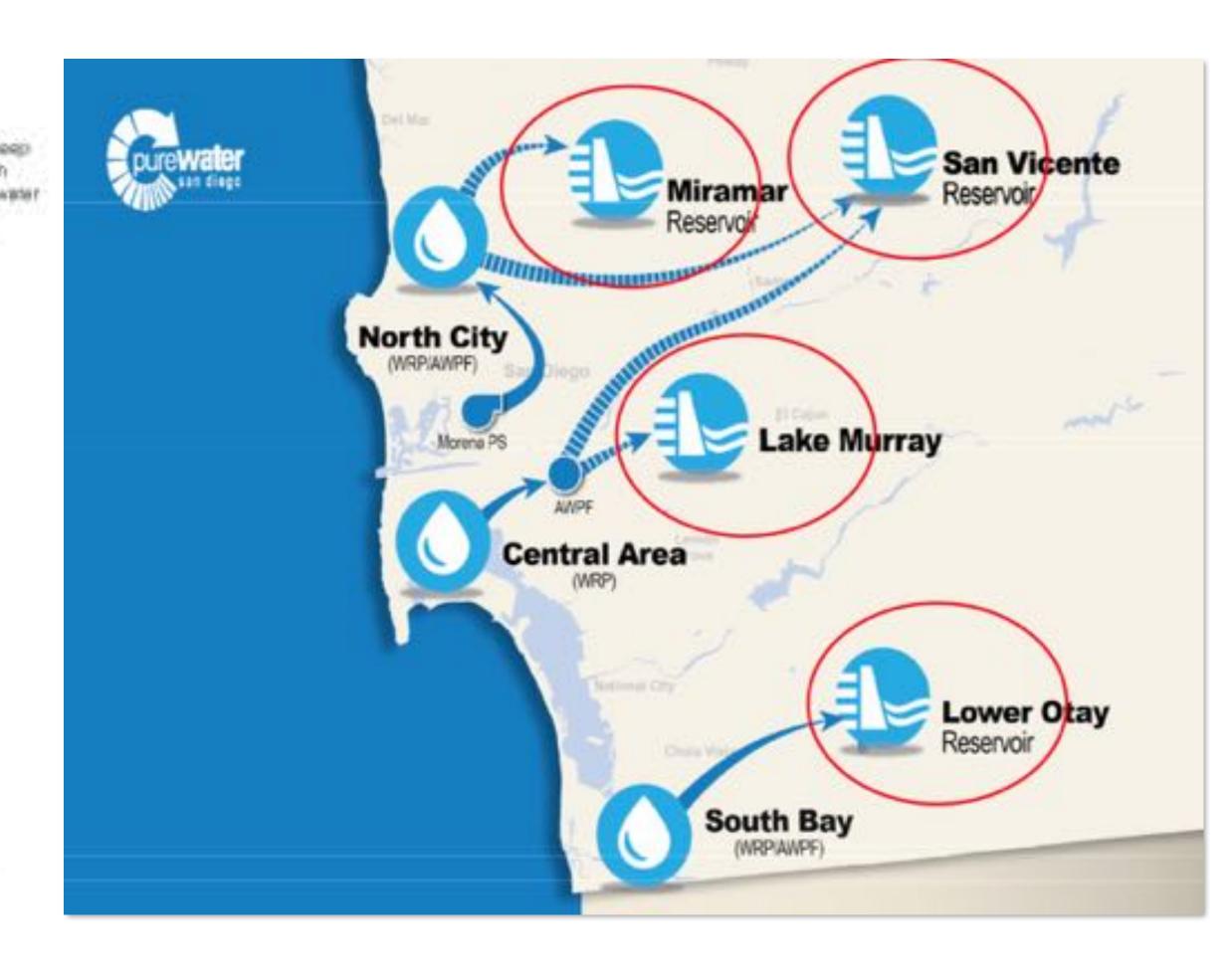


Potable Water Reuse

Groundwater Recharge

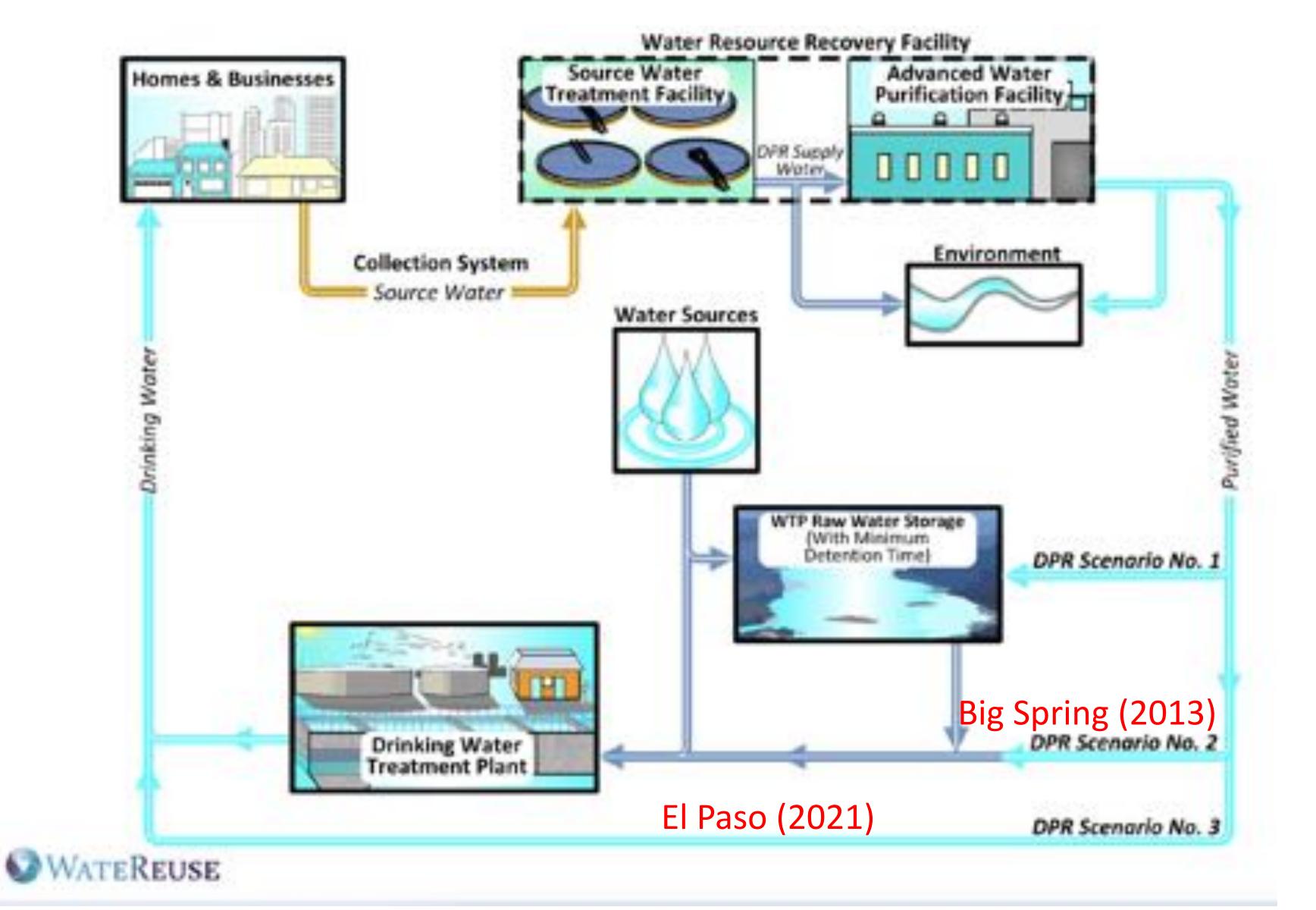
CARRY CHARL MISTERS Injection Wells 36 injection well sites keep COCSO! Treatment System G FOUNDWATER groundwater levels high Wastewalls freated, then Replenishment System (01/1R\$ enough to prevent seawater Whiter sent through purticulton from contaminating process then pumped to median wells. groundwater supplies. 888 888 88 Seawater Intrusion Seawater stain flow inland if groundwater r levels are Fault too low: Aquifers Water-bearing kand and gravel Recharge Basins GWRS water pumped 13 miles to basins in Anaheim. *OCHD - Grange County Webs Diversit where the water percotates into the ground, 10CSO - Drange County Settleton Detrick replenishing the Orange County Groundwater Basin. Note: Orapitic is a single schematic representation and is not intended to have detailed accuracy.

Surface Water Augmentation





Direct Potable Water Reuse







Anticipating Future Opportunities

A pessimist sees the difficulty in every opportunity; an optimist sees the opportunity in every difficulty.
-Winston Churchill



Consider what happened during the recent drought:

- SGMA passed first groundwater regulations in CA
- SoCal invested in reuse, desal and stormwater
- Greywater regulations passed
- Potable reuse permit issues resolved

What happened in the Bay Area?





How Can A Regional Approach Help?



- Over the next 35 years, the public and elected officials expect that Bay Area communities will recycle their wastewater.
- If we are going to achieve this goal, an "all-of-the-above" strategy may be necessary.
- A regional network can achieve things that would be difficult for individual entities:
 - -identifying and fostering partnerships among organizations
 - -demonstrating/optimizing new technologies in local context
 - -engaging/communicating with the public & elected officials



