

Presentation by:

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ÁGUAS DO
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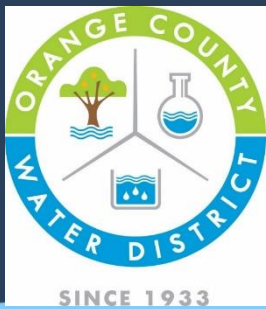
O CAMINHO DA
INOVAÇÃO
ONLINE 2020

A Look Inside
Orange County Water District
and the World's Largest Potable
Reuse Facility – the
Groundwater Replenishment
System
in California
USA

California - USA

- Most of the population lives in Southern California
- Average rainfall ~12 inches/year (300 mm/year)
- Water supplies come from:
 - Imported Supplies/Surface Water
 - Groundwater





ORANGE COUNTY WATER DISTRICT (OCWD)

- Formed in 1933 by an act of the California legislature to manage the groundwater basin
- Basin provides groundwater to 19 municipal and special water districts that serve 2.5 million residents in north and central Orange County (OC)
- Basin currently supplies 77% of the water supply for north and central OC



THE GROUNDWATER REPLENISHMENT SYSTEM

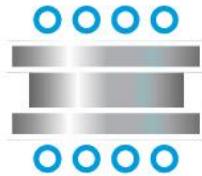
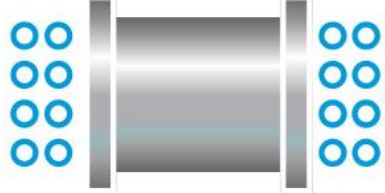
- Produces 378 million liters per day
- Purifies sewer water that otherwise would be discharged to the ocean
- Produces drinking water quality
- Replenishes the groundwater basin with enough water for nearly 850,000 people for one year
- Operational since January 2008
- Largest potable reuse project in the world





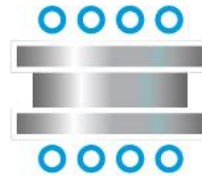
Microfiltration (MF)

Highly
Treated
Wastewater



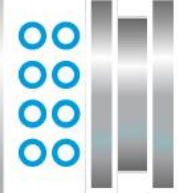
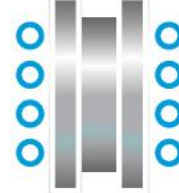
Backwash
Sent to OCSD

Reverse Osmosis (RO)



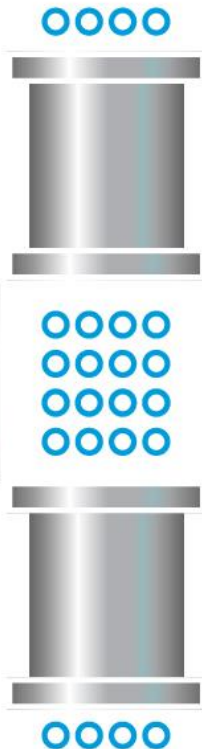
Brine Sent
to OCSD

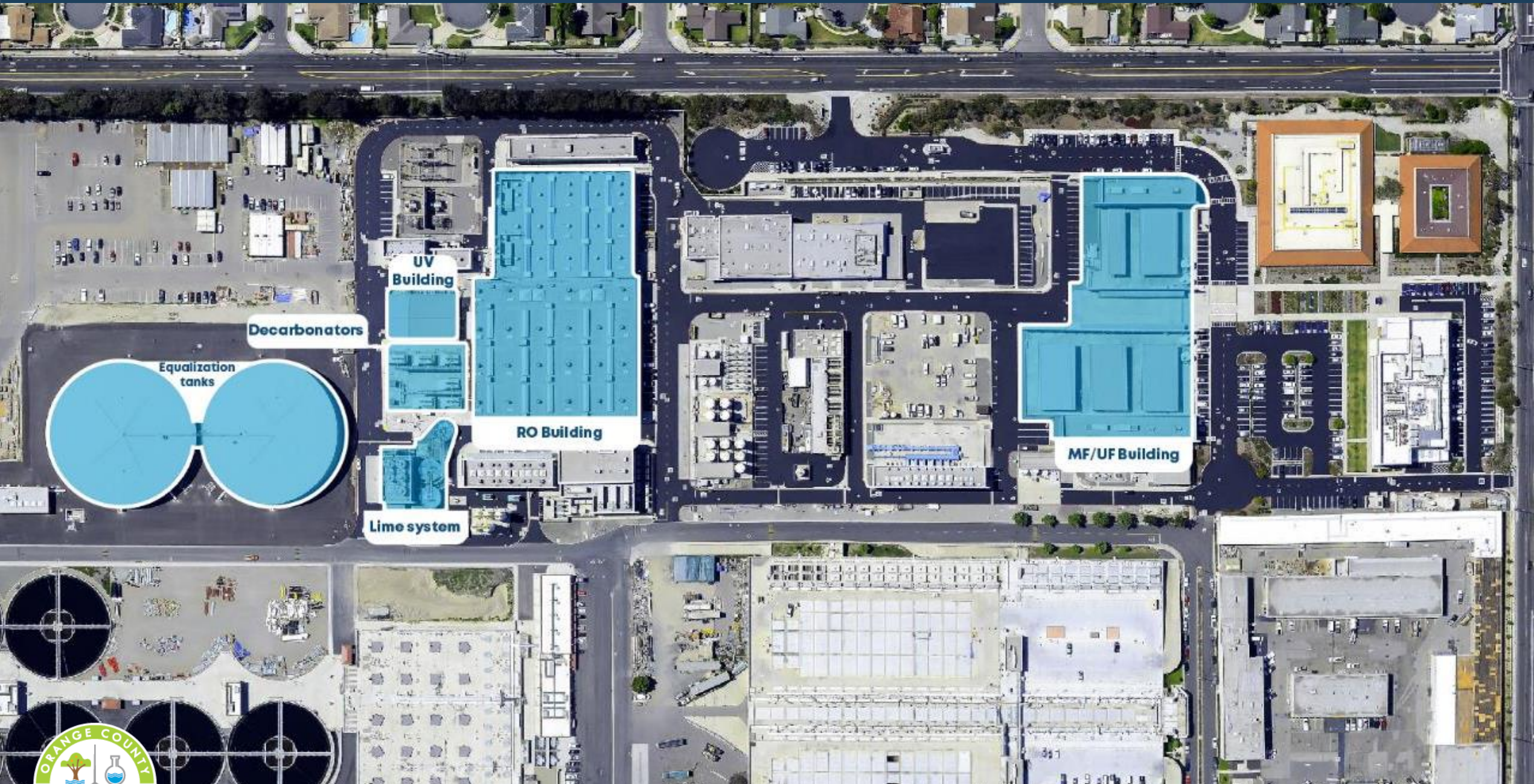
Ultraviolet Light (UV) with Hydrogen Peroxide



Recharge
Basins in
Anaheim

Seawater
Barrier
(36 well sites)





GWRS Facility in Fountain Valley, CA



Microfiltration



Reverse Osmosis



Ultraviolet Light



Post Treatment - Lime (Calcium Hydroxide) Addition

GWRS PROJECT FUNDING



- Original Project Cost: \$481 million
 - Split equally between OCWD and OCSD
 - Received \$92 million in state and federal grants, and \$3.8 million per year (21 year) operation and maintenance subsidy from Metropolitan Water District
- Expansion Project Cost: \$142 million
 - Received \$1 million in state grants
- Costs comparable to imported water rates in Southern California



WHY DID WE NEED THE GWRS ?

- Recurring and extended droughts
- Imported water shortages
 - Colorado River losses
 - State Water Project losses
 - Environmental restrictions
 - Potential levee failures
- Local projects lessen dependency on outside sources
- Seawater intrusion challenges



WHAT HAVE WE LEARNED FROM THE GWRS?

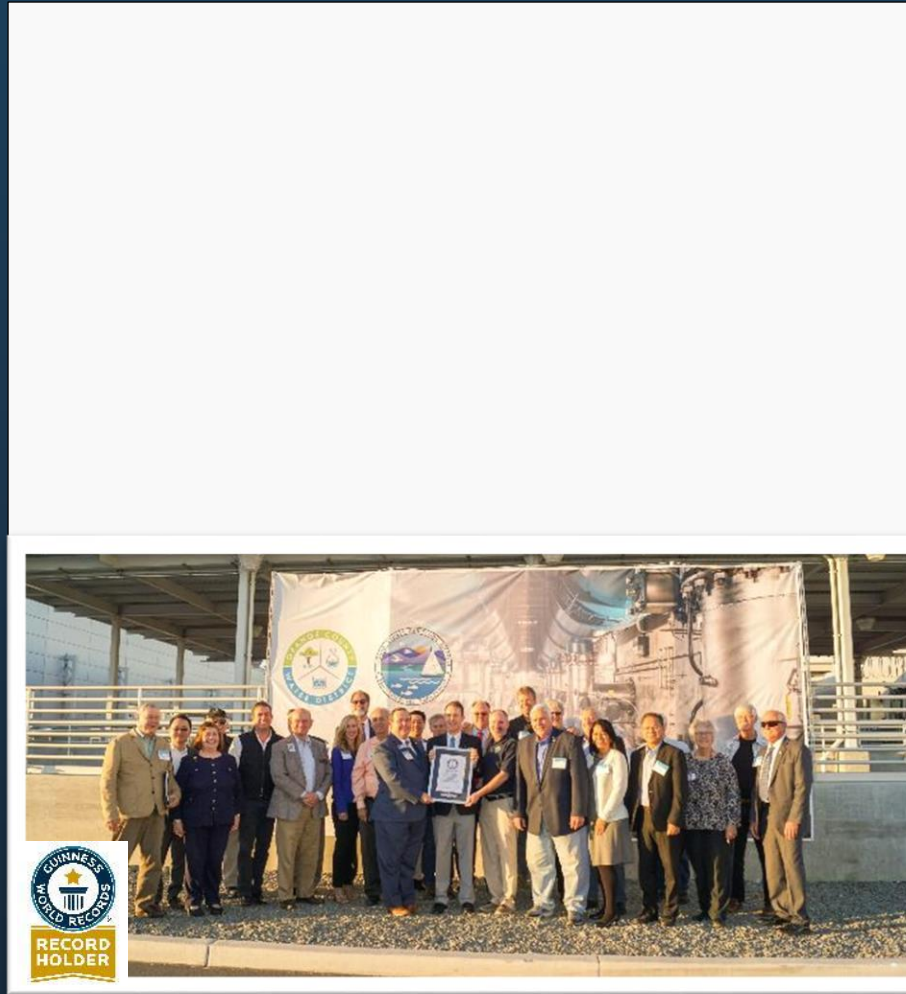
- Public can accept indirect potable reuse projects if:
 - Need is clear
 - Outreach is effective and ongoing
 - Elected officials and community leaders make commitment
 - Quality is higher than alternatives
 - Regulators have ongoing oversight
 - Independent scientific review
- The more people know about the GWRS the more they accept it



GWRS SUCCESS

- Public Outreach/Education
- 50+ awards
- National & international media attention
- 40,000+ visitors
- Guinness World Record

FEATURED IN



QUESTIONS?



SINCE 1933

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