

# Orange County Water District Groundwater Replenishment System (GWRS)

John Kennedy

Executive Director of Engineering and Water Resources

July 7, 2022



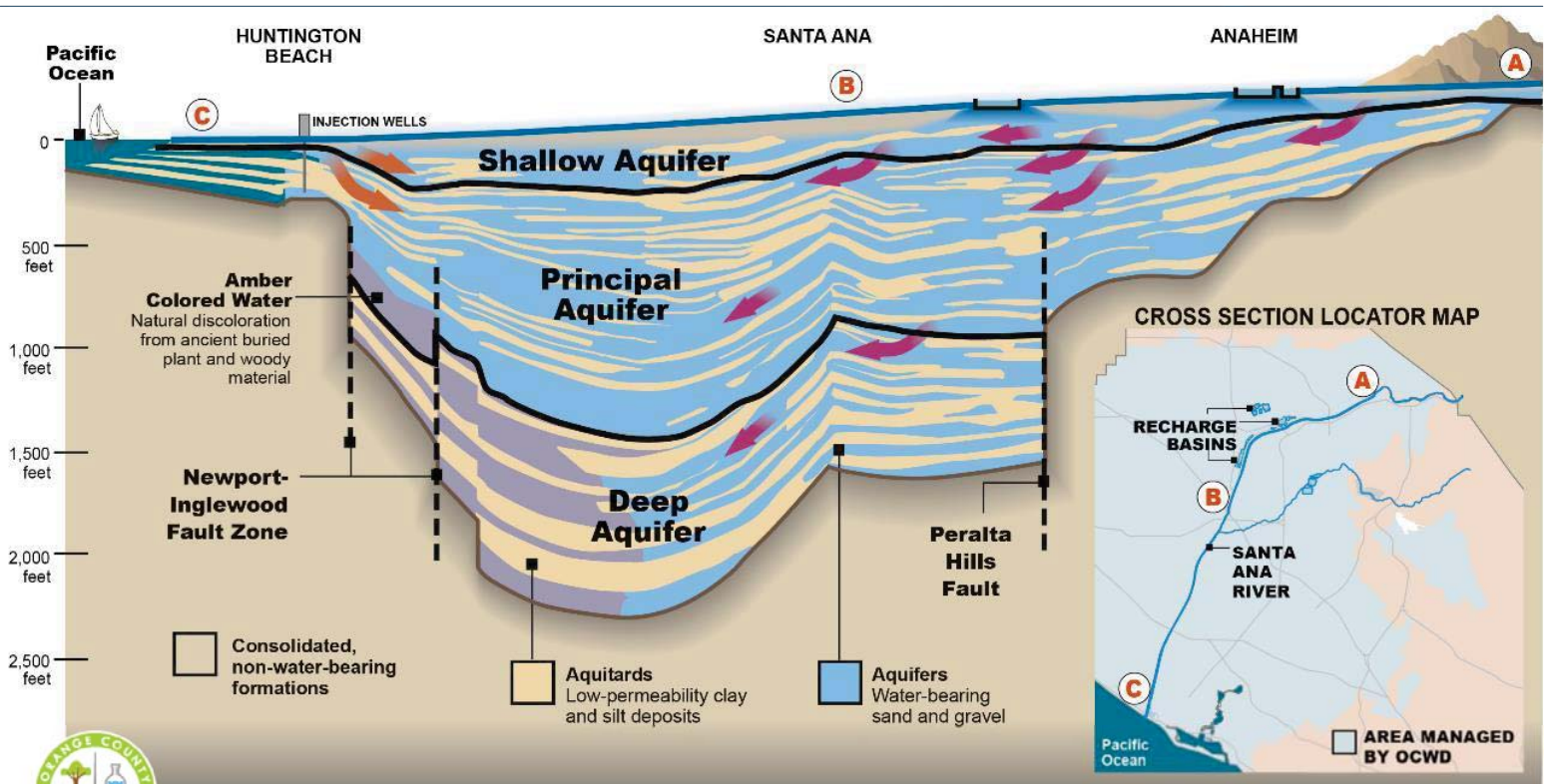
## ORANGE COUNTY WATER DISTRICT (OCWD)

- Formed in 1933 by California Legislature
  - Manage the OC Groundwater Basin
  - Protect rights to Santa Ana River water
- Provide groundwater
  - 19 municipal and special water districts
  - 2.5 million customers in north & central OC

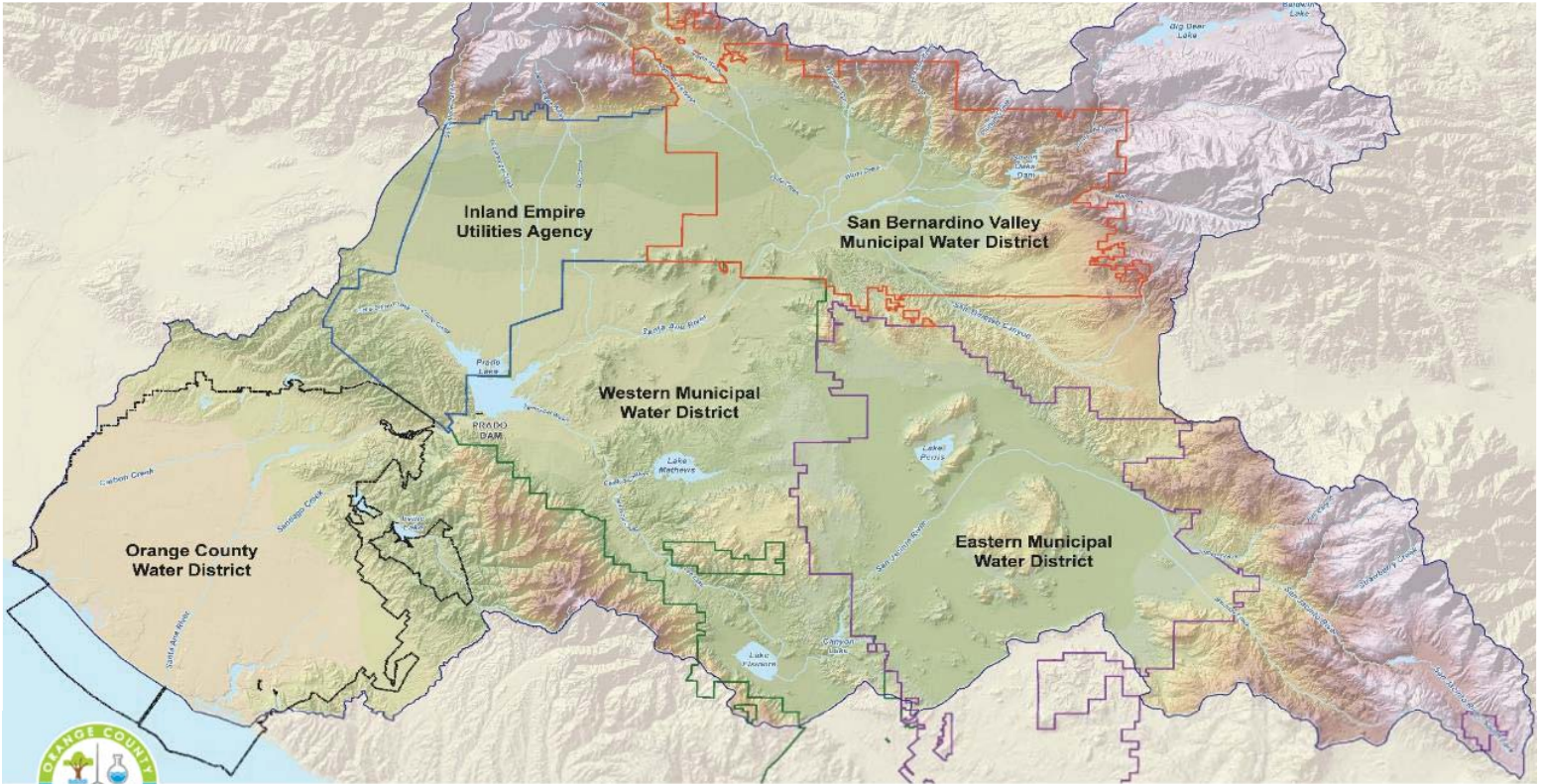


# OCWD GENERAL INFORMATION

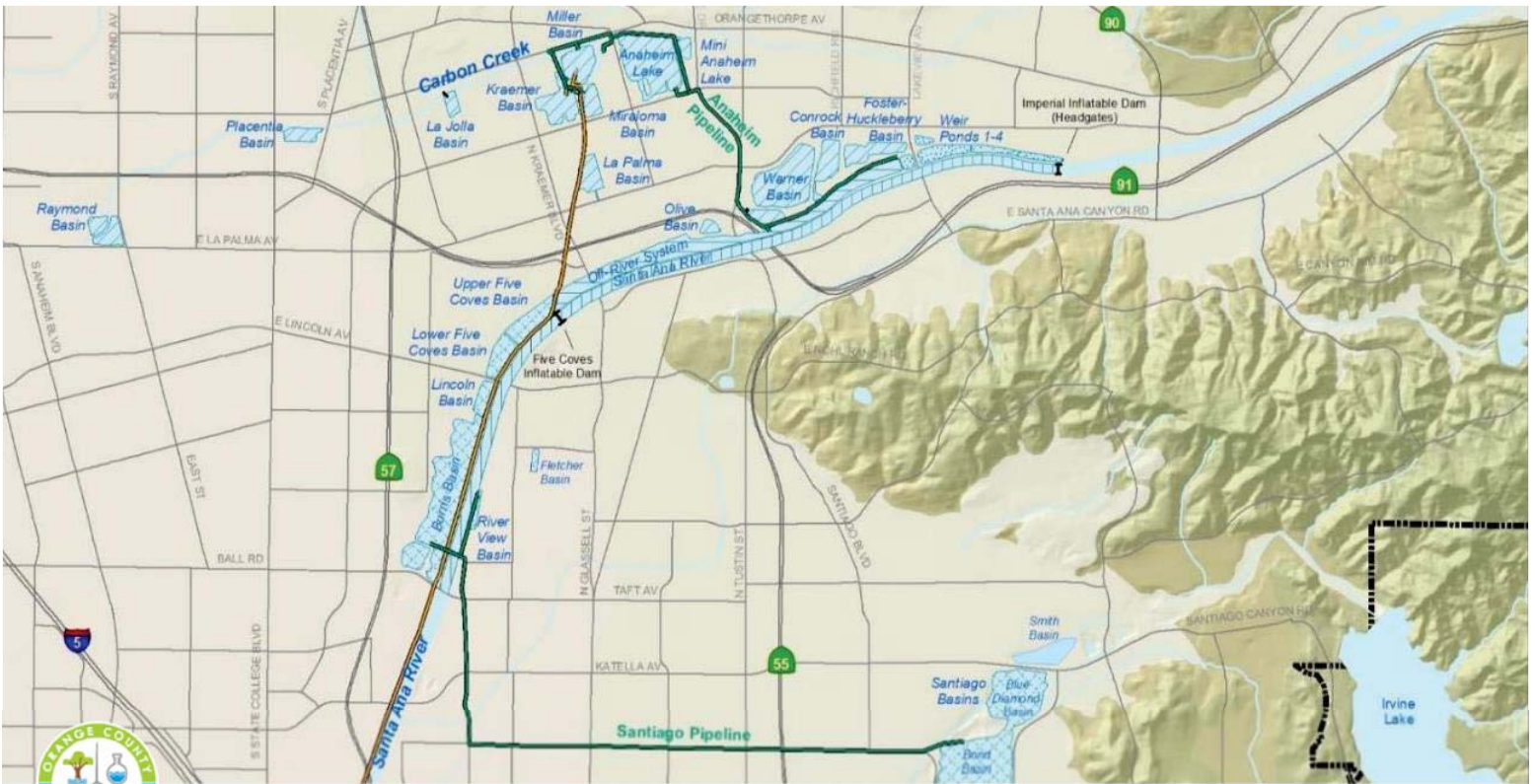
- OCWD governed by a 10-member Board of Directors
  - 7 members directly elected by the public
  - 3 members appointed (Santa Ana, Anaheim & Fullerton)
- Non-adjudicated groundwater basin
- Groundwater Basin supplies ~77% of the water supply for north & central OC



## OC GROUNDWATER BASIN



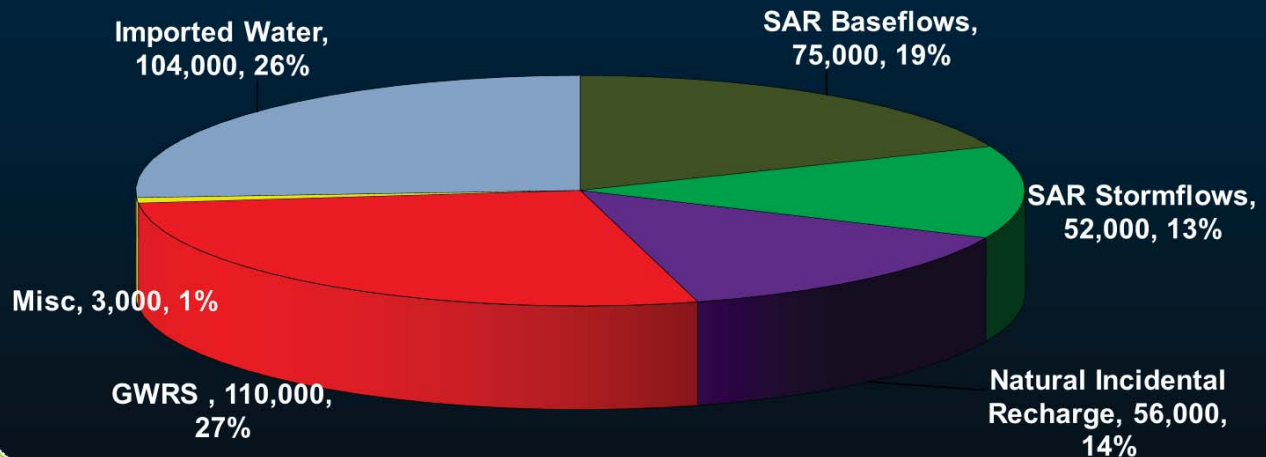
SANTA ANA RIVER WATERSHED



OCWD RECHARGE FACILITIES

# FY 2022-23 OCWD TOTAL WATER DEMANDS AND SUPPLY SOURCES

Total 400,000 afy



## THE GROUNDWATER REPLENISHMENT SYSTEM

- 100 million gallon per day (MGD)
- Purifies sewer water that otherwise would be discharged to the ocean
- Drinking water quality
- Replenishes the Groundwater Basin with 103,000 afy of water-enough water for nearly 850,000 people
- Operational since January 2008 (70 MGD), expanded May 2015 (30 MGD), final expansion under construction and will be complete in the first quarter of 2023 (30 MGD)
- Largest potable reuse project in the world



# EARLY YEARS OF GWRS DEVELOPMENT

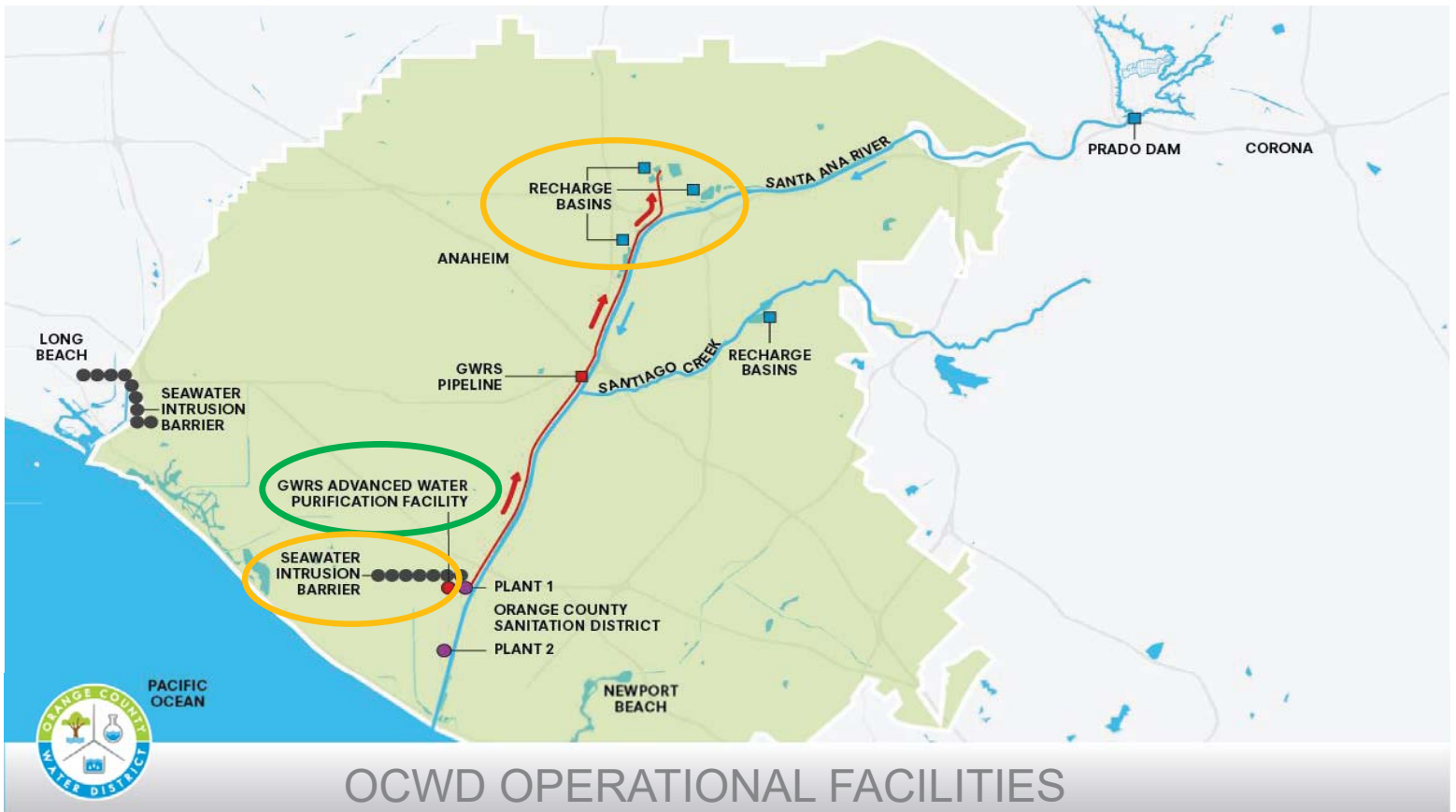
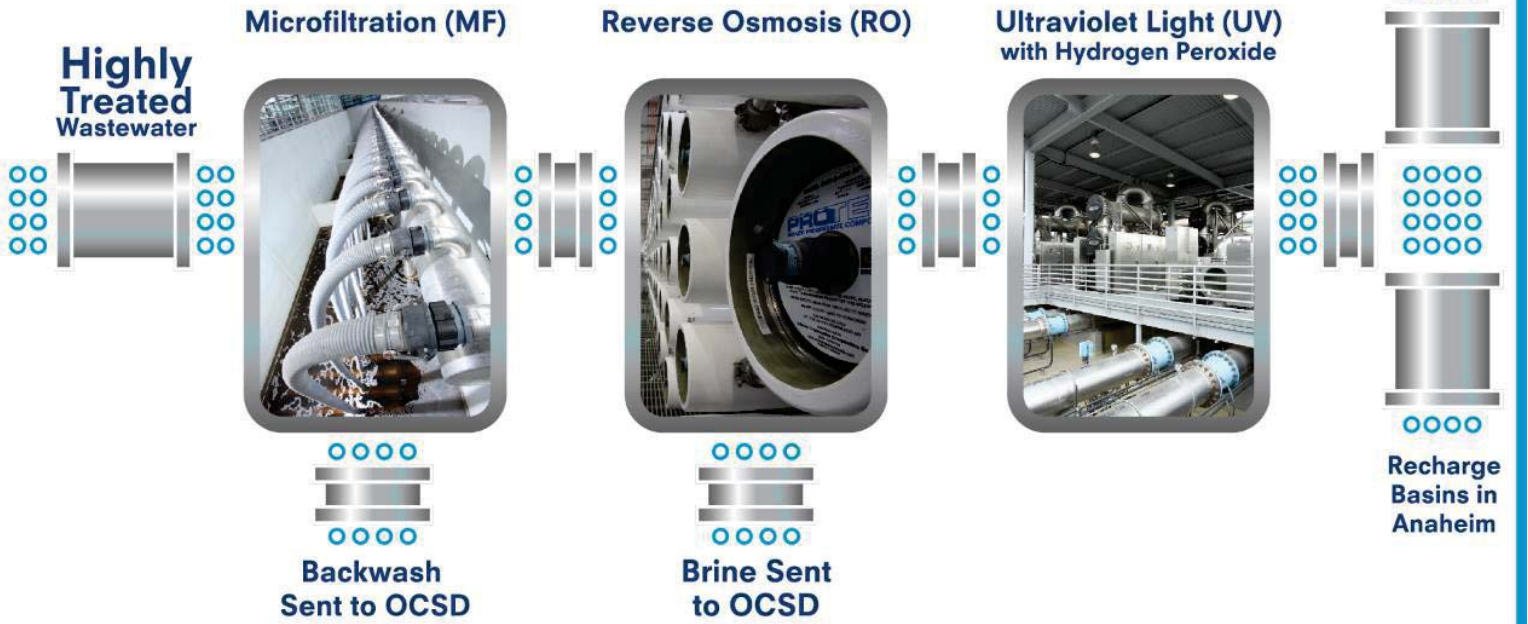
- Needed a source of water (30 mgd) for injection along the coast
- GWRS required a very large financial commitment
- Some local opposition
  - Few cities
  - One OCWD Board member
  - No public opposition
- 1994 Orange County Bankruptcy
- LA and San Diego failures with similar projects (toilet to tap)



# GWRS STRATEGIC ADVANTAGES

- OC Sanitation District (OC San) as a Partner
  - Similar service area
  - Neighbors
  - Funded 50% of initial \$481 million project
  - Takes the brines
  - Free Secondary treated water
- OCWD is the water customer - 24/7/365 days a year
- Water Factor 21 in operation since 1975
- Courageous Board





OCWD OPERATIONAL FACILITIES

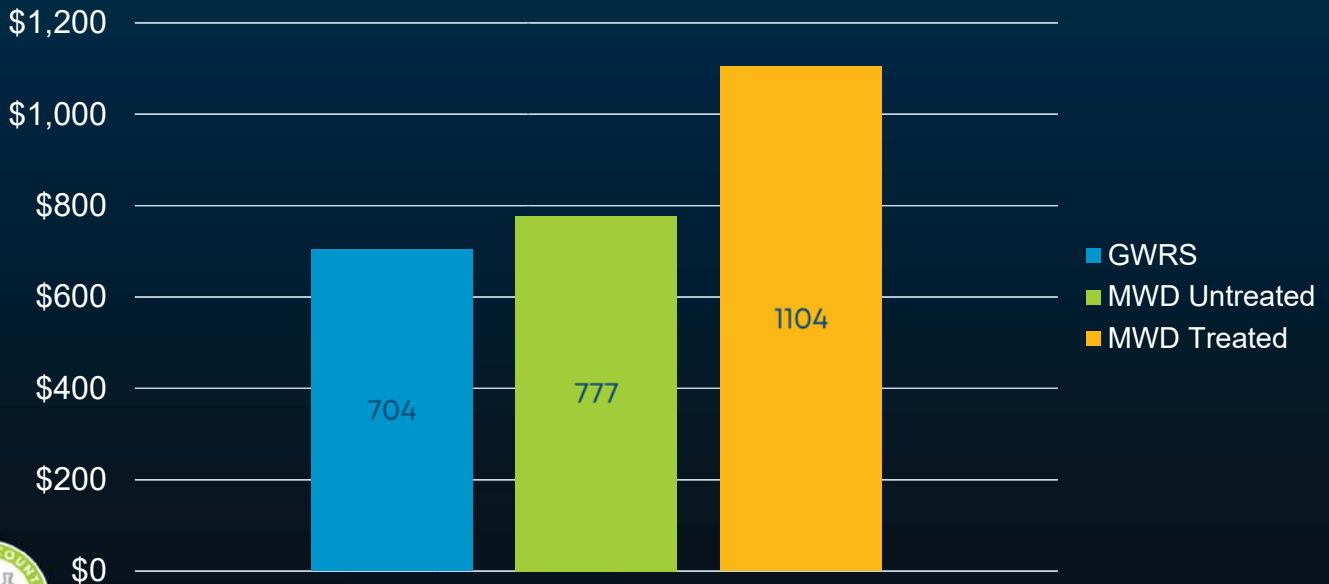
# GWRS COST SUMMARY



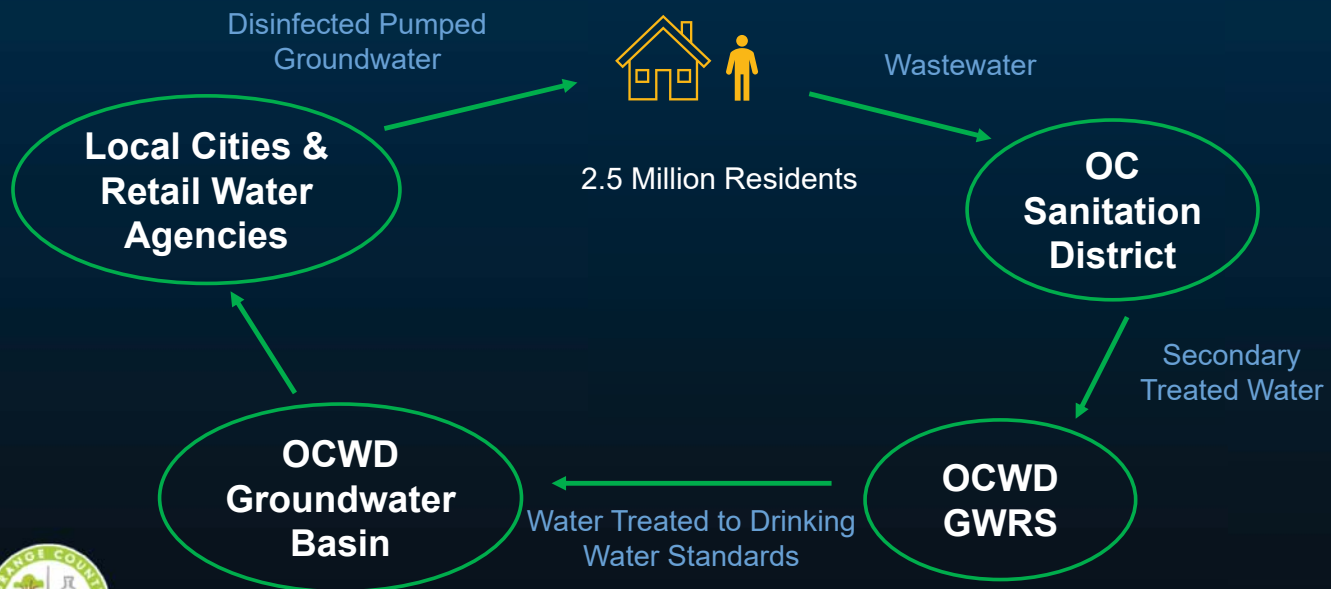
Project Phase	GWRS Daily Production (MGD)	GWRS Annual Production (AFY)	Capital Cost (millions)	Funding Source
GWRS (2008)	70	72,000	\$481	\$195 M OCWD State SRF & COPs \$195 M OCSD Reserves \$71 M State Grants \$20 M federal grant
GWRS Initial Expansion (2014)	30	31,000	\$142	\$141 M State SRF \$1 M state grant
GWRS Final Expansion Estimate (2022)	<u>30</u>	<u>31,000</u>	<u>\$295</u>	<u>\$133 M EPA WIFIA loan</u> <u>\$10 M Grants</u> <u>\$152 State SRF</u>
	130 mgd	134,000 afy	\$918	



## FY 2020-21 WATER SUPPLY UNIT COST COMPARISON (\$/af)



# GROUNDWATER REPLENISHMENT SYSTEM CLOSED LOOP



## BENEFITS OF GWRS

- Creates a new local water supply
- Reuses a wasted resource
- Increases water supply reliability
- Costs less than water from the Colorado River and the State Water Project
- Uses one-half the energy it takes to import water and one-third the energy to desalinate seawater
- Improves quality of water in the basin





# PUBLIC ACCEPTANCE



- Many projects stopped by public and political opposition
- Outreach began early, over 10 years prior to start-up
- Researched public concerns
- Face to face presentations
- Community leaders
- Seek opposition
- Community support
- Outreach continues today, assisted by media interest
- No active opposition

# GWRS SUCCESS

- 50+ awards
- National & international media attention
- 35,000+ visitors



## FEATURED IN



# QUESTIONS?

John Kennedy

714-378-3304 - JKennedy@ocwd.com



@OCWaterDistrict



@OCWD



@OCWDWaterNews



GWRS AERIAL VIEW

