Orange County Water District
Groundwater Replenishment System (GWRS)

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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
FY 2022-23 OCWD TOTAL WATER DEMANDS AND SUPPLY SOURCES
Total 400,000 afy

- **Imported Water**, 104,000, 26%
- **SAR Baseflows**, 75,000, 19%
- **SAR Stormflows**, 52,000, 13%
- **Natural Incidental Recharge**, 56,000, 14%
- **GWRS**, 110,000, 27%
- **Misc**, 3,000, 1%

**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
## GWRS COST SUMMARY

<table>
<thead>
<tr>
<th>Project Phase</th>
<th>GWRS Daily Production (MGD)</th>
<th>GWRS Annual Production (AFY)</th>
<th>Capital Cost (millions)</th>
<th>Funding Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>GWRS (2008)</td>
<td>70</td>
<td>72,000</td>
<td>$481</td>
<td>$195 M OCWD State SRF &amp; COPs $195 M OCSD Reserves $71 M State Grants $20 M federal grant</td>
</tr>
<tr>
<td>GWRS Initial Expansion (2014)</td>
<td>30</td>
<td>31,000</td>
<td>$142</td>
<td>$141 M State SRF $1 M state grant</td>
</tr>
<tr>
<td>GWRS Final Expansion Estimate (2022)</td>
<td>30</td>
<td>31,000</td>
<td>$295</td>
<td>$133 M EPA WIFIA loan $10 M Grants $152 State SRF</td>
</tr>
</tbody>
</table>

130 mgd 134,000 afy $918

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

![Bar chart comparing GWRS, MWD Untreated, and MWD Treated water supply unit costs. GWRS has a cost of $704, MWD Untreated has a cost of $777, and MWD Treated has a cost of $1104.](chart.png)
The OCWD Groundwater Replenishment System (GWRS) is a closed loop system that reuses wastewater to increase water supply reliability and cost-effectiveness. It serves 2.5 million residents and uses one-half the energy to import water and one-third the energy to desalinate seawater. The GWRS improves the quality of water in the basin.

Benefits of GWRS include:

- 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
SEAWATER INTRUSION BARRIER

OCWD BASIN ACCUMULATED OVERDRAFT & BASIN MANAGEMENT ACTIONS

Recommended Operating Range

Basin Operating Range

AF

0

Jun-58
Jun-60
Jun-64
Jun-68
Jun-70
Jun-74
Jun-78
Jun-82
Jun-84
Jun-86
Jun-88
Jun-90
Jun-94
Jun-96
Jun-98
Jun-02
Jun-04
Jun-06
Jun-08
Jun-10
Jun-12
Jun-14
Jun-16
Jun-18
Jun-20
Jun-22

Drought

drought

drought

drought

drought

drought

drought