

Entry: 736

Final Expansion of the Groundwater Replenishment System

Page: NEAA Nomination Form
Category Community Leadership (greater than 250,000 pop.)
Admin Notes
NOMINATING AGENCY'S INFORMATION
Submitting Agency's Name Orange County Sanitation District
Service Area Population of Submitting Agency 2.6 million
State (Abbreviation) CA
Name of Individual Submitting this Application Kelly Newell
Title of Individual Submitting this Application Public Affairs Specialist
Signature of Individual Submitting Application (pdf/jpg/png)
Agency Logo - Hi-Res Picture (jpg/png) Download File (https://neaa.secure-platform.com/file/4294/eyJ0eXAiOiJKV1QiLCJhbGciOiJIUzI1NiJ9.eyJtZWRRpYUlkIjo0Mjk0LCJhbGxvd05vdFNpZ25lZFVybCI6IkhBNHlIiwiaWduWub3JIT3BlblOC%20San.JPG)
PROJECT / INDIVIDUAL NOMINEE'S INFORMATION
Name of Nominated Project / Program or Nominee (as it will appear on the NEAA award) Final Expansion of the Groundwater Replenishment System
Project / Program Summary In March 2023, the Groundwater Replenishment System (GWRS) completed its final expansion, achieving the goal of producing up to 130 million gallons of drinking water a day (MGD), enough water for nearly one million people in north and central Orange County. In a world increasingly impacted by water supply challenges, the Orange County Water District (OCWD) and the Orange County Sanitation District (OC San) have taken innovation to new heights by jointly creating the award-winning GWRS, a shining example of how public agencies can work together to solve local water issues. The GWRS provides a new, local, drought-resilient supply to the 2.5 million people in OC San's and OCWD's shared service area by recycling 100 percent of OC San's reclaimable wastewater flows for the first time – something unheard of with other wastewater recycling projects. The facility replenishes the local groundwater basin, protects it from seawater intrusion, and maximizes water reuse for the region.
Has this project / program ever been submitted for NEAA recognition in the past? No
SUPPORTING DOCUMENTATION

Narrative Description (pdf): Project / Program or Individual (attach pdf, limited to 4 pages, double-spaced, 12pt)

[Download File \(<https://neaa.secure-platform.com/file/4290/eyJ0eXAiOiJKV1QiLCJhbGciOiJIUzI1NiJ9.eyJtZWRpYUlkIjo0MjkwLCJhbGxvd05vdFNpZ25lZFVybyCI6IkZhbnHNIiwiaWdub3JlT3BlbProgram%20Narrative.pdf>\)](https://neaa.secure-platform.com/file/4290/eyJ0eXAiOiJKV1QiLCJhbGciOiJIUzI1NiJ9.eyJtZWRpYUlkIjo0MjkwLCJhbGxvd05vdFNpZ25lZFVybyCI6IkZhbnHNIiwiaWdub3JlT3BlbProgram%20Narrative.pdf)

Supplemental Information Included - i.e. images, video, add'l document (Optional)

Yes

Supporting Document (PDF, limited to 4 pages)

Download File (<https://neaa.secure-platform.com/file/4291/eyJ0eXAiOiJKV1QiLCJhbGciOiJIUzI1NiJ9.eyJtZWRRpYUlkIjo0MjksLCJhbGxvd05vdFNpZ25lZFVybCI6IkZhbnHNlIiwiaWduaWduWdub3JIT3BlbiSupporting%20Document.pdf>)

Supporting Document (PDF, limited to 4 pages)

No File Uploaded

Supporting Material - Video (provide link)

<https://www.youtube.com/watch?v=RfNF0ly32PM> (<https://www.youtube.com/watch?v=RfNF0ly32PM>)

Supporting Material - Image (jpg/png)

No File Uploaded

Member Spotlight Hi-Res Picture (pdf, jpg, or .png)

Download File (<https://neaa.secure-platform.com/file/4292/eyJ0eXAiOiJKV1QiLCJhbGciOiJIUzI1NiJ9.eyJtZWZpYUlkIjo0MjkyLCJhbGxvd05vdFNpZ25IZFVybCI6IkZhbHNIiwiiaWdub3JIT3BlblXPIrwi8lg9C-7rBAA?GWRS%20%281%29.jpg>)

Member Spotlight Hi-Res Picture (.pdf, .jpg, or .png)

Download File (https://neaa.secure-platform.com/file/4293/eyJ0eXAiOiJKV1QiLCJhbGciOiJIUzI1NiJ9.eyJtZWRRpYUlkIjo0MjkzLCJhbGxvd05vdFNpZ25IZFVybCI6IkJhbHNlIiwiaWduWdub3JlIT3BblklGWRS_FE_Header%20-%20Copy.png)

Project Poster (pdf or image) / Website link (indicate at least one)

Project Website

APPLICATION AUTHORIZATION

Please contact btrombino@nacwa.org (<mailto:btrombino@nacwa.org?subject=Who%20is%20Our%20NACWA%20Primary%20Contact%20for%20NEAA%3F>), if you do not know the name of your NACWA Representative (SUBJECT: Who is Our NACWA Primary Contact for NEAA?)

Name of Submitting Agency's NACWA Representative

Lan Wiborg

Title of Submitting Agency's NACWA Representative

Director of Environmental Services

Signature of Submitting Agency's NACWA Representative (pdf/jpg/png)

Download File (<https://neaa.secure->

Does this Project/Program involve another NACWA Agency?

No

Does this Project/Program involve an Additional NACWA Agency?

No

2023 NACWA-NEAA COMMUNITY LEADERSHIP AWARD



Final Expansion of the Groundwater Replenishment System



Program/Project Narrative

The Groundwater Replenishment System (GWRS), the world's largest indirect potable reuse facility, is a joint project of the Orange County Sanitation District (OC San) and the Orange County Water District (OCWD). Since its inception in 2008, it has produced more than 400 billion gallons of water and counting.

Earlier this year, a final expansion of GWRS was completed adding 30 million gallons per day (MGD) to the system's capacity, upping its total to 130 MGD or enough water for 1 million people. The project also enabled 100 percent of OC San's reclaimable wastewater flows to be recycled for the first time – unheard of with other wastewater recycling projects.

The road to 130 MGD and 100 percent recycling capacity was challenging, but OC San and OCWD delivered a cost-effective solution applying sound science, research, engineering and testing to not only produce more water for reuse but also optimize the efficiency and energy use of the system.

The goal of the GWRS Final Expansion was three-fold. 1) Increase capacity for groundwater replenishment, 2) capture and reuse all remaining reclaimable water being sent to the ocean, and 3) reduce operating costs through the use of newer enhanced technologies and by improving the existing system's performance.

To increase the system's capacity, an additional supply of treated wastewater was needed. The source: OC San's Treatment Plant No. 2, located approximately 3.5 miles from the GWRS. It required new conveyance facilities, more infrastructure, and a vision to reimagine GWRS' existing design to accept and treat more water, which arrives at the plant at a much different quality.

By producing more water, the GWRS provides a drought-resilient supply, benefiting not only the Orange County region, but all of California by not importing as much water from northern California or the Colorado River. GWRS water is pumped to recharge basins where it naturally percolates into the Orange County Groundwater Basin, managed by OCWD, and becomes part of the drinking water supply for 2.5 million people in north and central Orange County. GWRS water is also sent to injection wells located along Orange County's coast to create a seawater intrusion barrier that protects groundwater supplies.

The GWRS is the result of a collaborative effort between OCWD and OC San. Both sought solutions to issues they faced. In the mid-1990s, OCWD needed to expand the existing wastewater recycling facility, Water Factory 21, to address continued challenges with seawater intrusion. At the same time, OC San faced the challenge of having to build a second ocean outfall. The GWRS resolved both these issues. Through this collaboration, the GWRS emerged as one of the most celebrated civil engineering and water reuse projects in the world.

The GWRS is a flagship project in the water sector and has garnered global attention for its innovative reuse of a previously wasted resource, becoming one of the most studied civil engineering and water recycling projects in the world. Through the constant collaboration of OCWD and OC San, the system has helped communities worldwide overcome the technical and public challenges associated with water reuse while bringing water reliability and resilience to Orange County residents and businesses.

These agencies continue to be at the forefront of innovation, and remain committed to sharing their expertise, lessons learned and best practices with others. Organizations from around the world have studied GWRS to augment water supplies via indirect potable reuse, maximize energy efficiency, and optimize process control.

The project also qualifies to reduce the conservation standard imposed by the California State Board during a drought. This benefits OCWD's 19 water retailers by providing a one tier reduction to the conservation standard for urban water suppliers. It also allows increased groundwater pumping for providers at almost half the cost of importing water. Less imported water from the Colorado River and the State Water Project is required for Orange County, and the GWRS also uses half the energy required to move imported water and one-third the energy required to desalinate seawater.

Understanding that public support of the GWRS was paramount to the success of the project, community outreach was – and continues to be – a top priority for our agencies. When the conception of the facility first began in the 1990s, leadership understood the challenges of public perception and the importance of overcoming the term “Toilet to Tap.” With that in mind, OCWD and OC San launched a comprehensive community outreach plan that resulted in construction and commissioning of the GWRS with no active public opposition.

Outreach began early, more than 10 years prior to startup of the GWRS. The efforts began with significant research to understand the public's concerns about water reuse and creation of an independent advisory panel, community presentations, a support letter campaign, tours of the plant from construction through today's operations, development and distribution of educational collateral pieces and a heavy emphasis on media outreach. The

results have been overwhelmingly successful. From the beginning, the GWRS has received 100 percent support from cities in our service area, from Orange County local, state, and federal elected officials, from Orange County Chambers of Commerce and the Orange County Business Council, many major businesses, all major environmental groups, and medical and public health professionals.

Results

With the Final Expansion project operational, OC San and OCWD have realized their goal of reusing all reclaimable flow from OC San's two treatment plants and fortifying the GWRS as a dependable water supply resource.

The GWRS:

- Provides a reliable supply of high-quality water, even during drought
- Reduces the need for imported water from northern California and the Colorado River
- Offers a more cost-effective and energy-efficient strategy than importing water from distant sources
- Improves water quality of the Orange County Groundwater Basin
- Creates a hydraulic barrier that prevents seawater intrusion into drinking water wells
- Replenishes groundwater supplies
- Reduces the volume of treated wastewater discharged into the ocean and puts it to beneficial use

Since the GWRS facility began taking water from OC San's Plant No. 2 in December 2022, the GWRS has produced approximately 25 billion gallons.

Program/Project Supporting Material Guidelines:

<https://youtu.be/RfNF0ly32PM>

[The OCWD/OC San partnership - Orange County Water District](#)

[OC San CIP Annual Report](#) – page 5

[GWRS Annual Report](#)

[Photos](#)

Member Spotlight

The Groundwater Replenishment System (GWRS) is the world's largest advanced water purification system for potable reuse. It was established in 2008 by the Orange County Water District (OCWD) and the Orange County Sanitation District (OC San). Since its inception, it has produced over 400 billion gallons of water and counting.

The GWRS Final Expansion project, completed in December 2022, added 30 million gallons per day (MGD) to the system's capacity, bringing the total to 130 MGD - enough water for 1 million people. This expansion achieved an unprecedented milestone of recycling 100 percent of OC San's reclaimable wastewater flows, a feat unmatched by other wastewater recycling initiatives.

The GWRS Final Expansion project had three goals: 1) Increase capacity for groundwater replenishment, 2) capture and reuse all remaining reclaimable water being sent to the ocean, and 3) reduce operating costs through the use of newer enhanced technologies and by improving the existing system's performance.

To achieve the ambitious goals of the GWRS Final Expansion project, an additional supply of treated wastewater was needed. The source was none other than OC San's Treatment Plant No. 2, located approximately 3.5 miles from the GWRS. It required new conveyance facilities, more infrastructure, and a vision to reimagine GWRS' existing design to accept and treat more water, which arrives at the plant at a much different quality.

The key to this successful project is the partnership between OCWD and OC San. These two entities, each grappling with unique challenges, joined forces in the mid-1990s. OCWD needed to expand Water Factory 21 to address continued challenges with seawater intrusion and OC San faced the challenge of having to build a second ocean outfall. The GWRS resolved both these issues. Through this remarkable partnership, the GWRS emerged as one of the most celebrated civil engineering and water reuse projects in the world.

Beyond its regional significance, the GWRS provides a drought-resilient supply, benefitting not only the Orange County region but all of California by not importing as much water from northern California or the Colorado River.

The GWRS is a flagship project in the water sector and has garnered global attention for its innovative reuse of a previously wasted resource. The GWRS' success has grown public trust in the potential and benefits of advanced water purification technologies and inspired advanced potable water reuse projects nationally and globally.