



## Why is **Pure Water San Diego** Being Implemented?

*San Diego relies on importing 85% of its water supply from the Colorado River and Northern California Bay Delta. The cost of this imported water has tripled in the last 15 years and continues to rise. With limited local control over its water supply, the City of San Diego is more vulnerable to droughts, climate change and natural disasters.*

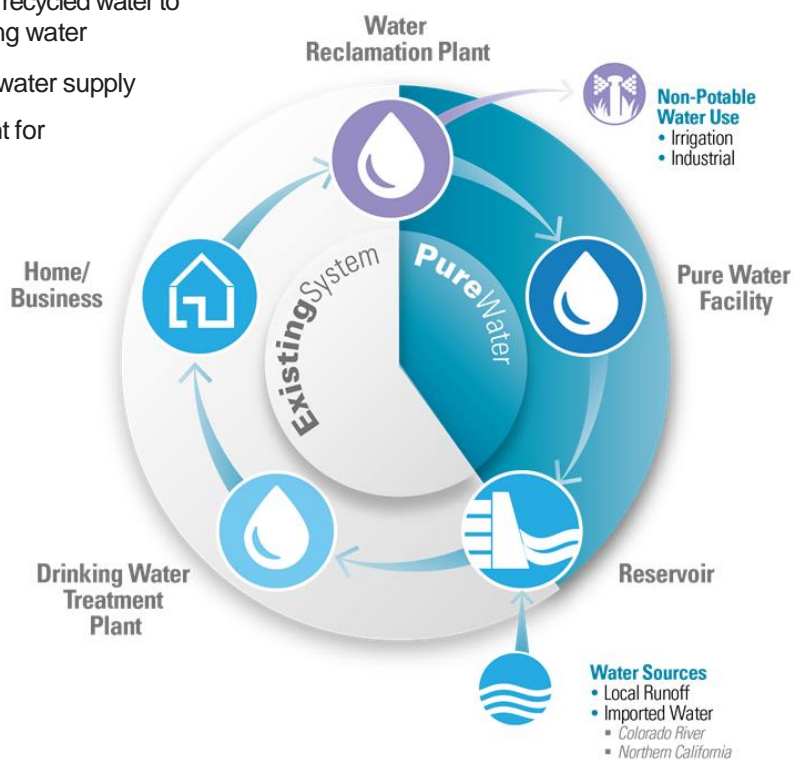
## What is **Pure Water San Diego**?

Pure Water San Diego is a phased, multi-year program that will provide 1/3 of San Diego's water supply locally by 2035. The Pure Water Program:

- Uses proven technology to clean recycled water to produce *safe, high-quality* drinking water
- Provides a *reliable, sustainable* water supply
- Offers a *cost-effective* investment for San Diego's water needs

## How Does the **Pure Water Program** Work?

With San Diego's existing water system, only 8% of the wastewater leaving homes and businesses is recycled; the rest is treated and discharged into the ocean. The Pure Water Program transforms the City's water system into a complete water cycle that maximizes our use of the world's most precious resource—water.



# Where is the Pure Water Program?

The Pure Water facilities will be located throughout the City of San Diego and are grouped into three geographical areas to facilitate implementation: North City, Central Area and South Bay (shown on map).

Construction on the Phase 1 North City projects will start in 2019.

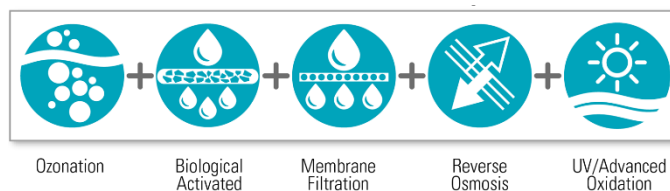


**When** will the **New Facilities** be Built?

Phase	1	30 mgd by 2023	North City
		Output	Location
Phases	2&3	Additional 53 mgd by 2035	Central Area South Bay (as needed)
		Total 83 mgd	

\*mgd = million gallons per day

**What** are the **Steps** of the **Water Purification Process?**



Since June 2011, the City has produced 1 million gallons of purified water every day at its Pure Water Demonstration Facility.

More than 50,000 water quality tests have confirmed the water is safe and meets all federal and state drinking water standards.

Local **residents**, community **groups**, environmental **organizations** and local **businesses** support the **Pure Water Program**.

Do you **support Pure Water**? Like us, follow us:



@PureWaterSD

**Want to Know More?**

Visit [www.PureWaterSD.org](http://www.PureWaterSD.org) to sign up for a free tour of the Pure Water Facility or request a presentation for your organization.



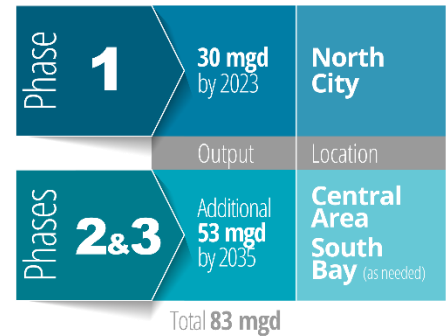


Completing our Water Cycle, Securing our Future

## What is Pure Water San Diego?

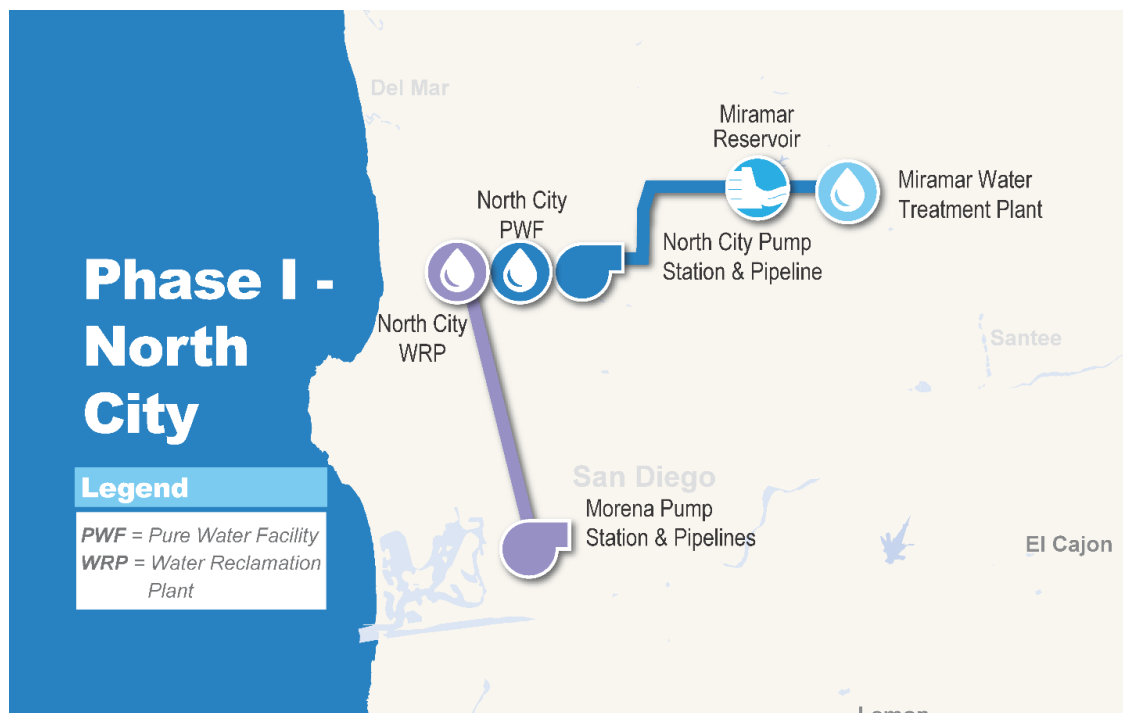
Pure Water San Diego is the City of San Diego's (City) program that will provide one-third of San Diego's water supply locally by 2035. The Pure Water Program will include a system of treatment facilities, pump stations and pipelines that will be constructed in multiple phases and will:

- Use proven technology to clean recycled water to produce safe, high-quality water
- Provide a reliable, sustainable, water supply; and
- Offer a cost-effective investment for San Diego's water needs.



## What does Phase 1 Include?

Phase 1 - North City is comprised of several projects that will deliver 30 million gallons per day (mgd) of purified water to Miramar Reservoir. The purified water will blend with the City's imported and local water sources and be treated again at the Miramar Drinking Water Treatment Plant and distributed to the public. The projects include the Morena Pump Station and Pipelines, the North City Water Reclamation Plant Expansion, the North City Pure Water Facility, and the North City Pure Water Pump Station and Pipeline. A detailed map of the project locations can be viewed online at [phase1.purewatersd.org](http://phase1.purewatersd.org).



## Morena Pump Station and Pipelines

This project will transport approximately 32 mgd of wastewater to the North City Water Reclamation Plant (NCWRP), where it will be treated before being sent to the new North City Pure Water Facility (NCPWF) for further purification. Construction will include a new pump station on Sherman Street and two parallel 10.7-mile-long wastewater pipelines. One wastewater pipeline will transport wastewater to the NCWRP, while the other will transport salt and contaminants removed during the water purification process at the NCPWF to the Point Loma Wastewater Treatment Plant. The wastewater pipelines will start at Sherman Street, follow West Morena Boulevard to Clairemont Drive, continue to Genesee Avenue and go through University City to the NCWRP on Eastgate Mall. This project will also include the construction of two approximately 3.5-mile water pipelines, a 16-inch water distribution pipeline and a 36-inch water transmission pipeline, which will run parallel to the wastewater pipelines along West Morena Boulevard and Morena Boulevard.

**Construction Start: 2019/2020**

## North City Water Reclamation Plant Expansion

This project will increase the amount of recycled water the NCWRP produces to meet the needs of both the recycled water system and the new NCPWF. The NCWRP is located on Eastgate Mall and treats wastewater to recycled water standards for irrigation and industrial uses. The plant capacity would increase from 30 mgd to 52 mgd. A new pump station located at the NCWRP will convey up to 42 mgd of recycled water to the new NCPWF across the street for further purification.

**Construction Start: 2019**

## North City Pure Water Facility

A new Pure Water Facility will be built on Eastgate Mall across the street from the existing NCWRP to clean the recycled water further to produce 30 mgd of safe, high-quality water that meets all state and federal drinking water standards. The facility will use the proven five-step water purification process of ozonation, biological activated carbon filters, membrane filtration, reverse osmosis and ultraviolet disinfection with advanced oxidation.

**Construction Start: 2019**

## North City Pure Water Pump Station and Pipeline

This project will transport purified water produced at the NCPWF to Miramar Reservoir. A new pump station will be constructed next to the NCPWF on Eastgate Mall along with an 8.4-mile pipeline that will convey approximately 30 mgd of purified water to Miramar Reservoir. The pipeline will start on Eastgate Mall, follow Miramar Road, and continue through Scripps Ranch and end in the Miramar Reservoir.

**Construction Start: 2019**

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Do you **support Pure Water**? Like us, follow us:



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## Want to Know More?

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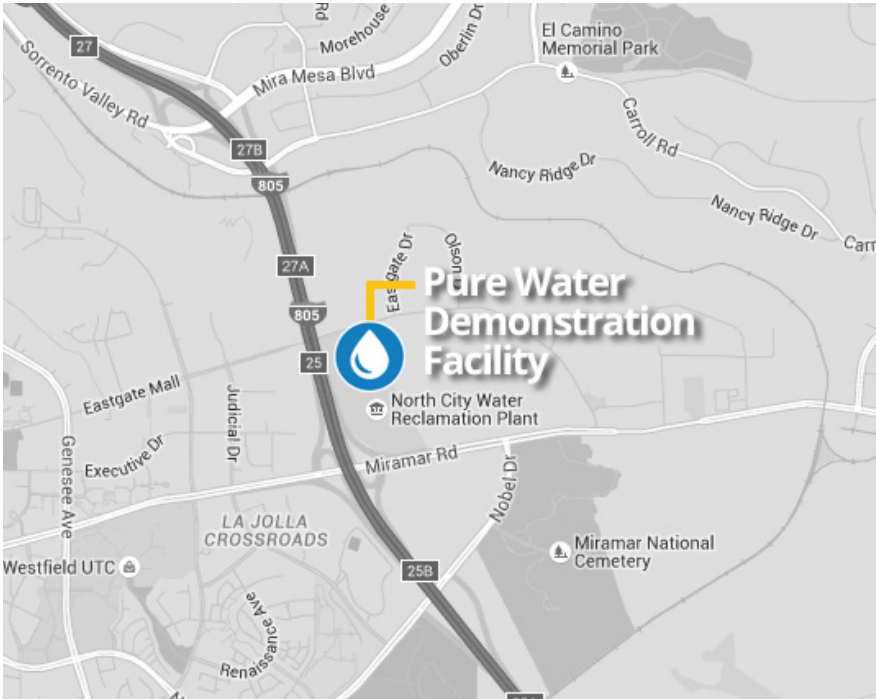






*Construction on the North City Pure Water Facility (NCPWF) will be completed in 2023. The NCPWF will produce 30 million gallons of purified water per day. Learn more about the Pure Water San Diego Program at [www.purewatersd.org](http://www.purewatersd.org).*

*Request a presentation about Pure Water San Diego for your group or organization at [presentations.purewatersd.org](http://presentations.purewatersd.org) or call (619) 533-7572.*



Tasting is **Believing**

You are invited to tour the Pure Water Demonstration Facility. During the walking tour, you will see and learn about each step of the water purification process up close and have the opportunity to taste the purified water produced at the facility.

The Pure Water Demonstration Facility is located at the North City Water Reclamation Plant at 4949 Eastgate Mall, San Diego, CA 92121. Register for a public tour at [www.purewatersd.org/tours](http://www.purewatersd.org/tours) or call (619) 533-7572.

Want to **know more?**

Visit [www.purewatersd.org](http://www.purewatersd.org) and sign up for a free tour of the Pure Water Demonstration Facility!



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**Pure Water  
San Diego**

The City of  
**SAN DIEGO**



**A look at the technology behind**

**SD Pure Water  
San Diego**

*A safe, reliable and sustainable  
drinking water supply for San Diego*



# Innovation for San Diego's Water Future

*Pure Water San Diego is the City's phased, multi-year program that uses proven water purification technology to clean recycled water to produce safe, reliable, high-quality water. Pure Water will provide 1/3 of San Diego's water supply locally by 2035.*

## The Purification Process

*The Pure Water Demonstration Facility began operating in June 2011 and purifies one million gallons of recycled water every day. Water quality tests have confirmed the purified water produced meets all federal and state drinking water standards. The facility's water purification process uses a multi-barrier approach of consecutive treatment steps which work together to remove or destroy contaminants. Each barrier includes frequent and continuous water quality monitoring, and safeguards are built into the process to ensure public health protection. Here is a look at the process, which starts with recycled water that is clean enough to be used for irrigation and industrial purposes:*

## The Process

Barrier 1  
**Ozonation**



Ozone is a gas produced by subjecting oxygen molecules to high electrical voltage. The ozone gas is infused into the water and the water travels through a long series of pipes, called the ozone contactor. The ozone destroys microorganisms and reacts with and breaks down contaminants in the water. Prior to the next step, the ozone is consumed and breaks down into oxygen.

Barrier 2  
**Biological  
Activated Carbon  
Filters**



Biological activated carbon (BAC) filters are filled with carbon granules covered in "aerobic" bacteria, which thrive in the presence of oxygen. The bacteria on the granules consume 30-50% of the organic matter (anything that is or was living). The "helpful" bacteria, along with any other bacteria still in the water, are removed in the next treatment step.

Barrier 3  
**Membrane  
Filtration**



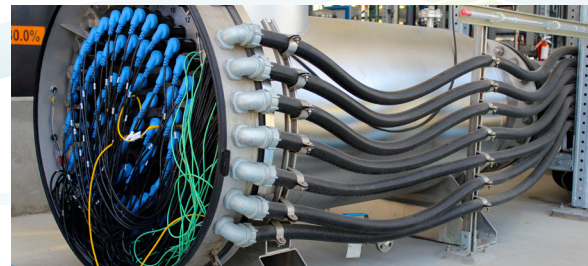
Membrane filtration uses canisters filled with straw-shaped hollow fibers that provide 99.99% removal of microscopic particles including suspended solids, bacteria and protozoa. The filters are tested daily to confirm their consistent removal of contaminants. The pores in the fibers are smaller than 1/300 the diameter of a human hair.

Barrier 4  
**Reverse Osmosis**



Reverse osmosis uses high pressure to force water through spirally wound membranes that remove most salts and minerals, and 99% of dissolved organics, including pharmaceuticals and personal care products. This process is used by the bottled water industry.

Barrier 5  
**Ultraviolet  
Disinfection/  
Advanced  
Oxidation**



Inside a reactor are 72 ultraviolet lights that break down the DNA of any microbes or viruses. At the same time, advanced oxidation generates powerful reactive molecules that oxidize and destroy any trace contaminants that may remain in the water.

*San Diego is among many innovative agencies implementing water purification technology to provide a safe, reliable and sustainable drinking water supply.*



# 2018



## Year in Review Report

The City of San Diego's Pure Water Program has made great strides in facility and pipeline design, equipment testing and building community awareness over the last several years. This report provides a snapshot of Pure Water's accomplishments and activities that took place in 2018.

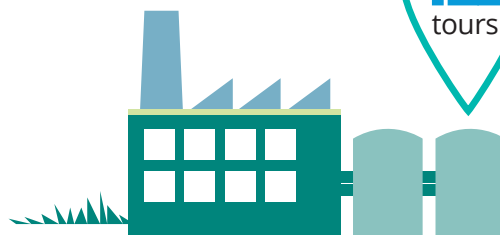
# Pure Water San Diego

## 2018 Public Outreach Program Highlights

More than **2,100** people toured the Pure Water Facility.



**122**  
tours

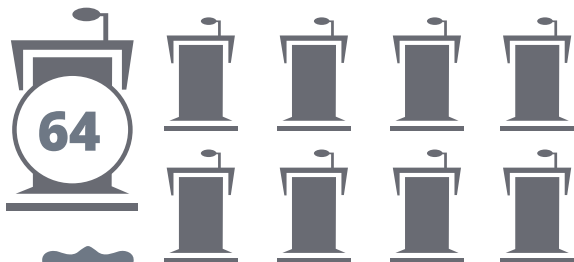


Presentations to over  
**1,600**  
community members

**38**  
Community  
Events



**214%**  
Growth in  
Instagram Followers



**28**  
Stakeholder  
Interviews



More than  
**680**  
Support Pledges  
from San Diegans



More than  
**2,600**  
youth engaged through tours,  
events and presentations





# Milestones

## April 2018

City Council unanimously approves Environmental Impact Report for Phase 1 projects and contracts for Construction Management consultants.

## May 2018

Pure Water Program partners with Ryan Bros Coffee to host a Bike to Work Day Pit Stop and brew coffee with the purified water from the Pure Water Demonstration Facility.

## June 2018

The City's Public Utilities Department forms four community working groups within the Phase 1 project areas and holds the first of 16 meetings in 2018 to obtain feedback on how to avoid or minimize construction impacts.

## August 2018

Draft Title 22 Engineering Report for the Phase 1 projects is submitted to the Division of Drinking Water and three public hearings are held to provide the public with information about the purified water that will supplement water supplies.

## November 2018

City Council authorizes Mayor Kevin L. Faulconer to execute construction contracts to lowest responsible and reliable bidders for Phase 1 projects.

Pure Water Program receives \$614 million in low-interest loans from the U.S. Environmental Protection Agency's Water Infrastructure Finance and Innovation Act (WIFIA) program.

## December 2018

Design of key Phase 1 projects reach 100 percent completion.











## Bike to Work Day

In May 2018, the Pure Water Program partnered with Ryan Bros Coffee to brew coffee using purified water from the Pure Water Demonstration Facility. The limited-edition coffee was served to bikers during San Diego's Bike to Work Day at Ryan Bros Coffee's flagship store in Barrio Logan. The Pure Water Bike to Work Day pit stop marked the first time a coffee roaster brewed coffee with advanced treated recycled water.

The pit stop was located outside Ryan Bros' flagship store and attracted more than 60 bikers. Riders enjoyed samples of the purified water, giveaways, participated in media interviews and took photos with the Pure Water selfie frame. KUSI News and Fox 5 San Diego covered the partnership during their morning shows.







# Phase 1 Project Outreach

The Pure Water team continued outreach activities to businesses and residents in the communities that will be impacted by construction of the Phase 1 projects.

## Tours for Phase 1 Community Members

More than 200 people visited the North City Water Reclamation Plant on April 7, 2018, to learn more about the future Pure Water facilities and pipelines. Community members had the opportunity to speak directly with City engineers about the upcoming Phase 1 projects that will begin construction in 2019. In addition, City staff guided 11 Pure Water Demonstration Facility tours.

## Phase 1 Working Groups

The Public Utilities Department created project area Working Groups whose members provided informed input and feedback regarding opportunities to avoid, minimize or reduce potential construction impacts. Four Working Groups were convened based on the Phase 1 construction areas: 1) Bay Park/Morena, 2) Clairemont, 3) University City and 4) Scripps Ranch/Miramar. Each Working Group met four times in 2018. In addition to discussions about the operational safety of the Phase 1 pipelines, City staff and consultants presented and asked for feedback on 11 construction topics.

More than 100 recommendations were made by the groups, and a matrix of the recommendations and the City's responses was prepared and distributed for discussion in the fourth meeting of each group. Of these recommendations, 69 percent were adopted or will inform the Construction Outreach Plan and 23 percent are under evaluation. Eight percent were not adopted based on a variety of reasons, including but not limited to, recommendations being outside of the scope of the project, inability to adjust the type or noise level of equipment that is required to complete construction, safety issues created if recommendations were adopted, requirements of the Municipal Code for noise permits, and the need to prioritize construction of the Pure Water Phase 1 projects to ensure all are completed in time for commissioning. The groups will hold additional meetings in 2019. The Pure Water team will keep Working Groups members engaged and informed throughout construction.







## Facility Tours

The Pure Water Demonstration Facility tours remain the centerpiece of the Pure Water Program's outreach efforts by educating the public about the safety and reliability of water purification technology. Tour attendees receive an introductory presentation followed by a walking tour of the facility and an opportunity to taste the purified water. This year, the Pure Water team:

- Welcomed our **16,000<sup>th</sup>** tour participant
- Guided **122** tours for more than **2,100** people
- Hosted international delegates, class field trips, Girl Scout troops, local community groups and water industry professionals

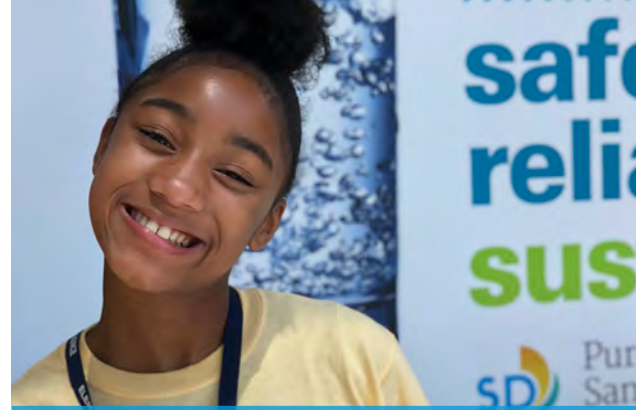




# Engaging Youth and Multicultural Communities

The next generation of San Diegans will be the main beneficiaries of the Pure Water Program, which is why the City continues to place emphasis on engaging youth. Throughout the past year, 2,695 San Diego youth were engaged through tours, events and presentations. In November 2018, the City partnered with Carollo Engineers and the Fleet Science Center Better Education for Women in Sciences and Engineering (BE WiSE) Program to hold a workshop for aspiring female scientists and engineers. More than 30 middle and high school students attended the workshop and toured the Pure Water Demonstration Facility and North City Water Reclamation Plant. Female engineers from the City and Carollo Engineers discussed their careers in water and answered questions from workshop attendees.

Over 670 multicultural community members were engaged at seven events in their communities. Additionally, 17 in-person presentations were made at meetings of community councils, community planning groups and organizations in multicultural communities.







# Online Engagement

The number of Instagram followers increased by 169 percent and Instagram engagement increased by 214 percent.

More than 21,000 people visited [www.purewatersd.org](http://www.purewatersd.org) to obtain program information and sign up for tours and presentations.

Four editions of the Pure News newsletter and two e-updates were all sent to more than 8,300 program stakeholders throughout the year.

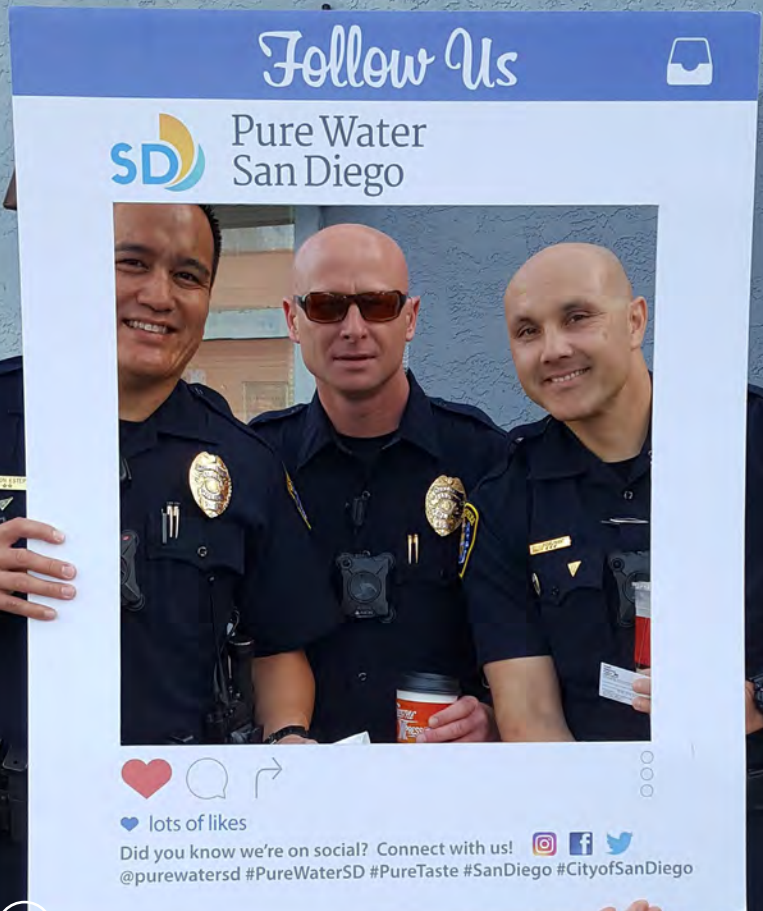
There were 89 media articles, television broadcasts, blogs or newsletters featured Pure Water in national, local and online media.

Media highlights included Water Online and News Deeply highlighting Pure Water San Diego while discussing the progress of potable reuse in California. KUSI featured the Pure Water collaboration with local coffee chain, Ryan Bros Coffee, during Bike to Work Day.



NO WATER, NO BEER.

#ValueWater





# Recognition and Industry Presence

## Awards

The Pure Water Program won five awards for its comprehensive public outreach and education efforts, including the Award of Excellence from the Public Relations Society of America – San Diego/Imperial Counties for the Bike to Work Day partnership with Ryan Bros Coffee.

## Conferences

Presentations about the program were given at eight conferences focusing on the challenges of managing implementation of a potable reuse program and the program's successful outreach efforts. Presentations were given at conferences hosted by organizations including WaterReuse, American Water Works Association, Association of Clean Water Agencies and American Planning Association California. Having a presence at such conferences solidifies San Diego's reputation as an industry leader.







# Pure Water San Diego

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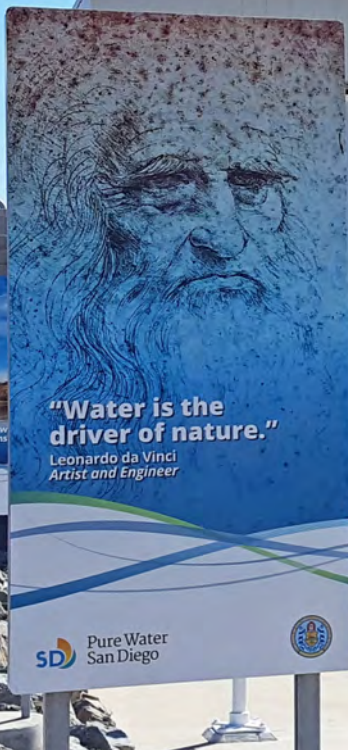


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Pure Water  
San Diego



safe, reliable, sustainable

Goal:

producing  
**1/3** of our  
water supply