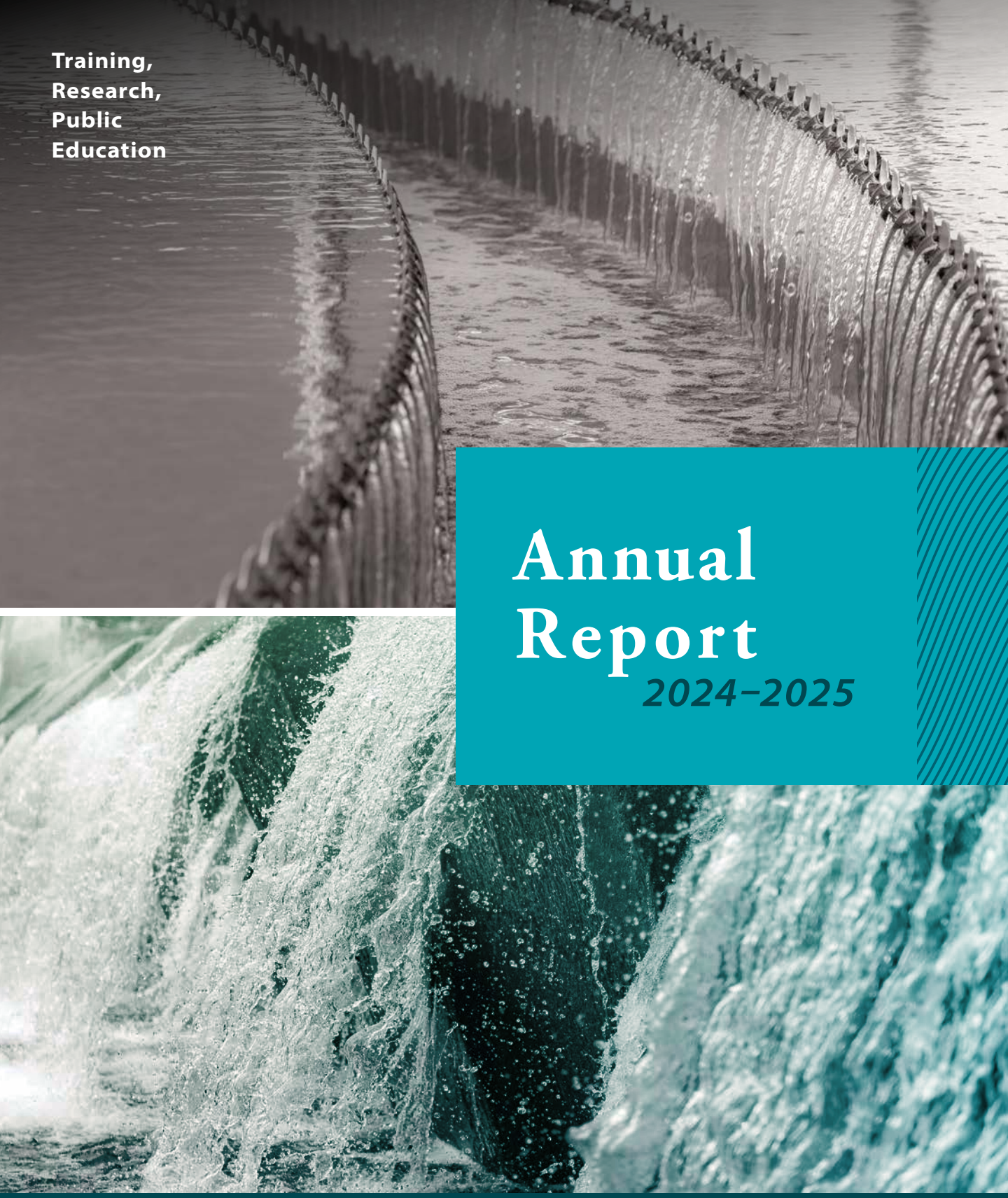


Training,
Research,
Public
Education

Annual Report

2024–2025

WATER PROGRAMS
Sacramento State

Contents

From My Desk:
Akram Botrous

As I reflect on the past year, I am proud of the enduring strengths of the Office of Water Programs (OWP): our client-focused approach and our commitment to innovation. These qualities have enabled us to deliver practical, solution-oriented research and provide timely, forward-looking guidance that addresses both current needs and emerging challenges—particularly within the evolving landscape of water regulations. We also apply these strengths to our ongoing efforts to improve the water operator training program in response to student feedback and changes in water sector technology and best practices.

From training water and wastewater operators, to supporting disadvantaged communities with securing access to safe drinking water and developing digital tools for water professionals, our team has consistently delivered exceptional service to the communities we serve.

This 2024–2025 Annual Report outlines key activities and accomplishments from the past year. Selected highlights include:

- Publication of the second editions of the training manuals *Membrane Bioreactors* and *Manage for Success*
- Sampling of 1,598 drinking water wells for PFAS, serving 490 public water systems
- Updates to the Caltrans Stormwater Hydrologic Utility v.4 and the Post Storm Technical Memorandum (PSTM) Utility v.2 web applications

These achievements would not have been possible without the dedication of our staff and the invaluable support of our community partners. Their expertise and commitment continue to drive our success. A testament to this excellence is the recognition of our own Brian Currier, who received the Geoff Brosseau Leadership Award—California Stormwater Quality Association's (CASQA's) highest and most prestigious honor—for his outstanding leadership and contributions to the stormwater profession.

We are also pleased to provide pre-professional experiences to undergraduate and graduate students through part-time employment and internships. As students contribute tens of thousands of hours each year to OWP projects, they gain skills and build bridges between academic excellence and real-world applications and innovations. We recognize the creativity and energy these students bring to our work and appreciate the flow of ideas and personal connections they help create between OWP and the rest of the campus community.

As we look ahead, we remain focused on expanding our impact, strengthening collaboration, and advancing sustainable solutions that benefit communities and protect our shared water resources.

Sincerely,

Akram Botrous

Akram Botrous, PhD, PE, BCEE
Executive Director, OWP

About Us

OWP publishes the industry standard in drinking water and wastewater training materials and provides valuable, science-based applied research services for water management in California and elsewhere.

Our team of over 60 professionals, trained in a variety of academic disciplines, collaborates to produce high-caliber work that furthers OWP's mission and values. The next three pages highlight the local, national, and international universities, colleges, and degree programs from which OWP staff made their start.

California State University, Sacramento
MS, Civil Engineering (4)
MS, Civil & Environmental Engineering
MS, Computer Science (5)
MS, Geology
MA, English Literature (2)
MBA, Management
BA, Mathematics
BA, English (2)
BS, Business Administration
BS, Civil Engineering (2)
BS, Geology
BS, Computer Science (2)
BS, Mechanical Engineering
BS, Graphic Design (2)
Instructional Design for eLearning Certificate

University of California, Davis
PhD, Civil & Environmental Engineering
PhD, Agricultural & Resource Economics
MS, Civil & Environmental Engineering
MS, Hydrologic Sciences
BA, Music
BS, Civil Engineering
BS, Civil & Environmental Engineering (2)
BS, Environmental Biology and Management
BS, Geology

University of California, Berkeley
PhD, Civil & Environmental Engineering
MS, Civil & Environmental Engineering
Professional Technical Editing Certificate

University of California, Santa Cruz
BA, Biology

Stanford University
MS, Environmental Engineering (2)
MS, Civil & Environmental Engineering
MA, Music History
BA, Human Biology
BS, Civil Engineering (2)

California State Polytechnic University, Humboldt
BA, Economics

California Polytechnic State University, San Luis Obispo
BS, Environmental Management & Protection

California State Polytechnic University, Pomona
BS, Civil Engineering (Environmental Focus)

California State University, Fresno
BA, Mass Communication & Journalism

California State University, Northridge
BA, English (Writing)

California State University, East Bay
Single Subject Credential English

Mills College
MFA, English & Creative Writing

Washington State University
MS, Geology

Utah State University
PhD, Environmental Engineering
MS, Mathematics
MS, Environmental Engineering

University of Wisconsin, Madison
BS, Civil & Environmental Engineering

Skidmore College, Saratoga Springs
BA, Government

University of Oregon
BS, Journalism

Oregon State University
MS, Civil & Environmental Engineering

University of Arizona
MS, Chemical Engineering

University of North Texas, Denton
MPA, Public Administration

Indiana University, Bloomington
PhD, Public Affairs

University of Georgia
PhD, Water Resources & Remote Sensing

Tufts University
BS, Chemical Engineering

University of Nebraska, Lincoln
PhD, English
PhD, Environmental Engineering

Southern New Hampshire University
BA, Graphic Design & Media Arts (Web Design)

University of Maine
MS, Agriculture & Resource Economics

Capella University,
BS, Physiology

Iowa State University,
BS, Elementary Education

Zhytomyr State Technological University
MS, Computer Engineering

American University of Beirut
BS, Geology

University of Baghdad
BS, Civil Engineering (Structures Division)

Queen Mary University of London
PhD, Water Quality Management

Imperial College London
MS, Engineering Hydrology

University of Leeds
MS, Engineering Geology

University of Surrey
BS, Chemical Engineering

Punjab Technical University, Mohali, India
BT, Computer Science

CVR College of Engineering,
BT, Information Technology

Medicaps University,
MCA

Indian Institute of Information Technology,
BT, Computer Science and Engineering

Jawaharlal Nehru Technological University,
BT, Information Technology

Cairo University,
BS, Civil Engineering

IHE, Delft,
MS, Sanitary Engineering

Higher School of Economics,
MS, Finance

Saint Petersburg State University of Economics,
BS, Economics

Professionals from around the globe.

Student Assistants

OWP has hired more than 70 student assistants since 2021. After graduation, a number have moved into full-time positions at OWP while others have attained positions with other high-profile companies in the Sacramento area and beyond.

2024–2025 Student Assistant Majors

Business Administration, Management Information Systems (1)

Civil Engineering (3)

Computer Science (11)

English (1)

Graphic Design (1)

Health Science (2)

Student assistants worked a combined total of

16,633 hrs

Student Assistants Employed in 2024–2025

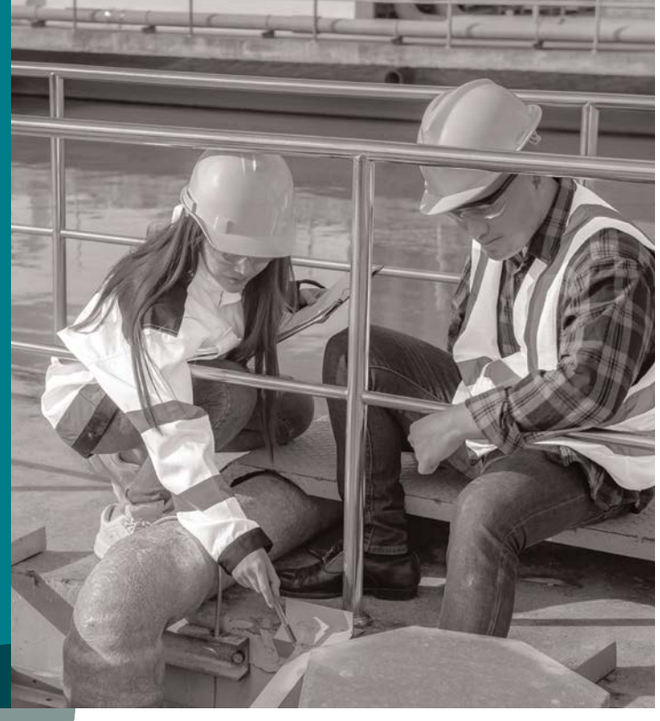
Computer Science student assistants, left to right: Kushagra Verma, Danny Phan, Alekya Paladugu, and Vikas Mishra. Far right: Ayush Shukla (Web Developer)

Student assistants help bring new perspectives and fresh ideas to OWP.

Training Services

2024–2025 Highlights

Offering over 50 print, online, and video courses for water and wastewater sector professionals, OWP delivers affordable training materials that help operators, managers, and inspectors elevate their job performance.



New Editions This Year

As part of our ongoing efforts to update and improve our training materials, we released two new editions of training manuals this year. *Membrane Bioreactors*, 2nd edition, offers the training wastewater treatment system operators need to operate and maintain municipal membrane bioreactor facilities safely and effectively. *Manage for Success*, 2nd edition, presents the knowledge and skills needed to sustainably lead drinking water and wastewater utilities into the future with a focus on stewardship of utility and community resources.

Manual orders

26,146

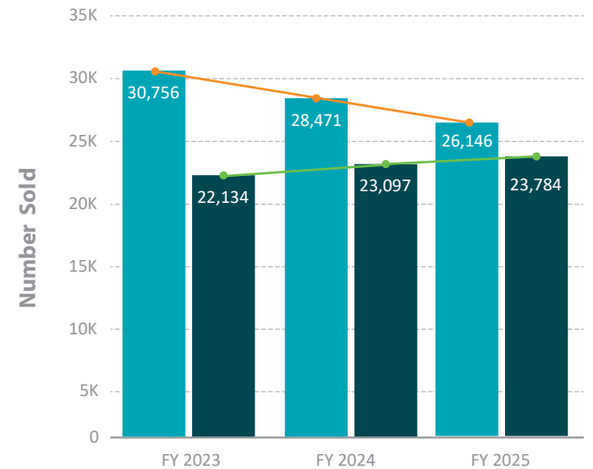
Adult learners

14,321

Course enrollments

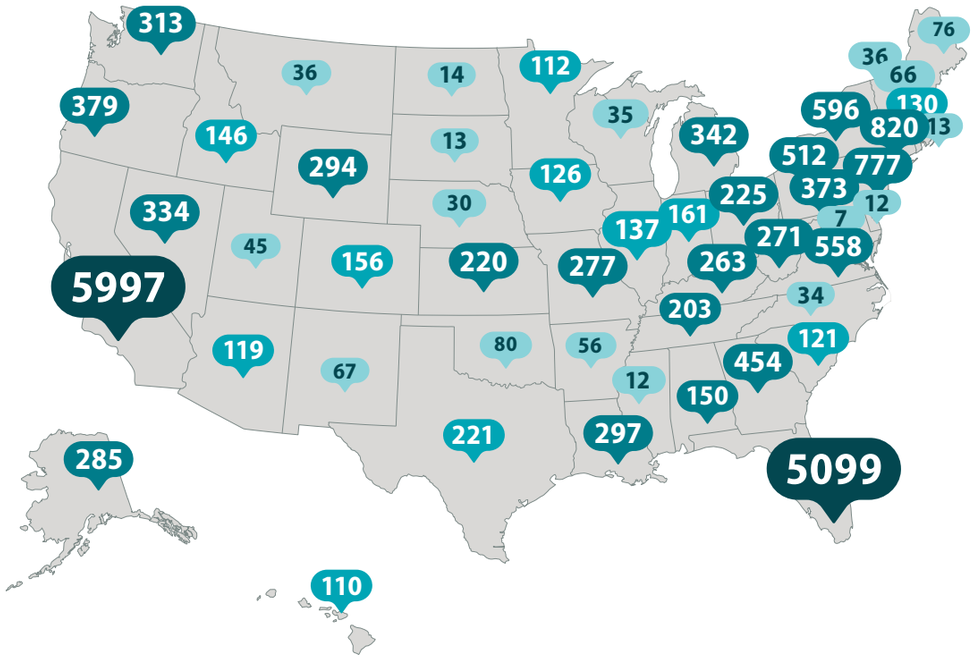
23,784

Training Manual Sales & Course Enrollments (Y2Y)

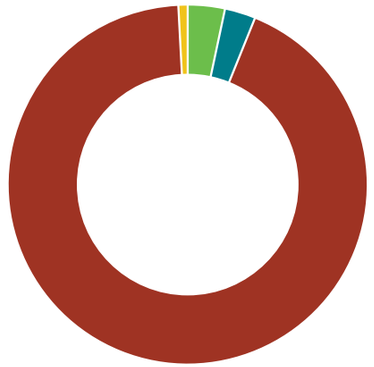


- Training manual orders reached 26,146, with 82% of orders placed outside California.
- 14,321 adult learners enrolled in our courses for continuing education units, contact hours, or academic credit, accounting for more than 23,780 course enrollments.
- With the majority of our US students residing outside of California, OWP continues to be a leading national training provider.
- International orders from Canada, Belize, New Zealand, Jamaica, Barbados, and other nations accounted for 8% of our manual sales and 18% of our course enrollments this year.

US Course Enrollments Sold (by State)



International Course Enrollments Sold (by Country)



Canada	2,377
Jamaica	87
Belize	73
Other*	17

***Other**: Cayman Islands (8), Barbados (2), New Zealand (2), Philippines (2), India (1), Turks & Caicos Islands (1), Portugal (1).

21,230
Total US Course Enrollments

12,715
US Student Enrollees

24,181
Training Manuals Sold in US

2,554
International Course Enrollments

1,587
International Student Enrollees

1,965
Training Manuals Sold Internationally

Popular Training Materials

Wastewater Courses

Operation of Wastewater Treatment Plants, 3 volumes (training manuals, course enrollments)

Membrane Bioreactors (training manual, course enrollment)

Operation and Maintenance of Wastewater Collection Systems, 2 volumes (training manuals, course enrollments, DVD)

Collection Systems: Methods for Evaluating and Improving Performance (training manuals, course enrollments)

Small Wastewater System Operation and Maintenance, 2 volumes (training manuals, course enrollments)

Industrial Waste Treatment, 2 volumes (training manuals, course enrollments)

Treatment of Metal Wastestreams (training manual, course enrollment)

Pretreatment Facility Inspection (training manual, course enrollment, DVD)

Drinking Water Courses

Water Treatment Plant Operation, 2 volumes (training manuals, course enrollments)

Water Distribution System Operation and Maintenance (training manual, course enrollment, online)

Small Water System Operation and Maintenance (training manual, course enrollment, online)

Small Water Systems Video Information Series (learning booklet, DVDs, course enrollment)

Water Systems Operation and Maintenance Video Training Series (learning booklet, DVDs, course enrollment)

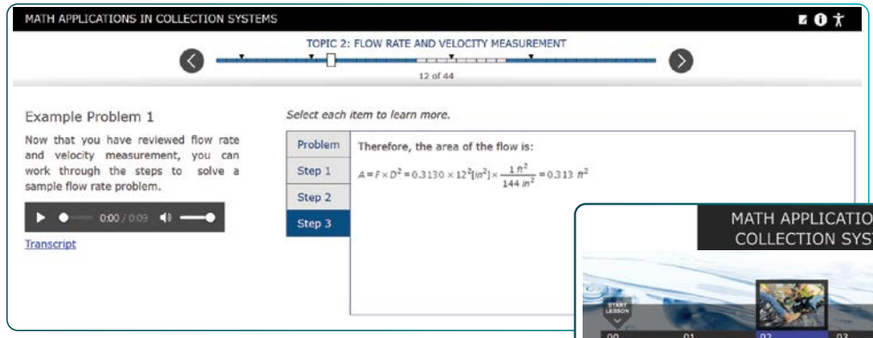
Basic Small Water System Operations (training manual)

Management Courses

Manage for Success (training manual, course enrollment)

Utility Management (training manual, course enrollment)

Online Math Courses for Operators



Step-by-step examples with audio notes

Start screen menu with lesson topics

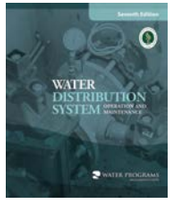
Math applications in:

- Water Treatment
- Water Distribution Systems
- Collection Systems
- Wastewater Treatment

Courses feature:

- Detailed, step-by-step example problems
- Example problems include audio notes, figures, and tables to expand your learning experience
- US and metric versions available

Most Popular Training Manuals & Courses



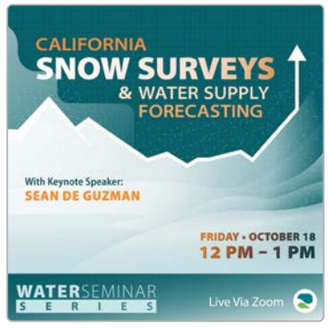
- Water Treatment Plant Operation, Volume 1
- Water Distribution System Operation and Maintenance
- Water Treatment Plant Operation, Volume 2
- Operation of Wastewater Treatment Plants, Volume 1
- Operation of Wastewater Treatment Plants, Volume 2

WATERSEMINAR SERIES

Exploring Water Use, Management, & Protection in California

OWP's Water Seminar Series brings together expert speakers, water sector professionals, the Sacramento State community, and the public to explore critical California water issues.

**Seminars are currently presented live via Zoom.*

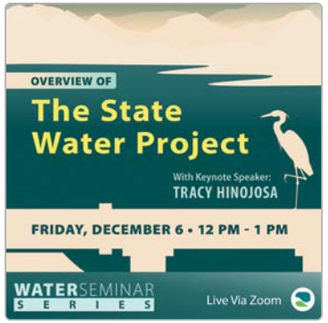


California Snow Surveys and Water Supply Forecasting

October 2024

As California's climate changes and those changes result in more and more frequent extreme weather events, the Department of Water Resources (DWR) is changing the way it observes and forecasts weather and hydrologic conditions. Partnerships with the research community enable DWR to incorporate advances to ensure a forecasting framework that can adapt at the pace of a changing climate. DWR's California Cooperative Snow Surveys is working with the research community to develop an operational framework for climate resilient forecasting.

The goals for the framework are to transition to spatially explicit, physically based, and climate informed modeling tools, such as watershed models that simulate the physical processes of snow accumulation and melt and incorporate forecasts, and to create an integrated forecast platform that allows easier visual inspection of observed conditions, high-resolution near-term forecasting, standard weather forecasting, week 2 to 4 outlooks, sub-seasonal to seasonal outlooks, and water year outlooks. The presentation included information on the history of the California Cooperative Snow Surveys Program, snow survey procedures, Aerial Remote Sensing of Snow (ARSS) Program activities, and the roadmap for developing a climate resilient forecasting framework.



Overview of the State Water Project

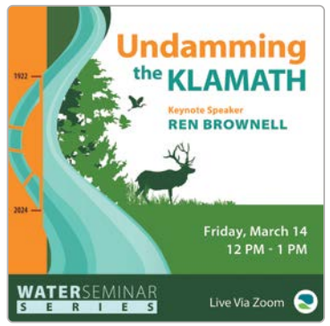
December 2024

The California State Water Project (SWP) is a multi-purpose water storage and delivery system that extends more than 705 miles—two-thirds the length of California. A collection of canals, pipelines, reservoirs, and hydroelectric power facilities delivers clean water to 27 million Californians, 750,000 acres of farmland, and businesses throughout our state. Tracy Hinojosa, Water Operations Branch Manager at the Department of Water Resources, Division of Operations & Maintenance, presented an overview of the SWP, including the history, purpose, and benefits of the project, as well as the challenges facing the SWP today.

Undamming the Klamath

March 2025

The Lower Klamath Project is the largest salmon restoration project of its kind. Four dams spanning two states were removed in just a year and a half. This presentation covered how the removal was completed, environmental considerations along the way, and the restoration progress of the 2,200 acres formerly submerged by impounded waters.



The Future of Water: Will it be there for us?

April 2025

Our global water environment is under stress, creating significant uncertainty about our planet's ability to support humanity into the future. And the changing climate isn't helping. As the demand for water continues to grow, meeting demand is no longer just about its scarcity. It's also about its security because of the socioeconomics of accessibility and equity in water's numerous consumptive uses across all scales of modern civilization.

This presentation considered the impacts of rapid global urbanization on water, the geopolitical ramifications of water demands across geopolitical boundaries, and the influence of modern agricultural practices on water's future. It asked and explored the questions: To what degree is climate change responsible? What is the role of public policy at the local, regional, and national level in shaping water's future? What role does the environmental engineering community play in addressing this incredibly complicated challenge? Are there feasible, practical, cost-effective technical solutions that will ensure a sustainable future where water will be available, safe, and secure?

Listen now at:
www.owp.csus.edu/water-seminars/ ›

SPOTLIGHT

Technical Assistance Helps Disadvantaged Communities Provide Safe and Sustainable Drinking Water

For the last decade, OWP has provided technical assistance to disadvantaged communities (DACs) through the Safe and Affordable Funding for Equity and Resilience (SAFER) program and Proposition 1, the Water Quality, Supply, and Infrastructure Improvement Act of 2014 (Prop 1) program administered by the California State Water Resources Control Board, Division of Financial Assistance (DFA). As a designated Technical Assistance (TA) provider, OWP has helped 151 communities throughout California provide safe and sustainable drinking water to their residents and become one of the leading and most trusted TA Providers in California.

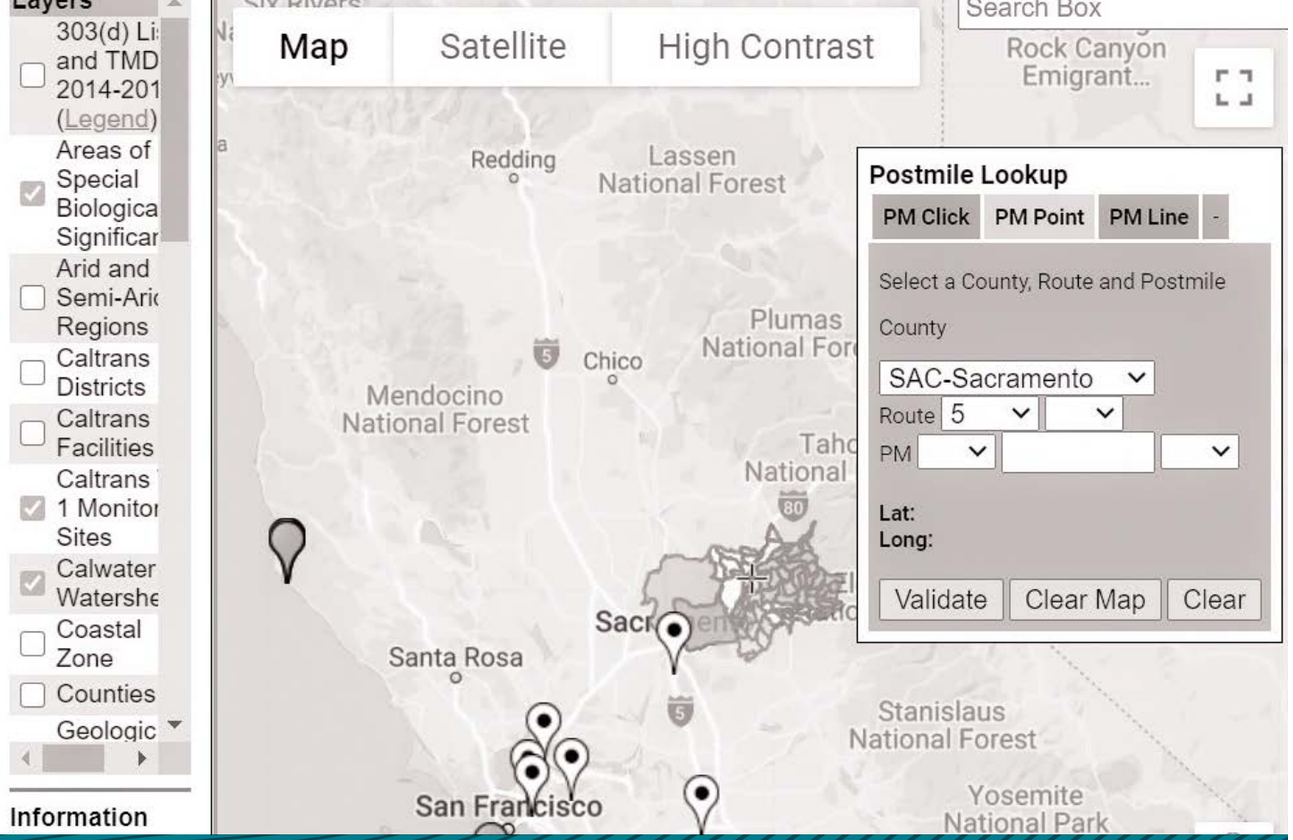
Disadvantaged communities have median household incomes significantly below the state average. Among the DACs OWP assists are schools, small rural communities, fire-affected communities, mobile home parks, and isolated water districts in mountainous and desert areas. Solutions include new groundwater wells, water treatment plants, storage tanks, pipelines, pumping facilities, new water source development, or other infrastructure needed to improve water supply. These projects lead to tremendous improvements in the drinking water system sustainability for Californians most in need of the basic human right to clean drinking water. Of the 151 projects that OWP has successfully managed on behalf of DFA for DACs, 85 are complete and 66 are still active.

These projects start when OWP receives TA Requests from DFA on behalf of DACs. OWP then hires engineering and environmental consultants to identify and evaluate alternatives to solve each community's drinking water system challenges. OWP's role is to manage each project and work with project stakeholders, including the local community, local water district, regulatory agencies, and other interested parties, to facilitate the creation of the solution that best meets local needs. As part of this work, OWP helps facilitate the selection of an alternative that satisfies the often-conflicting priorities of the numerous project stakeholders. The solutions generally fall into two categories: engineering improvements to the DAC's existing water supply infrastructure, and consolidation of the DAC's water system with a nearby water district that has the resources and infrastructure to better provide a sustainable water supply to the DAC. The result of this work for each planning project is a Construction Funding Application, which then leads to a Construction Funding Agreement between DFA and the local community to fund the construction of the recommended project.

These state programs recognize that access to a sustainable supply of clean drinking water is a basic human need. While California is a wealthy state within one of the world's wealthiest countries, there are areas of the state that do not have this access. In some areas, water supplies contain contaminants (e.g., nitrates, uranium, arsenic, metals, and bacteria) that can affect the health of residents. In addition, current water supply infrastructure is sometimes inadequate to guarantee a sustainable supply of healthy drinking water. Added layers of complication are that California's control over drinking water is fragmented, with over 7,000 water districts, and areas of inadequate water supply are often found in small water districts in DACs. These DACs frequently have limited resources available to maintain adequate drinking water supplies to serve their residents.

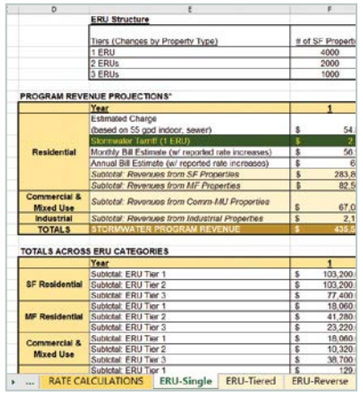
Funding for these projects comes from funds approved by California voters and the state legislature. In November 2014, voters approved Prop 1. Then in 2019, the California State Legislature passed Senate Bill 200 that created the Safe and Affordable Drinking Water Fund, which is part of the larger SAFER program. The fund provides up to $130 million annually until 2030. The DFA was tasked with overseeing the distribution of these Prop 1 and SAFER funds to DACs to improve water supply sustainability for qualifying communities.

Of the 151 projects that OWP has successfully managed on behalf of DFA for DACs, 85 are complete and 66 are still active.



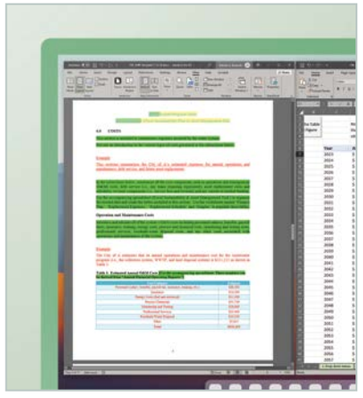
Technical Tools & Services

Our robust, science-based, and customizable resources for water sector professionals focus on research, design, and planning, and include numerical modeling, permit compliance, and stormwater design software tools developed and maintained by OWP's research engineers.



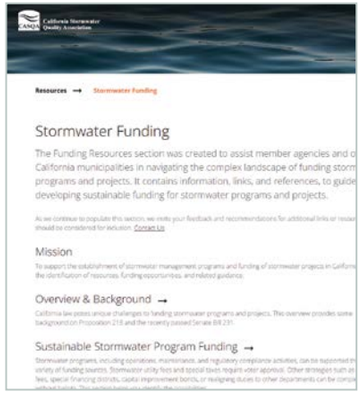
Toolkit for Stormwater Asset Management and Funding

OWP's Environmental Finance Center (EFC) developed a free toolkit to assist municipal stormwater practitioners in implementing asset management. The toolkit includes a guidance report and worksheets that help record data on system assets from pipes to gutters to green infrastructure. The toolkit also helps prioritize maintenance needs, estimate long-term costs, and evaluate revenues from various rate scenarios.



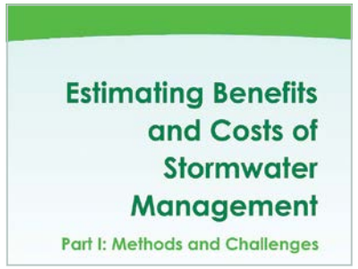
Fiscal Sustainability Plan/Asset Management Plan (FSP/AM) Template and Tool

OWP's EFC developed a downloadable kit called the Fiscal Sustainability and Asset Management Plan Template and Tool for small water and wastewater community service districts (CSDs). The template document provides CSDs with a starting point when developing their own asset management plans. This can be used to fulfill the fiscal sustainability plan required to receive funding from the Clean Water State Revolving Fund. The Fiscal Sustainability tool also provides CSDs with a blueprint to help track their ongoing costs and keep their budgets on track throughout the life of their systems. These documents have been distributed through the EFC network and are available on the EFC at Sacramento State's website.



California Stormwater Quality Association Stormwater Funding Resources Webpages

OWP's EFC collaborated with SCI Consulting and Larry Walker Associates to develop stormwater funding resources webpages for the California Stormwater Quality Association (CASQA). These provide municipal stormwater practitioners with comprehensive resources to explore opportunities for and obtain program and project funding. Program funding topics include stormwater utility fees, realignment of services, local development impact fees, and special taxes. Project funding topics include ways to achieve multiple benefits, resources for estimating costs, and opportunities for grants and loans.

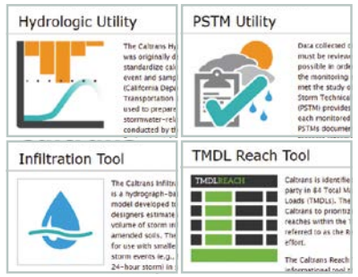


Data Tables and Analysis for Costs of California Stormwater Programs

OWP's EFC accumulated, standardized, and analyzed costs for stormwater management across California municipalities. Reported spending activities and the data used in the analysis are available as executable files. The database serves as the basis for statewide assessments of municipal permit compliance costs by the State Water Board.

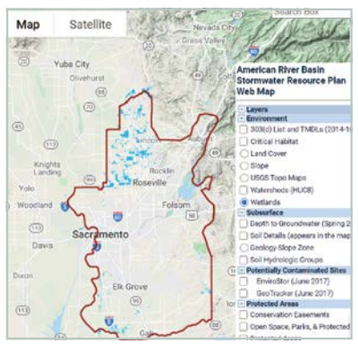
The Stormwater Funding Storyboard

The EFC at Sacramento State developed an interactive storyboard with tools and information that stormwater utilities can use to create effective and sustainable stormwater programs, including resources for early-stage stormwater utility planning and rate development systems.



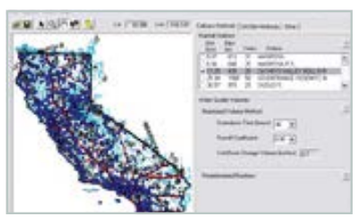
Caltrans Stormwater Tools and Utilities

OWP develops and maintains multiple stormwater analysis and data management tools for California Department of Transportation (CalTrans). Many of these tools are developed to meet specific requirements for the collection, management, and analysis of data for various regulatory monitoring and compliance tasks. Other tools assist designers with meeting stormwater design requirements and documentation.



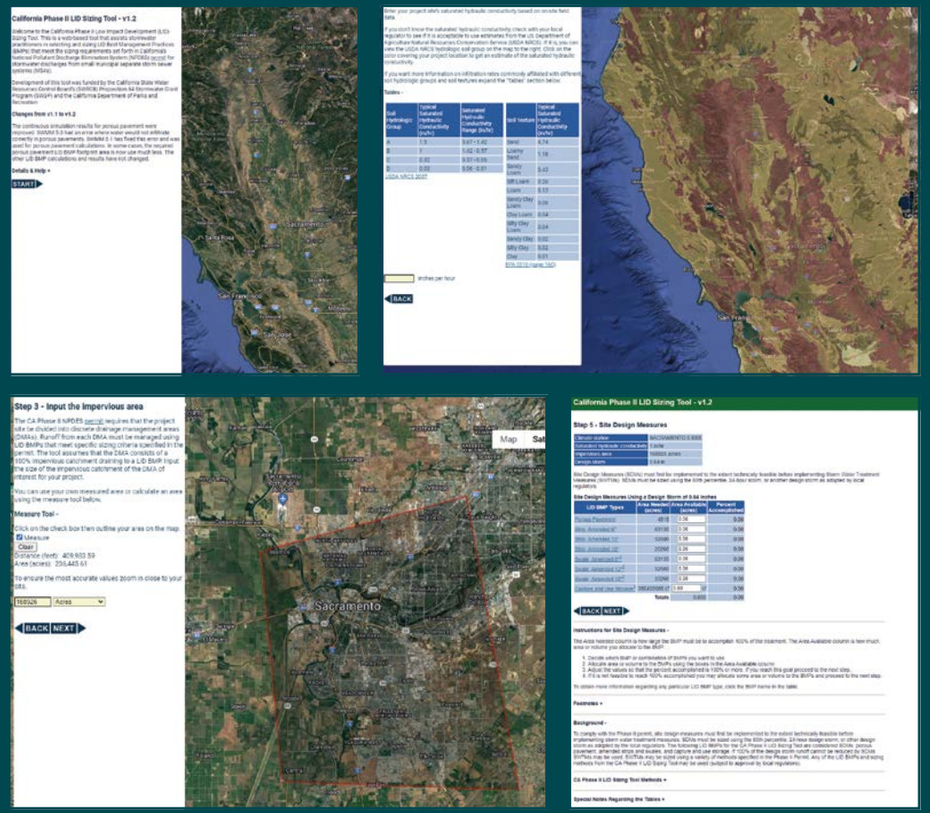
American River Basin Stormwater Resource Plan Web Map

This web-based geographic information system (GIS) map assists users in identifying and evaluating stormwater capture and use project opportunities for the American River Basin Stormwater Resource Plan. The interactive map provides multiple layers of surface, subsurface, environmental, and community characteristics for eastern Sacramento County, western Placer County, and surrounding regions. OWP developed the tool with funding awarded from the State Water Board Proposition 1 Storm Water Planning Grant Program.



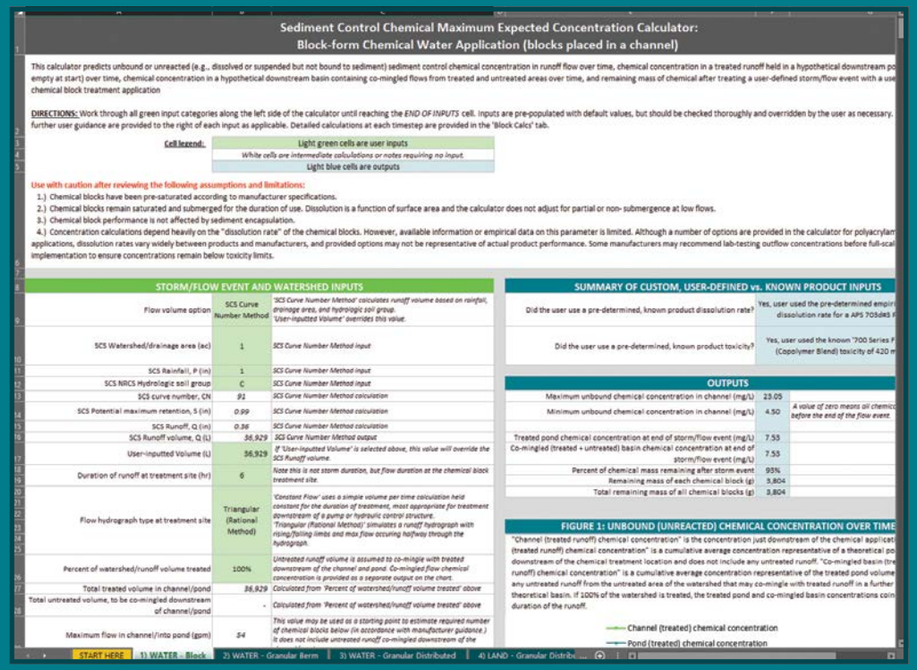
Basin Sizer

Assisting stormwater practitioners in sizing stormwater basins anywhere in California, Basin Sizer is a software tool that calculates water quality volumes and water quality flows using various methods and data obtained from rainfall stations throughout the state. Users can easily select project locations using the interactive map.



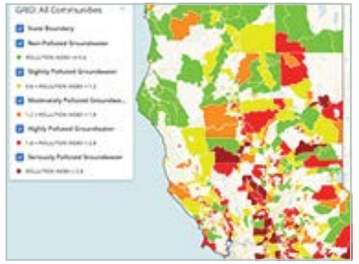
California Phase II Low Impact Development Sizing Tool

The Low Impact Development (LID) Sizing Tool assists stormwater practitioners with selecting and sizing LID best management practices that meet sizing requirements in California's National Pollutant Discharge Elimination System (NPDES) permit for stormwater discharges from small municipal separate storm sewer systems. OWP developed the tool with funding awarded from the State Water Board's Proposition 84 Stormwater Grant Program. Subsequent improvements were funded by the California Department of Parks and Recreation.



Passive Chemical Dosing Discharge Calculator

The passive chemical dosing discharge calculator employs a mass balance timestep modeling approach to predict the maximum expected concentration of erosion control treatment chemicals in effluent water following a user-defined pre-storm application for erosion control or enhanced treatment via sedimentation. The tool, developed using information gathered from a literature review of existing empirical data and existing best management practices, manufacturer and vendor guidance, and input from a technical advisory committee, demonstrates the benefits of using basins to attenuate spikes in concentration over a larger volume. This planning tool assists users in designing environmentally safe erosion and sediment controls that use treatment chemicals at construction and industrial sites.



The California Groundwater Risk Index

The California Groundwater Risk Index (GRID) is an interactive map that shows disadvantaged communities at risk of exposure to contaminated groundwater. Developed to support grant-funded groundwater remediation projects, GRID combines and maps multiple data sources, including California's Groundwater Ambient Monitoring and Assessment (GAMA) Program data and the CalEnviroScreen tool, to identify disadvantaged and severely disadvantaged communities.

Stormwater Practitioner Training and Exam Administration

In partnership with CASQA and the State Water Board, OWP developed and coordinated training and exam administration programs for Construction and Industrial Permit compliance. The program has certified over 11,000 Qualified Stormwater Developers, Qualified Stormwater Practitioners, and Qualified Industrial Stormwater Practitioners since its inception in 2011. The program was transitioned to CASQA in November 2024.

Struvite Tool

The Struvite Tool makes struvite control planning easier by calculating the struvite precipitation potential for a facility based on user-input water quality parameters. The user can vary input parameters to examine "what-if" scenarios when conditions are changed to control struvite precipitation.

Water Quality Planning Tool

This tool provides planners with an easy-to-use website that makes available the watershed information required to create and comply with stormwater permits. A feature of the website enables the user to find a watershed through interactive maps or by entering the postmile number of a project location.

Hydrologic Analysis Tool

Originally developed to prepare hydrographs for stormwater-related studies conducted by OWP, the Hydrologic Analysis Tool (HAT) standardizes complex calculations required for event-based stormwater monitoring. HAT is freely available to the public for NPDES permit monitoring and stormwater studies.

For more information about software tools, visit us online at: www.owp.csus.edu/research/software-tools/ ›

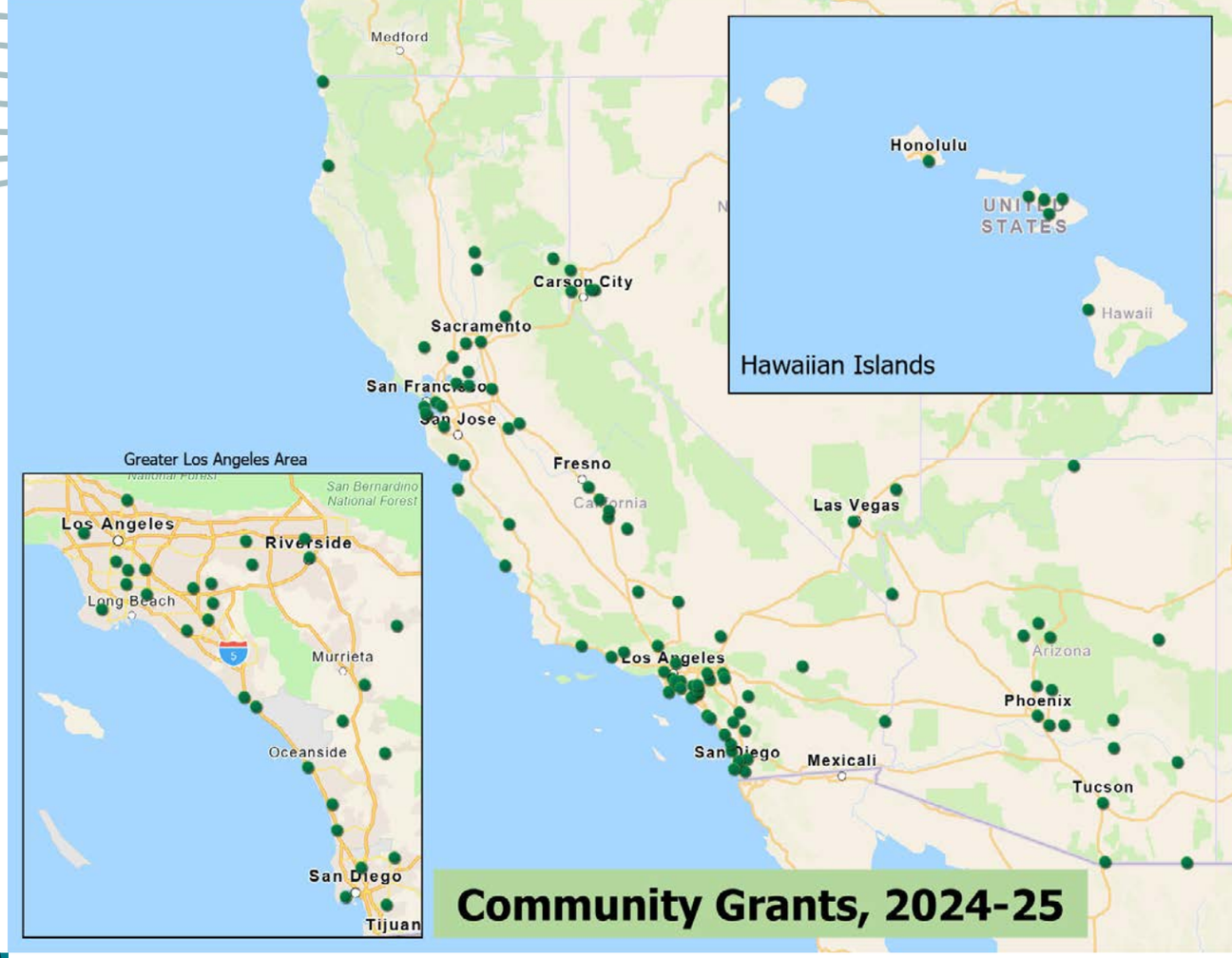
Applied Research

2024–2025 Highlights

Infrastructure Improvement Funds Application Assistance

During the past year, OWP's Environmental Finance Center (EFC) at Sacramento State continued its national leadership role in facilitating community investments in drinking water, wastewater, and stormwater infrastructure. The EPA provided funding to the EFC to support communities in EPA Region 9 (California, Arizona, Nevada, Hawaii, and Pacific territories) that are receiving congressionally directed spending (CDS) for planning, design, and construction of water service projects. CDS, also known as earmarks, is funding for specific projects requested by members of Congress and enacted in annual federal appropriations. Lawmakers use CDS to direct federal funds toward projects they deem important for their constituents, such as infrastructure, public safety, education, or healthcare initiatives. The EFC serves many communities in EPA Region 9 that receive CDS and need help developing and submitting funding applications, providing help with developing project work plans, completing budget forms, and assisting with cost-share waiver requests and analysis, as well as navigating grants.gov and other EPA websites relevant to application submittals.

OWP's EFC staff worked directly with 119 communities over the last year to complete application documents for much needed water infrastructure.



OWP's EFC staff worked directly with 119 communities over the last year to complete application documents for much needed water infrastructure. Some support is provided via email communication, but EFC staff commit to more personal interactions through virtual meetings to ensure that community representatives understand the application process. To further support communities and streamline the application process, EFC staff created an example work plan that provided applicants with a guide to presenting various information required for the grant applications. At the request of EPA Region 9 staff, the EFC also developed a process to receive, respond to, and track questions from grant recipients, including a means to identify additional resources that may be needed for applications. Finally, EFC staff provided outreach to unresponsive grant recipients, which resulted in a greater than 50% response/engagement rate.

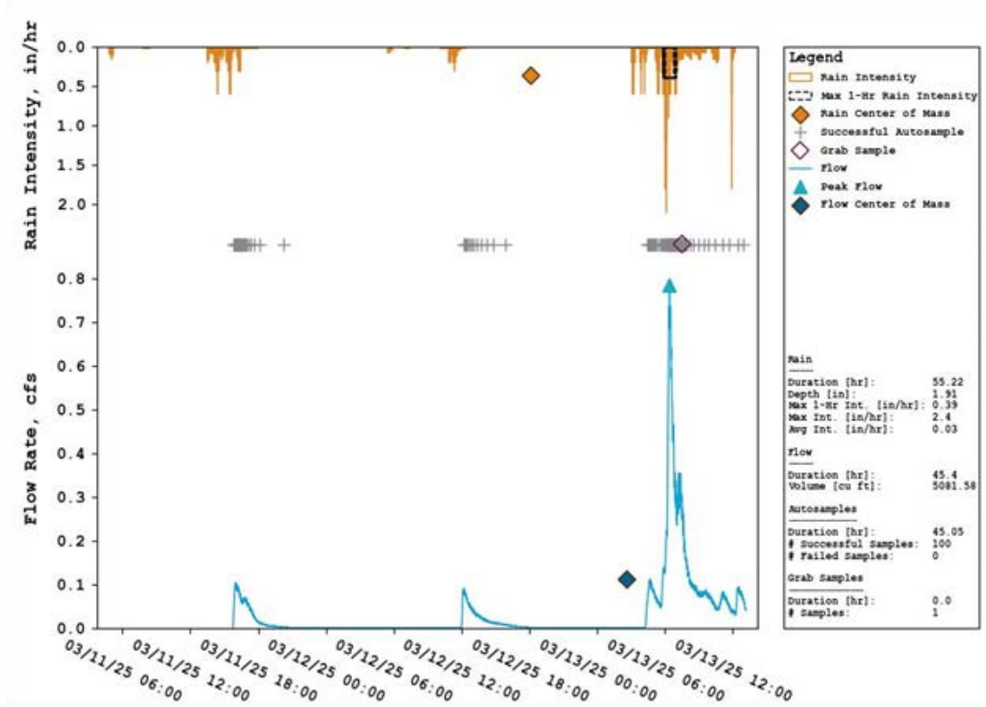
OWP's EFC at Sacramento State serves state and local governments, tribal communities, and the private sector in EPA Region 9, assisting them in developing the capacity to fund drinking water, wastewater, and stormwater projects and programs, as well as plan for future needs as regulations, technology, and resources change. The EFC is funded primarily through grants from the US EPA.

Sampling for PFAS in Disadvantaged Communities

During the 2024–2025 fiscal year, the project team sampled 1,598 wells serving 490 public water systems through a program to collect samples from drinking water wells and analyze them for per-and polyfluoroalkyl substances (PFAS). By providing technical assistance to water systems, this work contributes to efforts to manage PFAS in drinking water and reduce human exposure to PFAS for the protection of public health. All wells in California that serve disadvantaged communities and severely disadvantaged communities are eligible for the sampling and analysis at no cost, as required by State Water Resources Control Board (State Water Board) Order DW 2024-0002-DDW. OWP delivers the results to water systems along with required actions based on the sample analysis, including customer notifications and education.

Started in early 2024, this project leverages OWP's experience and expertise to develop and coordinate a complex, statewide project in a limited timeframe. The public can view the program's overall progress on the program dashboard at pfas.owp.csus.edu.

The project team comprises OWP staff, State Water Board staff, Geosyntec Consultants, and Babcock Laboratories. Geosyntec was awarded the field work based on an open solicitation that was presented to hundreds of firms. Babcock Laboratories are contracted directly to the State Water Board to analyze the samples.



Hydraulic Monitoring and Analysis Web Apps

With the newly updated Caltrans Stormwater Hydrologic Utility v.4 and the Post Storm Technical Memorandum (PSTM) Utility v.2 web apps, OWP offered improved technical and program-specific tools for clients. These apps were released for use by Caltrans staff and their monitoring consultants in the 2024–2025 rainy season, replacing long-standing tools for hydrologic monitoring and analysis. Designed as web apps, these new tools use Python as the back end, allowing research engineers and scientists to develop and maintain highly technical calculation algorithms while dedicated web developers and graphic designers focus on providing a top-notch user experience.

The Hydrologic Utility analyzes times series monitoring data for rain, flow, and water quality samples that are collected by monitoring field crews to identify key hydrologic parameters. The tool also performs project-specific QA/QC checks to help improve the data quality and identify issues early. The PSTM Utility then combines multiple results from the Hydrologic Utility analyses into a memorandum designed for review by technical experts. This also facilitates the review and approval process for each project team.

Applied Research

Funded Grants & Contracts

Wastewater Needs Assessment

UCLA Luskin School of Public Affairs contracted $1,605,490 with OWP (7/1/23–6/30/27) to provide assistance with the statewide wastewater needs assessment.

Per- and Polyfluoroalkyl Substances (PFAS) Sampling and Analyses

The State Water Board contracted $6,093,729 with OWP (6/30/23–2/28/27) to provide technical assistance with collecting and analyzing drinking water well samples for PFAS, as well as related community outreach to the water systems.

Stormwater Capture Estimation

The State Water Board contracted $299,802 with OWP (4/1/24–3/2/26) to develop a method to estimate current stormwater capture in California.

Environmental Finance Center (Region 9)

The EPA awarded OWP $5,000,000 to continue operating an Environmental Finance Center for Region 9 between May 2023 and September 2028.

Environmental Compliance Support

Sacramento State Facilities Management contracted $34,068 with OWP to assist with stormwater pollution prevention plan (SWPPP) development, trash assessments, and other related tasks.

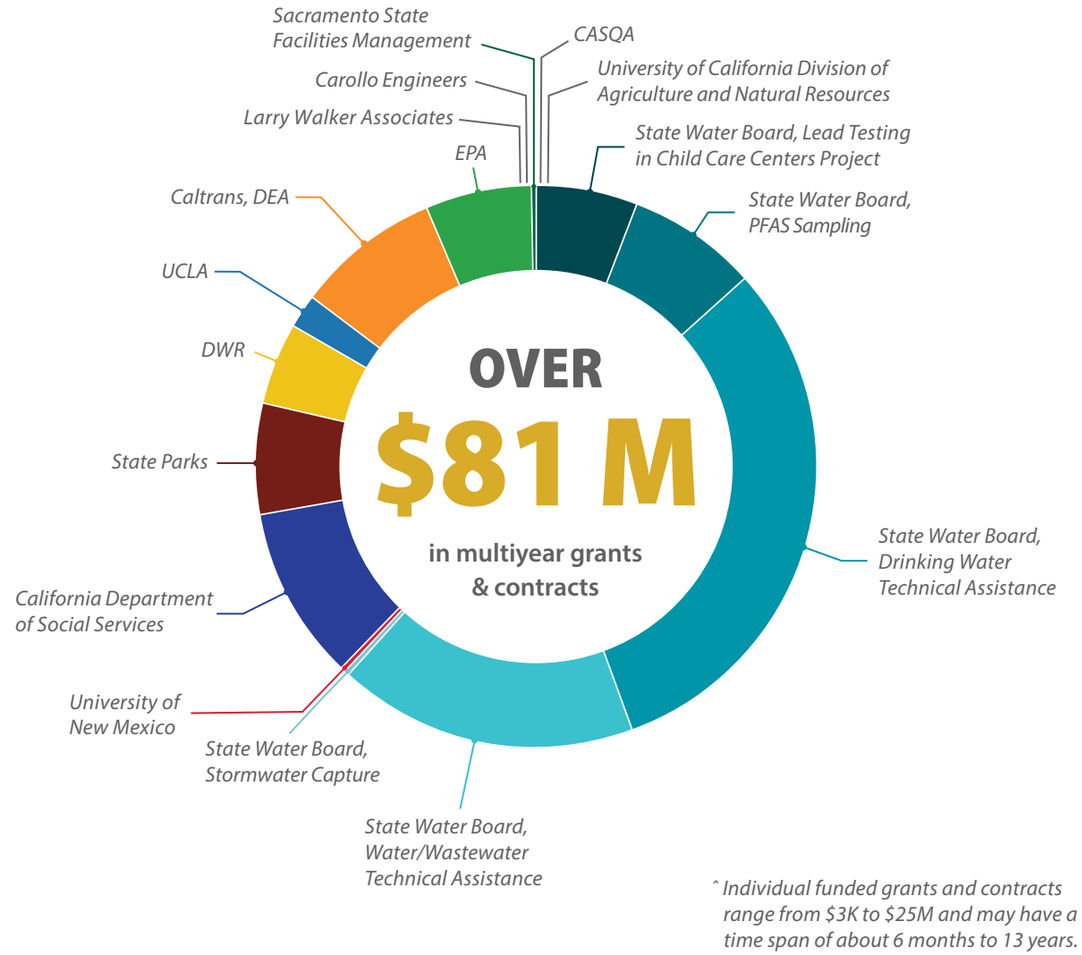
Utilities Mapping Support

Sacramento State Facilities Management contracted $3,138 with OWP to update campus utility maps and make them available to Facilities Management staff via a mobile application. Facilities Management staff can also add information about campus infrastructure using the app.

Lead in Drinking Water Projects

The State Water Board contracted $4,900,000 with OWP (10/1/19–1/31/26) to provide technical assistance to Licensed Child Care Centers to collect and analyze drinking water samples and, subsequently, remediate lead contamination that exceeds thresholds.

The California Department of Social Services (CDSS) contracted $8,102,400 with OWP (7/1/21–6/30/25) to provide the Community Care Licensing Division Child Care Program (CCP) with assistance in outreach and technical assistance to priority licensed child care centers to collect and analyze drinking water samples for lead.



ˆ Individual funded grants and contracts range from $3K to $25M and may have a time span of about 6 months to 13 years.

Stormwater Technical Assistance Project

Larry Walker Associates contracted $16,750 with OWP (7/01/23–12/31/24) to assist with regulatory and monitoring services for the Sacramento Stormwater Quality Partnership.

Stormwater Program Technical Assistance

The California Department of Parks and Recreation (State Parks) contracted $5,300,000 with OWP (6/29/21–6/30/25) to provide technical assistance for its stormwater program.

Safe, clean water helps communities stay healthy and thrive.

Stormwater Research Technical Assistance

The CalTrans, Division of Environmental Analysis (DEA) contracted $6,794,000 with OWP (12/1/22–11/30/27) to provide technical assistance with stormwater research focusing on discharge characterization, source identification and control, and treatment control studies.

Division of Safety of Dams Mapping Project

The California Department of Water Resources (DWR) contracted $3,750,000 with OWP (1/1/13–6/30/25) to assist the Division of Safety of Dams (DSOD) with dam break flood analysis and emergency action plan development.

Qualified SWPPP Developer and Qualified SWPPP Practitioner Testing and Certification

CASQA contracted with OWP (1/21/11–11/30/24) to develop and implement an online training delivery system to administer and grade tests and issue certifications for Qualified SWPPP Developers and Qualified SWPPP Practitioners.

Qualified Industrial Stormwater Practitioners Training and Testing

CASQA contracted with OWP (05/23/16–11/30/24) to develop and implement an online system to train and test Qualified Industrial Stormwater Practitioner certificate candidates.

Drinking Water and Wastewater Technical Assistance and Outreach

The State Water Board, under a Proposition 1 grant, contracted $14,057,000 with OWP (9/1/16–2/28/26) to provide drinking water and wastewater technical assistance to disadvantaged communities in California.

Drinking Water Technical Assistance and Outreach

The State Water Board, under the Safe and Affordable Funding for Equity and Resilience (SAFER) grant, contracted $25,000,000 with OWP (3/9/20–2/28/26) to provide drinking water technical assistance to disadvantaged communities in California.

State Revolving Funds Programmatic Support

The State Water Board contracted $250,000 with OWP (7/10/24–6/30/26) to support the Division of Financial Assistance in improving its services in the Clean Water State Revolving Fund (CWSRF) and Drinking Water State Revolving Fund (DWSRF) programs.

Small Public Water Systems Technical Assistance

The University of New Mexico contracted $223,014 with OWP (10/1/24–9/30/26) to support small public water systems in achieving and maintaining compliance with the Safe Drinking Water Act.

Impacts of Water Conservation Project

The Regents of the University of California Division of Agriculture and Natural Resources contracted with OWP (executed on 6/17/25) to support analyses to assess and quantify the economic benefits and impacts of the 2030 indoor residential use standard (42 gallons per capita per day) on water, wastewater, and recycled water systems.

Wastewater Generation Rates Study

Carollo Engineers contracted $30,000 with OWP (executed on 6/4/25) to support a study evaluating the flows and loads from non-residential discharges to wastewater collection systems and treatment plants.

Professional Activities

Conferences, Forums, & Webinars

Conferences offer insight into the latest trends and technologies relevant to the water sector.

July 2024

EPA On-Boarding Webinar to Technical Assistance Providers

Wastewater Needs Assessment Technical Advisory Group Kickoff Meeting Presentation

October 2024

California Stormwater Quality Association (CASQA) Conference, Sacramento, CA (1 presenter, 1 poster, and 4 abstract reviewers)

Wastewater Needs Assessment Technical Advisory Group Meeting Presentation

Groundwater Resources Association—Western Groundwater Congress Participation/ Outreach

Symposium on Biochar Applications in Transportation at California Natural Resources Agency (presenter)

January 2025

CSUS Environmental Studies Colloquium (presenter)

Water Professionals International (WPI) Innovation in Certification Conference, New Orleans, LA (presenter and exhibitor)

February 2025

2025 Pacific Water Conference Training Workshop (2 instructors)

Hawai'i Cesspool Conversion Planning Workshop (host and facilitation)

California Water Environment Association (CWEA) Pretreatment, Pollution Prevention, and Stormwater Conference, San Jose, CA (presenter)

March 2025

2025 Nevada Water & Wastewater Operator's Conference, Sparks, NV (exhibitor)

April 2025

Wastewater Needs Assessment Technical Advisory Group Meeting (2 presenters)

16th Annual CSU-WATER Conference (3 presenters)

We encourage growth by sharing knowledge and helping bring change.

Professional Activities

Committees & Meetings

ASTM Committee E64 on Stormwater Control Measures

California Stormwater Quality Association (CASQA)

- *BMP Effectiveness Subcommittee*
- *BMP Handbook Subcommittee*
- *Conference Subcommittee*
- *Construction Subcommittee*
- *Industrial Subcommittee*
- *Monitoring and Science Subcommittee*
- *Phase II Subcommittee*
- *Policy and Permitting Subcommittee*
- *Stormwater Capture and Use Subcommittee*
- *Awards Committee*
- *Stormwater Funding Subcommittee*

EFC Network

State Water Resources Control Board (State Water Board)

- *Construction General Permit Training Team*
- *Industrial General Permit Training Team*
- *CA Beach Water Quality Work Group*
- *State Revolving Fund Stakeholder Advisory Group*

Calleguas Creek Watershed TMDL Stakeholder Group

Transportation Research Board—Hydraulics, Hydrology, and Stormwater Committee

Washington State TAPE External Board of Reviewers

Water Environment Federation

- *Stormwater Committee*

Professional Activities

Awards

2024 Recipient of the Geoff Brosseau Leadership Award

Brian Currier,
OWP Research Engineer

CASQA Recognizes Exceptional Leadership and Contributions to Stormwater Profession

The California Stormwater Quality Association (CASQA) awarded OWP research engineer Brian Currier its 2024 Geoff Brosseau Leadership Award. CASQA's highest and most prestigious recognition, this award celebrates individuals who demonstrate exceptional leadership to CASQA, advance significant and impactful contributions to the stormwater profession, and exemplify exceptional character and integrity. According to CASQA's 2024 Annual Conference program, "Brian exemplifies CASQA's Core Values. He embodies the principle that how we work is as important as what we achieve. His unwavering integrity, collaborative spirit, and leadership by example have inspired all who have had the privilege of working with him. His work is more than technical contributions—it is a testament to the power of character-driven leadership."

In his over 25 years of experience, Brian has made significant contributions to the field and has been instrumental in shaping CASQA's initiatives and advancing stormwater practices statewide. Brian served on the CASQA board of directors for three terms (2015–2020) as well as serving on most CASQA subcommittees. He continues to serve on several committees including the Executive Program and Events and Communications committees. He was part of a team of former members of the board of directors who developed several student-focused programs, including the Stormwater Scholar Program and a student membership level. He has been a key member of the Construction General Permit (CPG) and Industrial General Permit (IGP) training programs, where his guidance helps ensure quality education for stormwater professionals across California.

Brian's commitment to education extends to his contributions to the Civil Engineering Department at Sacramento State. He co-created a stormwater management class and is a regular guest lecturer in civil engineering and environmental studies classes. He mentors graduate students for a variety of stormwater focused projects.

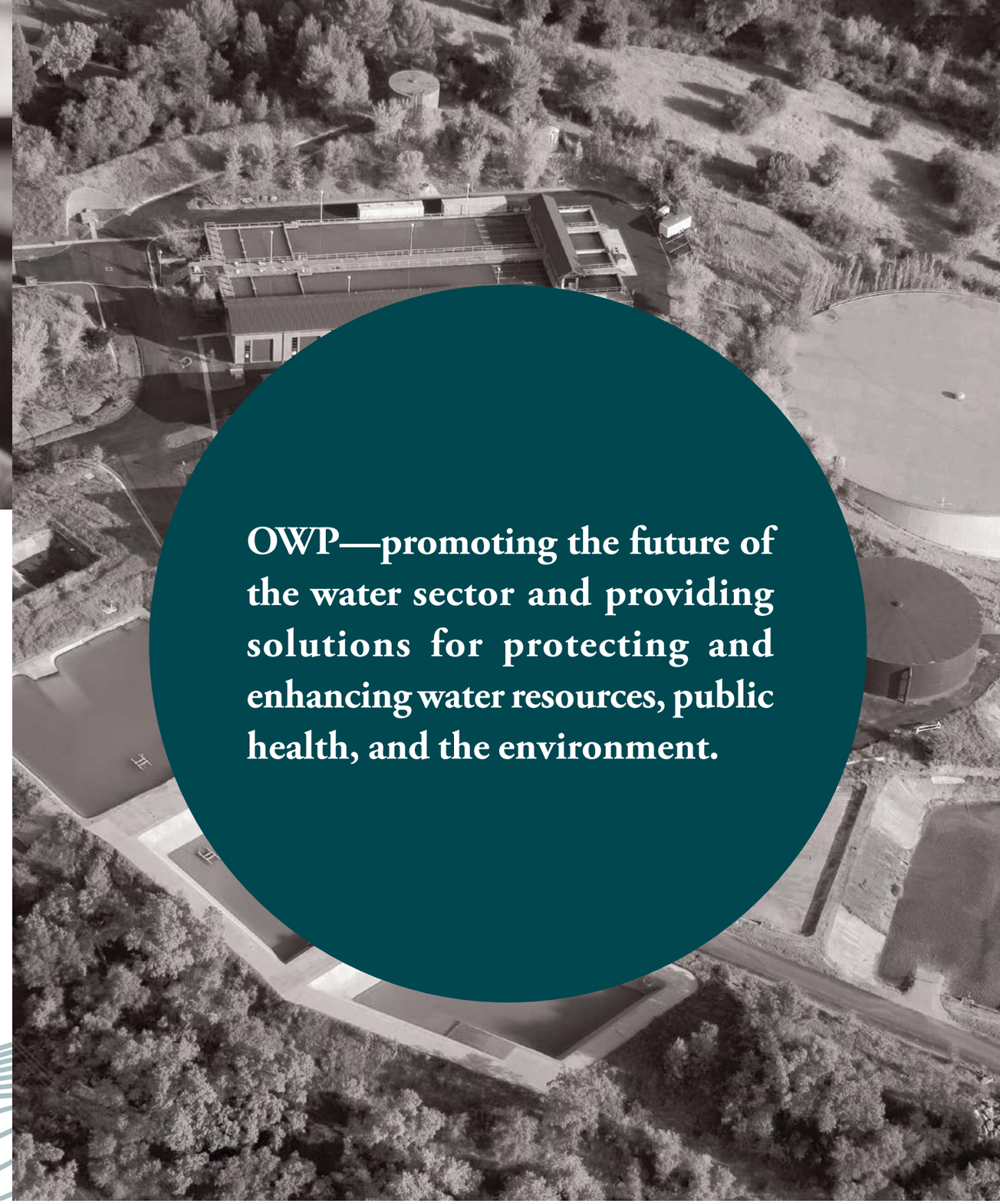
Brian has also been involved in various state-level initiatives, such as the California Phase II LID sizing tool and the California State Water Resources Control Board (State Water Board) Strategy to Optimize Resource Management of Stormwater (STORMS) program.

Professional Activities

Publications

Quantifying Replacement Rates from Indoor and Outdoor Urban Water Conservation Incentives in California

Porse, Erik, Jonathan Kaplan, Khalil Lezzaik, David Babchanik, and Patrick Maloney. 2025. "Quantifying Replacement Rates from Indoor and Outdoor Urban Water Conservation Incentives in California." *JAWRA Journal of the American Water Resources Association,* 61 (2): e70022.



OWP—promoting the future of the water sector and providing solutions for protecting and enhancing water resources, public health, and the environment.

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