

ANNUAL REPORT





About Us

The Office of Water Programs (OWP) at California State University, Sacramento (Sacramento State) 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 nearly 50 professionals, trained in a variety of academic disciplines, collaborates to produce high-caliber work that furthers OWP's mission and values. These two 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 (3)
- MS, Civil & Environmental Engineering
- MS, Environmental Engineering
- BS, Civil Engineering (2)
- BS, Geology
- BA, Mathematics
- BA, Communication Studies
- BS, Graphic Design (2)
- BA, Economics

University of California, Davis

- PhD, Civil & Environmental Engineering (2)
- MS, Civil & Environmental Engineering
- MS, Hydrologic Sciences
- MA, Creative Writing
- BS, Civil & Environmental Engineering (2)
- BS, Environmental Biology and Management
- BS, Geology
- BA, English Language and Literature

University of California, Berkeley

- PhD, Civil & Environmental Engineering
- MS, Civil & Environmental Engineering
- Professional Technical Editing Certificate

University of California, Santa Cruz

- BA, Biology

California State University, San Francisco

- BS, Computer Information Systems

Stanford University

- MS, Environmental Engineering (2)
- MS, Civil & Environmental Engineering
- BS, Civil Engineering with Honors (2)
- BA, Human Biology

Humboldt State University

- MS, Environmental Resources Engineering

California State University, Chico

- BS, Civil Engineering

California Polytechnic State University, San Luis Obispo

- BS, Animal Science

California State Polytechnic University, Pomona

- BS, Civil Engineering (Environmental Focus)

University of California, Los Angeles

- BS, Political Science

California State University, Fresno

- BA, Mass Communication & Journalism

Folsom Lake College, CA

- AS, General Studies

Sierra College, CA

- AA, Liberal Arts
- AA, Humanities

Yuba College, CA

- AA, Accounting

El Camino College, CA

- AS, Zoology

Professionals from all parts of the globe...



Washington State University

MS, Geology

Spokane Community College

AA, Legal Secretarial Science



Utah State University

PhD, Environmental Engineering

MS, Mathematics

MS, Environmental Engineering



University of Wisconsin, Madison

BS, Civil & Environmental Engineering



University of Maryland, College Park

MS, Environmental Management



New York University, NY

MS, Integrated Marketing



George Mason University

MPP, Science & Technology Public Policy



University of Oregon

BS, Journalism

Oregon State University

MS, Civil & Environmental Engineering



Colorado Technical University

PhD, Environmental Sustainability

Colorado State University

BS, Business Management



University of Georgia

PhD, Water Resources & Remote Sensing



University of Tennessee, Memphis

PhD, Biological Sciences

MS, Biological Sciences

BS, Biology Sciences



Capella University

PhD, Biological Sciences



Harvard University

M.A., History

Brandeis University

B.A., English and History



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 Surrey

BS, Chemical Engineering

University of Leeds

MS, Engineering Geology



From my desk:

Ramzi Mahmood

Dear faculty, staf , and team,

The fscal year 2019–2020 has been challenging to say the least. In addition to the issues presented in the normal course of serving as a research, training, and public education center, the COVID-19 pandemic changed everything. OWP faced these challenges and was able to transition to work from home within 24 hours of the Sacramento State campus closure on March 17, 2020. This was not a trivial matter—we needed to secure computers and other equipment as well as adjust our workfo w and procedures for our staf to be able to do their jobs. Everyone at OWP was able to respond and make the transition go smoothly. Like most organizations and people around the world, we continue to learn about resiliency through this unprecedented situation. As water sector professionals and researchers, we usually think about resiliency in the context of utilities and how adaptable our infrastructure systems are. However, the pandemic made us think about resiliency in all our systems and organizations.

Our annual report shows that we continue our success in providing updated training manuals, developing tools, providing technical assistance to 35 disadvantaged communities, and engaging in workforce development through supporting pre-apprenticeship in the water industry. Our Environmental Finance Center (EFC) developed a wide range of tools to support municipal stormwater practitioners in implementing asset management and exploring stormwater infrastructure funding options. OWP staf continued to be active publishing,



attending conferences, delivering workshops, and serving on professional committees. The impact of COVID-19 will be more visible next year (this report covers July 1, 2019, through June 30, 2020), but I have confidence that OWP can apply the lessons we've learned and build on the resiliency we've developed to serve and support the water sector.

I hope you enjoy this annual report. It is an example of the quality of our reports and other publications that are designed and developed by our in-house publication and design staff. OWP has come a long way since its founding in 1972 and has transformed into an organization that supports regional and state challenges in the water area by building in-house expertise and collaborating with Sacramento State faculty and other universities. And, we are well-positioned to continue our work into the future.

Training Services

Offering nearly 50 print, online, and video courses for water and wastewater industry professionals, OWP delivers affordable training materials that help operators, managers, and inspectors do their jobs better.

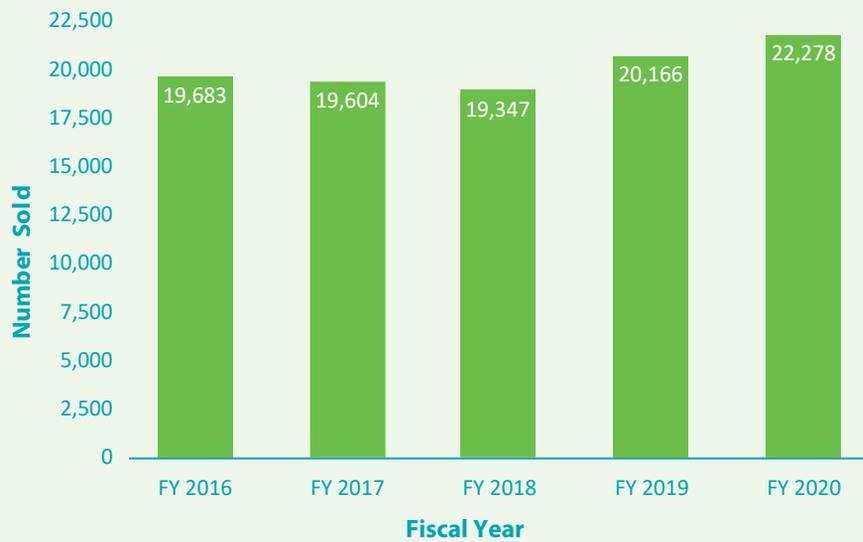
2019–2020 Highlights

- Training manual orders reached nearly 34,000, with 83% of orders being outside California
- More than 22,278 adult learners were enrolled in our courses for continuing education units, contact hours, or academic credit
- With more than half of our US students residing outside of California, OWP continues to be a leading national training provider
- Training materials and courses ordered internationally in the UK, Canada, Cayman Islands, Belize, Jamaica, and others represent 8% of our orders this year

Training Manual Sales



Course Enrollment Sales



Pre-apprenticeship Benefits Youth, Communities, & Water Industry

A joint partnership between OWP, SIATech Charter School, and the California Rural Water Association created a pre-apprenticeship program that introduces young people to the water industry, presents the varying types of jobs available, and leads into an apprenticeship program to prepare the students for lifelong careers.

In addition to water and wastewater operator, ancillary and supportive jobs and career paths like environmental laboratory technician, instrumentation technician, repair mechanic, and treatment plant electrician are available to the students. The program allows students to choose the path that most interests them and the amount of training and education that suits them. They can enter the workforce with a high school diploma, 15 weeks of specialized training in water treatment concepts and principles, and successful completion of a state certification examination. Students can take additional courses to become certified in industry specializations and earn associate's and bachelor's degrees.

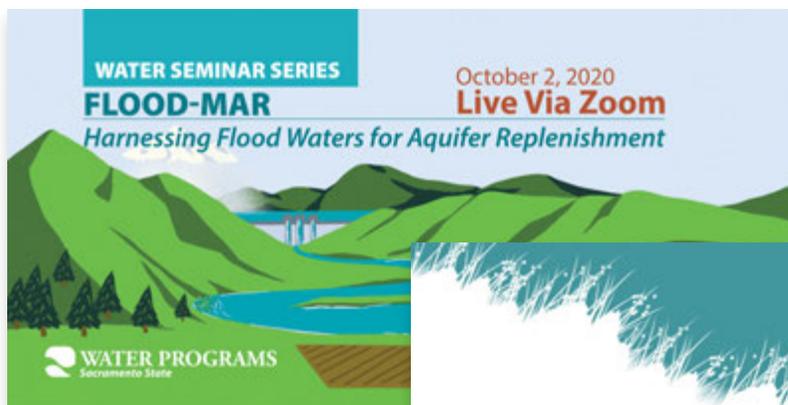
Additional pathways to water careers, such as pre-apprenticeship, will help newer and lower-performing education and training programs better meet the needs of their communities and create more career and high-wage opportunities for low-income adults, minorities, and women. If implemented widely, these educational opportunities could strengthen the pre-apprenticeship model in the US, resulting in a ready pipeline of skilled and diverse workers for industries including the water industry.

Seminars connect water to people, climate, and policy. Read more 

Opportunities for Innovation

Now in its 6th year, the **Water Seminar Series** continues to bring together water management experts, the campus community, and the public to share knowledge and collaborate on areas of interest in the field. The most recent presentation topics included:

- **Flood-Mar: Harnessing Flood Waters for Aquifer Replenishment**
- **The Water Policy of Managed Wetlands in the Central Valley**



Information about upcoming and past seminars is available at www.owp.csus.edu/water-seminars
*Due to COVID-19, earlier events in the year were cancelled.

Popular Training Titles

Training Materials

Wastewater Courses

Operation of Wastewater Treatment Plants, 2 volumes (training manual, CD, course enrollment, online)

Advanced Waste Treatment (training manual, course enrollment)

Membrane Bioreactors (training manual, course enrollment)

Operation and Maintenance of Wastewater Collection Systems, 2 volumes (training manual, DVD, course enrollment)

Collection Systems: Methods for Evaluating and Improving Performance (training manual, course enrollment)

Small Wastewater System Operation and Maintenance, 2 volumes (training manual, course enrollment)

Industrial Waste Treatment, 2 volumes (training manual, course enrollment)

Treatment of Metal Wastestreams (training manual, course enrollment)

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

Drinking Water Courses

Water Treatment Plant Operation, 2 volumes (training manual, course enrollment)

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

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

Water Systems Operation and Maintenance Video Training Series (training manual, DVD, course enrollment)

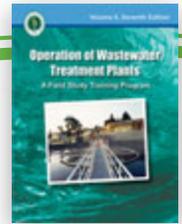
Basic Small Water System Operations (training manual)

Management Courses

Manage for Success (training manual, course enrollment)

Utility Management (training manual, course enrollment)

Most Popular



- 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

Sample Content from Our New Edition!

38 Chapter 2 Water Storage Facilities

2.1 Purpose of Storage Facilities

A water storage facility provides a sufficient amount of water to average or equalize the daily demands on the water supply system. The storage facility should be able to provide water for average and peak demands. Also, the storage facility helps maintain adequate pressures throughout the entire system.

Other purposes of water storage include meeting the needs for fire protection, industrial uses, and reserve storage. During a fire or other type of emergency, sufficient storage should be available to meet fire demands, as well as other demands, and also maintain system pressures. In some areas, the water supply system may serve some type of industry. Storage requirements will depend on the type of industry and the flow and pressure demands of the industrial activities of each industrial facility served by the water supply system. Reserve storage requirements depend on standby requirements and alternate sources of water supply. Reserve requirements may be specified by fire insurance regulations. Reserve storage capacity may be provided to meet future growth and development demands of the area being served.

Reservoirs are storage facilities and may be of several different types. We often think of a reservoir as an open body of water contained by an earth-fill dam or a concrete dam. This chapter, however, will discuss various types of steel and concrete tanks that are covered distribution system reservoirs to store treated water and are commonly used in most water systems, especially small water systems (Figures 2.1 and 2.2).

The requirements for a specific storage facility will depend upon a system's individual needs. To select a suitable type of storage facility, the answers to the following questions must be known:

- What is the maximum-day use?
- What is the maximum hourly use?
- What type of pressure will the facility be required to provide and maintain throughout the system?
- What size will be necessary to fulfill the requirements for emergencies such as fire flow?

Water storage facilities are used to store water from wells or water treatment facilities at times when demands for water are low and to distribute the water during periods of high demand. Water storage facilities are found at one or more locations in areas closest to the ultimate users, where higher pressures are needed, and where land is available. The benefits of storing water in a distribution system include:

- Demands on the source of water, the pumping facilities, and the transmission and distribution mains are more nearly equalized and also the capacities of the tanks and other treatment facilities in the system need not be so large
- System flows and pressures are improved and stabilized, providing better service to customers in the area
- Reserve water supplies are provided in the distribution system for emergencies such as firefighting and power outages

average demand
The total demand for water during a period of time divided by the number of days in that time period. Also called average daily demand.

peak demand
The maximum momentary load placed on a water treatment plant, pumping station, or distribution system. This demand is usually the maximum average load in one hour or less, but may be specified as the maintenance load or the load during some other short time period.

For additional information on storage facilities, see *Water Treatment Plant Operation*, Volume 1, Chapter 2, "Source Water Reservoir Management, and Intake Structures," in this series of training manuals.
www.cwipb.co.edu

Purpose of Storage Facilities Section 2.1 39

Figure 2.1 Typical storage facilities

Figure 2.2 Elevated tank (cross-sectional view)

Technical Tools & Services

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

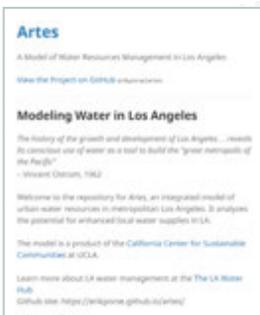
PROGRAM REVENUE PROJECTIONS	
Year	Amount
Residential	Subtotal: Revenue from Residential Properties
Commercial & Mixed Use	Subtotal: Revenue from Commercial Properties
Industrial	Subtotal: Revenue from Industrial Properties
TOTALS	Subtotal: Revenue from Residential Properties
TOTALS ACROSS EFC CA TIERONES	
Year	Amount
MF Residential	Subtotal: (CA) Tier 1
MF Residential	Subtotal: (CA) Tier 2
MF Residential	Subtotal: (CA) Tier 3
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Toolkit for Stormwater Asset Management and Funding

OWP's 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.

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) to 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.



Artes: A Model of Water Resources Management in Los Angeles

Artes is an integrated model of urban water resources in metropolitan Los Angeles that analyzes the potential for enhanced local water supplies. The model is a product of the California Center for Sustainable Communities at UCLA, where OWP's Erik Porse is a visiting assistant researcher. In 2019-20, the model was used to support several published research articles, including an assessment of energy use for urban water management and an assessment of the effects of stormwater capture and use on urban stream flows.

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 Resources Control Board.

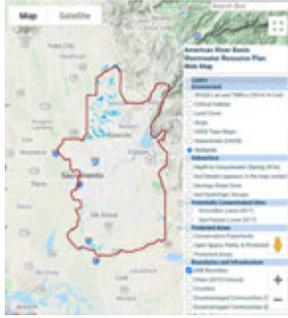


Hawaii Water Funding Opportunities

In January 2020, OWP's EFC co-hosted a Water Infrastructure Funding Forum for utility programs in Hawaii. To supplement the resources provided, OWP EFC staff, with support from the University of North Carolina, Chapel Hill EFC, developed a summary table of state, federal, and other local funding and financing opportunities for Hawaii water-related systems.

Caltrans Stormwater Tools and Utilities

OWP develops and maintains multiple stormwater analysis and data management tools for 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 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 California State Water Resources Control Board (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 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.

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.

The California Groundwater Risk Index

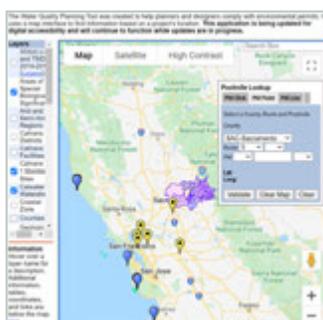
The California Groundwater Risk Index (GRID) is an interactive map that shows disadvantaged communities at risk of exposure to contaminated groundwater. Developed to support grant-funded groundwater remediation projects, GRID combines and maps multiple data sources, including California's Groundwater 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 the California Stormwater Quality Association and the State Water Board, OWP developed and continues to coordinate training and exam administration programs for Construction and Industrial Permit compliance. The program has certified over 10,000 Qualified Stormwater Developers, Qualified Stormwater Practitioners, and Qualified Industrial Stormwater Practitioners since its inception in 2011.

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.



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

Applied Research

Our experienced and well-trained staff of research engineers and scientists provide technical expertise and project consulting on data analysis, cost assessment, watershed planning, modeling, and water policy issues to public- and private-sector clients and partners. Water quality, management, and reuse are the focus of these sought-after services. Our staff also provides technical, managerial, and financial assistance to disadvantaged communities.

2019–2020 Highlights

Co-hosted a Funding and Financing Forum for Hawaiian water utilities. Conducted multiple training webinars on topics including workforce development for the water sector and QGIS for water utility asset management. Gathered and synthesized costs for stormwater spending by California entities subject to municipal separate storm sewer system (MS4) permits.

Developed training protocols for testing the drinking water at approximately 1,500 licensed child care centers that serve young children. The effort is supported by a \$4.9 million grant from the State Water Resources Control Board. Centers with a high concentration of lead are eligible for reimbursement of the cost to replace contaminated fixtures. OWP is partnering with the California Child Care Resource and Referral Network and the California Rural Water Association.

Conducted a preliminary investigation into the effects of climate change at seven state parks. The investigation estimated the increase to runoff generated



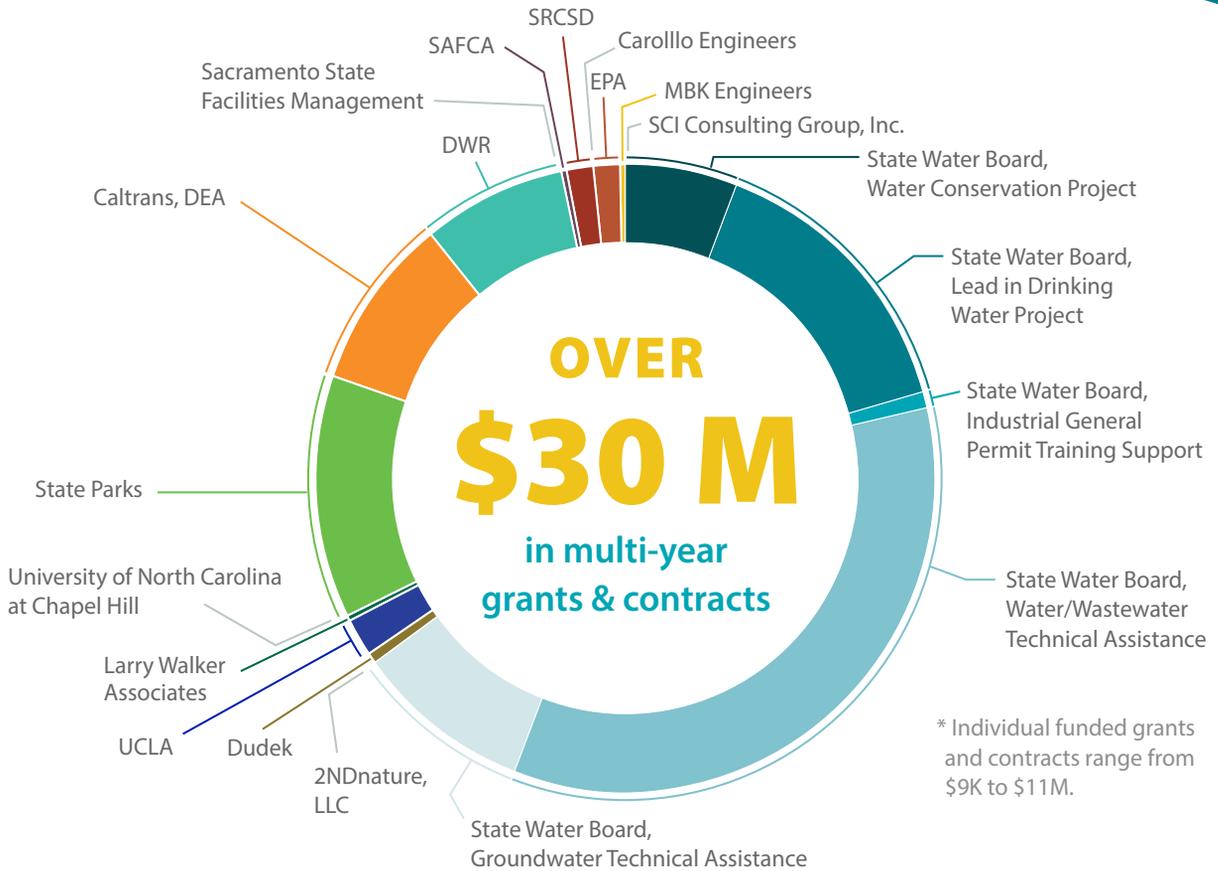
OWP, California Child Care Resource and Referral Network, and the California Rural Water Association develop protocols for lead testing

at these parks and the associated damage to infrastructure. Developed sewer system management plans for seven state parks to comply with regulatory requirements. Provided technical assistance to comply with multiple water quality regulations.

Led a team of faculty, researchers, and students to evaluate the environmental and economic effects of urban water use efficiency regulations based on a framework outlined in 2017 legislation (AB 1668 and SB 606). The project is evaluating the effects on multiple sectors, including urban water supply agencies, wastewater conveyance and treatment, water reuse, urban trees, and urban parklands. The project is a collaboration among experts at Sacramento State, the University of California, Los Angeles, the University of California, Davis, and Humboldt State University.

Provided technical assistance to help over 35 disadvantaged communities in California achieve drinking water standards through planning and design services for infrastructure, such as treatment plants and groundwater wells, as well as assistance in consolidating adjacent water systems.

Applied Research



Funded Grants & Contracts

Impacts of Water Conservation Project

The State Water Board contracted \$2,000,000 with OWP (10/11/19–1/31/22) to support analyzing the environmental and economic of proposed water conservation regulations.

Lead in Drinking Water Project

The State Water Board contracted \$4,900,000 with OWP (10/1/19–1/31/23) to provide technical assistance to Licensed Child Care Centers to collect and analyze drinking water samples and, subsequently, remediate lead contamination that exceeds thresholds.

Asset Management Technical Assistance Project

2NDnature, LLC, contracted \$10,000 with OWP (6/10/20–11/30/20) to provide technical assistance for a plan to implement stormwater infrastructure asset management for the City of Salinas.

Santa Monica Basin Groundwater Sustainability Project

Dudek Engineering and Environmental contracted \$148,400 with OWP (starting 9/3/19) to assist the City of Santa Monica and the Santa Monica Basin Groundwater Sustainability Agency achieve their goals of long-term sustainability and water independence by analyzing potential projects and basin management strategies.

Drinking Water Needs Analysis Project

UCLA contracted \$675,067 with OWP (9/1/19–3/31/21) to assist with a needs analysis on the state of drinking water in California.

Stormwater Technical Assistance Project

Larry Walker Associates contracted \$87,500 with OWP (12/20/19–12/31/20) to assist with regulatory and monitoring services for the Sacramento Stormwater Quality Partnership.

Geographic Information Systems Training for Disadvantaged Communities

University of North Carolina at Chapel Hill contracted \$40,000 with OWP (9/1/18–8/31/20) to provide comprehensive training on and technical assistance for geographic information systems (GIS) to disadvantaged communities.

Affordability of Drinking Water Project

University of North Carolina at Chapel Hill contracted \$13,500 with OWP (1/1/20–10/31/20) to assist with better understanding the affordability of drinking water.

Stormwater Program Technical Assistance

The California Department of Parks and Recreation (State Parks) contracted \$4,092,888 with OWP (05/1/18–05/1/21) to provide technical assistance for its stormwater program.

Stormwater Research Technical Assistance

The California Department of Transportation, Division of Environmental Analysis (DEA) contracted \$3,002,000 with OWP (12/1/19–11/30/22) 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 \$2,500,000 with OWP (1/1/13–6/30/22) to assist the DSOD with dam break food analysis and emergency action plan development.

Environmental Compliance Support

Sacramento State Facilities Management contracted \$28,838 with OWP to assist with stormwater pollution prevention plan (SWPPP) development, trash assessments, and other related tasks.

Levee Scour Hole and Vegetative Wind/Wave Buffer Research

Sacramento Area Flood Control Agency (SAFCA) contracted \$54,500 with OWP (10/03/16–12/31/21) to research and provide recommendations on levee scour holes and vegetative wind/wave buffers.

Wastewater Technical Expertise

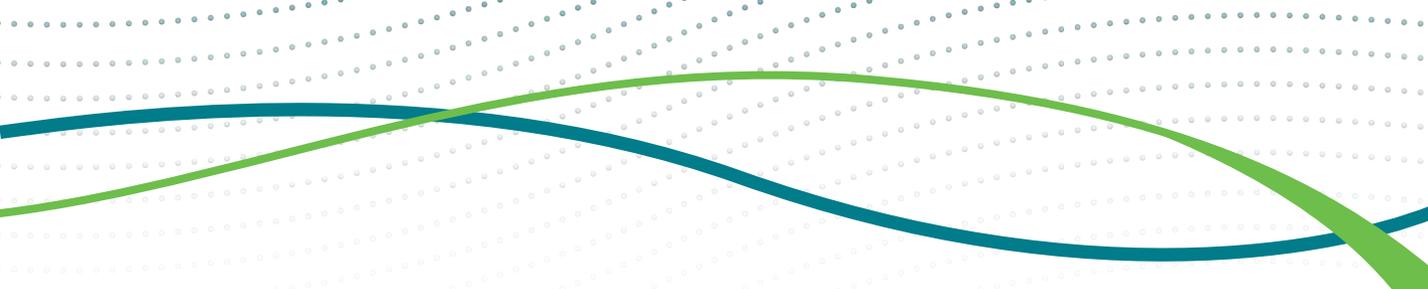
The Sacramento Regional County Sanitation District (SRCSD) contracted \$400,000 with OWP (6/11/03–12/31/20) to provide technical assistance, with a focus on wastewater characterization and treatment.

Wastewater Generation Rates Study

Carollo Engineers contracted \$40,181 with OWP (5/15/18–6/30/20) to assist with a project designed to determine wastewater generation rates from different sources.

Qualified SWPPP Developer and Qualified SWPPP Practitioner Testing and Certification

CASQA contracted with OWP (executed on 1/21/11) 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 (executed on 05/23/16) to develop and implement an online system to train and test Qualified Industrial Stormwater Practitioner certificate candidates.

Environmental Finance Center (Region 9)

US Environmental Protection Agency (EPA) contracted \$436,000 with OWP (10/16–09/20) to develop, operate, and maintain an Environmental Finance Center for Region 9.

California Industrial General Permit Training Program Support

The State Water Board contracted \$200,000 with OWP (2/28/18–3/31/20) to assist with enhancing the Industrial General Permit training program.

Yuba County Water Agency Project Priority Optimization

MBK Engineers contracted \$48,971 with OWP (executed on 12/11/17) to assist with developing a project prioritization methodology for the Yuba County Water Agency. Jonathan Kaplan (Sacramento State Economics professor) is performing the majority of the work.

Drinking Water and Wastewater Technical Assistance and Outreach

The State Water Board, under a Proposition 1 grant, contracted \$11,500,000 with OWP (9/1/16–2/28/22) to provide water and wastewater technical assistance to disadvantaged communities in California.

Groundwater Technical Assistance and Outreach

The State Water Board, under a Proposition 1 grant, contracted \$3,000,000 with OWP (9/1/16–2/28/22) to provide groundwater technical assistance to disadvantaged communities in California.

Stormwater Funding Resource Portal

SCI Consulting Group, Inc., contracted \$9,000 with OWP (9/1/18–3/31/19) to assist with the development of the CASQA Stormwater Funding Resource Portal.

Professional Activities

Conferences

July 2019

California Higher Education Sustainability Conference, Santa Barbara, CA (presenter)

August 2019

UC Davis Workshop on Conjunctive Use, Davis, CA (presenter)

4th Annual California Water Data Summit, Davis, CA (multiple presenters)

Environmental and Water Resources Institute (EWRI) – Operation and Maintenance of Stormwater Control Measures, Minneapolis, MN (presenter)

Tri-State Seminar, Las Vegas, NV (multiple presenters and exhibitor)

September 2019

Water Reuse Foundation 2019 Annual Conference, San Diego, CA (presenter)

National Rural Water Association, Nashville, TN (exhibitor)

Cal-TAP Fair, Redding, CA (presenter and exhibitor)

October 2019

California Stormwater Quality Association 2019 Conference, Monterey, CA (panelist, facilitator, multiple presenters)

Sacramento Regional Builders Exchange, Sacramento, CA (exhibitor)

Cal-Nevada AWWA, San Diego, CA (presenter)

November 2019

Localizing California Waters,
Yosemite, CA (presenter, poster)

CSUS Student Research and
Creative Activity Fall Poster Forum,
Sacramento, CA (poster)

December 2019

American Geophysical Union (AGU)
2019 Fall Meeting, San Francisco, CA
(multiple presenters)

January 2020

2020 Hawaii Water Infrastructure
Finance Forum, Honolulu, HI (co-
host and presenter)

Association of Boards of
Certification, Mobile, AL (presenters
and exhibitor)

PS3 Conference, Long Beach, CA
(presenter)

February 2020

2020 International Erosion Control
Association (IECA) Conference
(participant)

Transportation Research Board
Annual Meeting, Washington, D.C.
(presenter, session presider)

March 2020

Cal-TAP Fair, Carlsbad, CA (presenter
and exhibitor)

June 2020

Environmental Finance Center (EFC)
Day at Environmental Protection
Agency (EPA), webinar (multiple
presenters)

Professional Activities

Committees and Meetings

American River Basin Integrated Water Management Committee

American Water Works Association, California-Nevada Section

- Veterans Liaison Committee
- Veterans Workforce Initiative
- Workforce Strategies Committee

Bay Area Water/Wastewater Workforce Reliability

- Regional Training Work Group Candidate Development Committee
- Women in Trades Committee (chair)

California Association of Career and Technical Education Energy and Utilities (chair)

California Water Environment Association

- P3S Committee
- Regional Board of Directors
- Education Strategies Committee

California Stormwater Quality Association

- Board of Directors
- Vision Committee
- Events Committee
- BMP Subcommittee (co-chair)
- Conference Planning Subcommittee
- Construction Committee
- Effectiveness Assessment Subcommittee
- Impaired Watershed Subcommittee

- Industrial Subcommittee
- Phase II Non-Traditional Subcommittee
- Phase II Subcommittee
- Policy and Permitting Subcommittee

Folsom Cordova Unified School District CTE District Advisory Committee

Innovative Pathways to Public Service Committee

State Water Resources Control Board (State Water Board)

- Construction General Permit Training Team
- Drinking Water Operator Advisory Committee
- Dry Well Assessment Technical Advisory Committee
- Safe to Swim Network Water Quality Work Group

- Industrial General Permit Training Team
- Northern CA Water Quality Monitoring Group
- Southern CA Beach Water Quality Work Group
- Wastewater Advisory Committee

Transportation Research Board Hydraulics, Hydrology, and Stormwater Committee

Washington State TAPE External Board of Reviewers

Water Environment Federation

- National Collection Systems Committee
- Stormwater Committee
- Industrial Subcommittee



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Professional Activities

Publications

Porse, Erik, Kathryn B. Mika, Alvar Escriva-Bou, Eric D. Fournier, Kelly T. Sanders, Edward Spang, Jennifer Stokes-Draut, Felicia Federico, Mark Gold, and Stephanie Pincetl. 2020. "Energy use for urban water management by utilities and households in Los Angeles." *Environmental Research Communications*. 2 (1): 015003.

Shuang, Qing, Hui Jie Liu, and Erik Porse. 2019. "Review of the Quantitative Resilience Methods in Water Distribution Networks." *Water*. 11 (6): 1189.

Patel, Dipen, John Johnston, William Lucas, and Kelly McCamman. 2020. "Bioretention System Enhancements for Nutrient Removal." *Journal of Sustainable Water in the Built Environment*. (6)2: 04020006.



Uppal, Eric, Brian Currier, and John Johnston. 2020. "A Case Study of Capture and Use of Urban Runoff Conveyed Directly to a Drinking Water Treatment Facility as an Alternative Stormwater Management Strategy." *WEF National Stormwater Symposium Proceedings*. March 15–17, 2020. pp.588–616.



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