

FRESNO STATE

California Water Institute NEWSLETTER

Message from Interim Director Ramos

Dear Community,



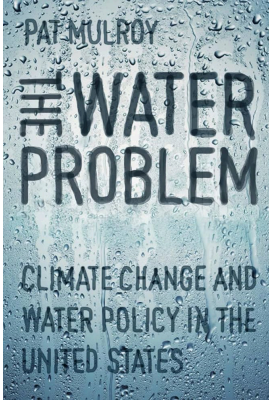
As the year comes to a close, we are excited to bring to you the fourth and last newsletter for 2024. The California Water Institute (CWI) is happy to share with you all the activities we have taken part of this year and are thrilled to highlight our latest research partnerships and ongoing projects, particularly our new collaboration with Sustainable Conservation. This partnership, supported by a grant from the California Department of Food and Agriculture, focuses on implementing on-farm recharge in pistachio orchards across the San Joaquin Valley. By piloting this recharge approach, we aim to explore critical areas like nitrate leaching, soil health, and crop yield, ultimately enhancing water sustainability for local agriculture. Together with Sustainable Conservation and Dr. Sangeeta Bansal, we are committed to delivering actionable insights that benefit both water quality and soil health.

Beyond our on-farm recharge efforts, our Institute has been instrumental in advancing innovative projects and community outreach initiatives. This October, we released our Annual Activities Report, which showcases significant milestones, such as our feasibility study on groundwater recharge basins near small Fresno County communities. We're also proud of our work on Shallow Subsurface Artificial Groundwater Recharge (SSAGR) systems, which explore modern approaches to aquifer replenishment on agricultural fields. By sharing our findings and facilitating public discussions, we strive to bridge the gap between academia and real-world water management.

Looking ahead, our dedication to sustainable water solutions remains steadfast. With funding from the Bureau of Reclamation, we are joining Water Blueprint of the San Joaquin Valley to develop a unified water plan for the region. This comprehensive, data-driven project will be central to identifying long-term solutions for managing our water resources effectively. As always, we're grateful for the collaborative spirit of our partners, faculty, and students in building a sustainable water future for California.

We also had some great educational activities in the past quarter and our students continue to learn and make an impact while gaining career-related knowledge. I hope you enjoy reading all about it as much as the CWI team enjoys making them happen!

Book Club Readers Explore 'Water Infrastructure Issues Strained by Climate Change'



The [California Water Institute](#) launched its Water Book Club this fall semester with the featured book, "The Water Problem: Climate Change and Water Policy in the United States" by Pat Mulroy. The book outlines the country's most pressing water management issues, further strained by climate change. Mulroy explores how to build water resilience in the midst of crumbling U.S. infrastructure with input from scientists, engineers and economists.

Fresno State faculty, staff and students meet weekly for in-depth discussions about the reading. Since its inception in 2019, the semester-long Water Book Club has drawn a diverse range of participants from departments across the university.

"A lot of people are returning members that join every year and they look forward to it," said Kaylie Rogers, CWI's event and office coordinator. "It's cool to hear discussions from other people on campus because some of them have an interest in water, but a lot of them are from other completely different departments."

Past books read by the Water Book Club include "Water to the Angels: William Mulholland, His Monumental Aqueduct, and the Rise of Los Angeles" by Les Standiford and "Superman's Not Coming: Our National Water Crisis and What We the People Can Do About It" by Deckle Edge.

Ag Summit Addresses Water and Agricultural Needs



More than 200 people attended the second annual Ag Summit, held September 4th at Fresno State. Lead by the Maddy Institute and co-hosted by CWI, the event focused on the importance of collaboration in addressing water and agricultural needs. Attendees included farmers, professors, engineers and business professionals who sat in on three panel discussions that addressed California's water system.

Topics included water management projects aimed at increasing storage like the development of the Sites Reservoir, which will be

the second largest off-stream reservoir in California. Other discussions centered on the importance of water data collection in agriculture and how to overcome distrust and conflict among water stakeholders. Dr. Tom Holyoke, professor of Political Science at Fresno State and co-assistant director of the [California Water Institute](#) highlighted ways in which the state government is trying to assist growers and repurpose water supplies.

Wade Crowfoot, secretary of the California Natural Resources Agency emphasized that a functioning water system is key to California's success. In a state of nearly 40 million people with the fifth-largest economy in the world, the Central Valley is critical to the state's survival.

"Ultimately, nobody wins if we all don't work together," Crowfoot said. "We need to find a way to meet our environmental standards — federal and state — and strengthen our water reliability for the Central Valley."

CWI's Annual Activities Report (2023-2024) Highlights Educational Events and Innovative Research



The California Water Institute's Research and Education Division released its Annual Activities Report (2023-2024) in October to highlight a number of innovative research projects and advancements in promoting sustainable water management. The report also celebrated CWI's ongoing efforts to connect with the community through engaging educational events.

Notable research projects include a January 2024 [published report](#) on the findings of a feasibility study that evaluated the groundwater recharge basins near small communities in Fresno County. The effects of this study on future groundwater quality and recharge potential may be a significant step towards addressing critical groundwater issues in the region.

A [published report](#) researched the impact of a Shallow Subsurface Artificial Groundwater Recharge (SSAGR) system, how it works and how it compares to traditional recharge basin technology. The research was done in partnership with the Fresno State University Farm Laboratory and explores the feasibility and benefits of SSAGR systems in agricultural fields.

In addition to this research, CWI will be developing a [unified water plan](#) in collaboration with Water Blueprint of San Joaquin Valley, thanks to a grant awarded by the Bureau of Reclamation. The two-year project aims to identify sustainable, long-term water management solutions in the San Joaquin Valley. The CWI and Blueprint will collect water data to formulate a reliable plan of action, along with educational resources for the public.

For 2023-2024, CWI wrapped up a slate of educational events geared towards children, the Fresno State community, and community members at large. Events included educating the public on the water cycle and marking historical water events that have shaped California's water infrastructure. Activities like Imagine a Day Without Water raised awareness about water issues, availability and support services for water insecurities. The 2023-24 Annual Activities Report is available online [here](#).

Faculty Fellows Program Celebrates Successful Year of Impactful Research Projects



The CWI Research and Education Department is proud to highlight the work of the Faculty Fellows program. Fellows are full-time Fresno State faculty from various colleges, which allows for a multi-disciplinary approach to addressing water resource management challenges in the San Joaquin Valley. During the 2023-2024 Academic Year, the fellows formed two teams to engage in water research. Two of these teams achieved notable success with one of the projects leading to a formal grant submission.

Team 1 focused on creating a White Paper and grant proposal for a farm digital twin. The digital twin would serve effectively as a digital model for an intended or actual real-world physical product, system or process. The digital twin would be used for testing, simulation, monitoring and maintenance. With the support of CWI, the team submitted a \$200,000 grant proposal and is awaiting results. If accepted, work would begin in Spring 2025.

Team 2 focused on the health impacts of groundwater quality in Tulare County. They developed a White Paper to assess how health issues may be associated with local groundwater quality. The

research aims to document health impacts from groundwater use. The White Paper also focused on addressing the possibility of developing educational materials for disadvantaged communities affected by water quality issues and create a documentary to highlight the problems.

Congratulations to the 2023-2024 Faculty Fellows for a remarkable year!

Employee Spotlight | Phoebe Bloomfield



Research student employee Phoebe Bloomfield is working towards her Master of Science in Civil Engineering at Fresno State. Her degree has an emphasis on water resources, which made her an ideal candidate for CWI's research projects.

Most recently, Bloomfield has been focused on a specialized project to digitally map all of the basins, wells and irrigation systems Fresno State owns and operates. She's working with CWI Assistant Director Cordie Qualle to create a single file containing multiple 3D layers showing where Fresno State water systems are located and how they are used. CWI plans to use the digitized inventory to apply for grants to fund construction and implementation of water irrigation systems that support water sustainability on campus.

"Working here has given me experience working in the real world," Bloomfield said. With her degree, she hopes to work with a city water municipality in the future.

Forward this email to a friend, family member, or colleague so they can [subscribe to our email list](#) to receive updates about CWI events and research to support water resiliency in the valley.