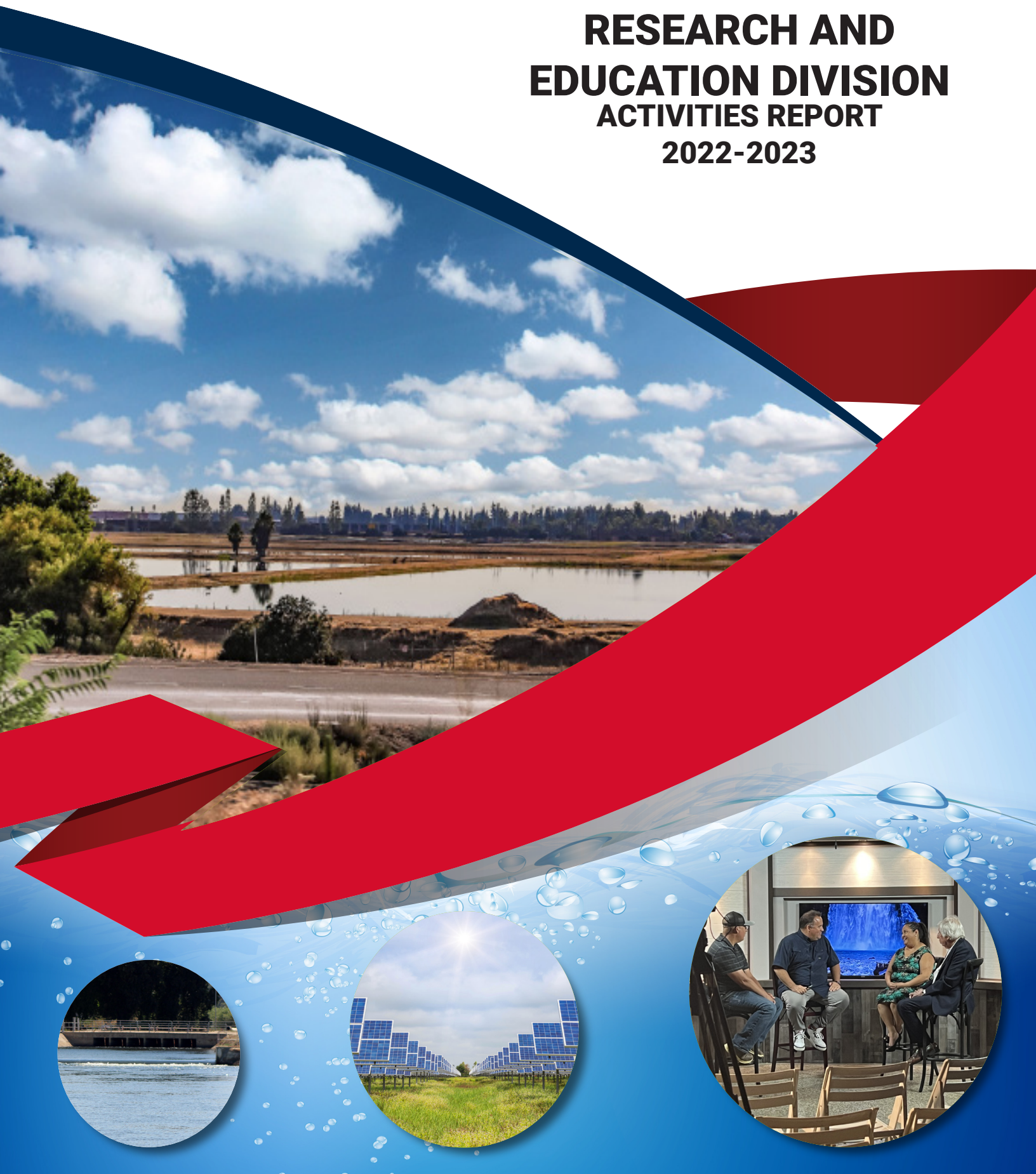


RESEARCH AND EDUCATION DIVISION ACTIVITIES REPORT 2022-2023



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Interim Director's Message



After over 21 years of working at Fresno State in the different water centers, a dream came true of leading one of them with my appointment as interim director of the California Water Institute (CWI). During this year of transition and uncertainty, we made significant progress towards fulfilling our mission of pursuing sustainable water management solutions for the Valley through education, collaboration and research. We onboarded two new projects that will have a big impact for the Valley, the Groundwater Feasibility Study and the Unified Water Plan. We educated the general public at our annual Water Bootcamp and built teams for potential new projects, just to name a few of the accomplishments.

What you will read in the next few pages are activities that help CWI reach our goals everyday of educating about water, sharing water-related research going on at Fresno State, and developing teams to address water resource management issues.

Opportunities for the next year are endless, and my vision is to continue to address water issues in the Valley by developing interdisciplinary teams and continuing to grow a passionate team. In the upcoming year, I am also looking forward to developing a 5-year strategic plan. Keep an eye out on your email, we might reach out to you for feedback as a stakeholder of our center.

As I previewed CWI's activities report, I could not help but be in awe of what we were able to achieve as a team. Just like water resources management does not happen in silos, neither do all of CWI's accomplishments. I could not do this on my own. I am thankful for a team that believes in our mission and is passionate about finding solutions for the Valley's water resource management issues. I am also thankful for our partners and group of stakeholders that support us and those that engage with us to identify issues that Fresno State can help address.

As I let you go to enjoy reading our annual activities report, I want to encourage you to read it with your water issues in mind. Think of ways you might be able to partner with us, or just call us to share your water-related issues, we would love to partner with you!

Sincerely,

Laura Ramos
INTERIM DIRECTOR

Advisory Committee

The Campus Advisory Committee includes one faculty member from each college to provide multidisciplinary guidance to CWI. We are thankful for all the advise they provide our team.



Florence Cassel



David Drexler



Andres Jauregui



Andrew Jones



Robert Lull



Fayzul Pasha



Frederick
Peinado Nelson



Monica Rivera



Beth Weinman

Education & Outreach

Fall 2022 Fresno State Water Showcase: Imagine a Day Without Water (October 20, 2022)

CWI hosted the virtual Fall 2022 Fresno State Water Showcase: Imagine a Day Without Water. The event highlighted Fresno State water-related research and studies, educational discussions, activities, and more. Imagine a Day Without Water is a national education campaign that highlights how water is essential, invaluable, and in need of equitable investment. To watch a replay of the event, please visit www.californiawater.org/community/.



The book club took a tour of the City of Clovis Water Treatment Plant.

Water Book Club (February – May 2023)

During the spring of 2023, staff, faculty, and students at Fresno State read “Superman’s Not Coming: Our National Water Crisis and What We the People Can Do About It” by Erin Brockovich. The club met virtually and discussed how mismanagement, chemical spills, mishandling of toxic waste and sludge, and even fake studies have created the perfect storm in terms of damaging water systems in the United States. Participants learned and asked questions about water contaminants, effects of water contaminants, and how we the people can help our nation’s water crisis for current and future usage. After the Water Book Club concluded, participants took a tour of the City of Clovis’ Water Treatment Plant to get a firsthand look, education, and understanding of a local water system.

Water Bootcamp (May 3, 10, 17, & 24, 2023)

In partnership with the World Ag Expo, California Water Institute’s Water Bootcamp is an annual, multi-day, virtual series dedicated to water topics. During Water Awareness Month in May, CWI hosted Water Bootcamp every Wednesday to increase the public’s knowledge about water management and provide resources for San Joaquin Valley communities. Topics included the following: hydrology, watersheds, climate change, introduction to water rights, Sacramento-San Joaquin Delta, surface water rights, stormwater, surface water and distribution, groundwater overview, groundwater recharge, and groundwater regulations. All topics were also presented in Spanish.



Canal running through agricultural land in the San Joaquin Valley.

Presentations and Appearances



Interim Director, Laura Ramos, during the Valley PBS panel discussion.

Valley PBS “California’s Watershed Healing” Screening Panel Discussion (September 8, 2022)

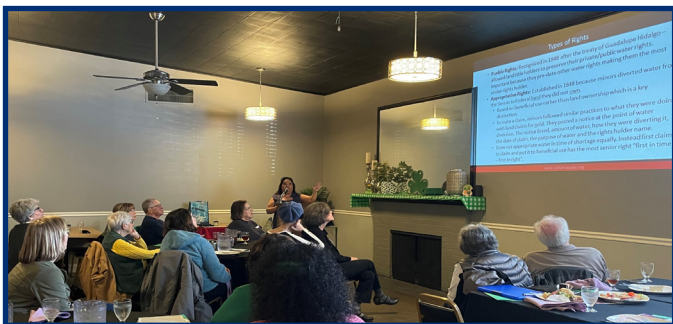
Interim Director Laura Ramos was invited to participate in a panel discussion after the screening of Chronicles Group’s “California’s Watershed Healing” documentary. The documentary was in celebration of Westlands Water District’s 70th anniversary and was hosted by Valley PBS.

World Ag Expo (February 15, 2023)

In February, the CWI participated in the World Ag Expo seminar sessions by providing four general water presentations. Interim Director Laura Ramos presented 30-minute sessions about water distribution, groundwater recharge, water rights, and the Sacramento-San Joaquin Delta. The seminars were very well received and were attended by 45-66 guests each session.



CWI water session at the World Ag Expo.



Interim Director, Laura Ramos, presents to Tulare County League of Women Voters.

League of Women Voters Educational Water Presentation (March 21, 2023)

Interim Director Laura Ramos was asked by the Tulare County League of Women Voters to present on an introduction of water in California that highlighted groundwater recharge and water rights. Interim Director Laura Ramos educated approximately 35 attendees, so they are better informed when voting on future water issues.

Let’s Talk Water (April 22, 2023)

In honor of Earth Day, Interim Director Laura Ramos was invited by the Fresno County Public Library to present on preserving the environment and why it is important to conserve water.

In the News

Se espera que continúen las inundaciones en el Valle Central con el derretimiento de nieve

https://www.univision.com/local/fresno-kftv/se-espera-que-continuen-las-inundaciones-en-el-valle-central-con-el-derretimiento-de-nieve-video?utm_campaign=Noticias+Univision+21+Fresno&utm_content=sprout&utm_medium=social&utm_source=twitter

Interim Director Laura Ramos was interviewed by Univision Fresno regarding the early floods California experienced in the year. Ramos explained that even though the rain is over, it is expected to flood again due to all the heavy snowpack melting as we enter the warmer weather.

Every Drop Counts: Experts Encourage Continued Water Conservation

[fresnostatenews.com/2023/06/05/every-drop-counts-experts-encourage-continued-water-conservation/](https://www.fresnostatenews.com/2023/06/05/every-drop-counts-experts-encourage-continued-water-conservation/)

Interim Director Laura Ramos and Associate Director Cordie Qualle were interviewed on the drought that California has been facing for years. Since California experienced an abundance of winter storms, many Californians believe we are no longer in a drought, but both Ramos and Qualle explain this is not the case. They also explained how groundwater works and what happens when we experience both dry and wet years.

Continued Rains Highlight Ongoing Water Storage and Flood Concerns

<https://www.fresnostatenews.com/2023/03/23/continued-rains-highlight-ongoing-water-storage-and-flood-concerns/>

Above-average rainfall in the Fresno area has raised concerns about water storage and potential flooding. With the possibility of more wet weather due to cyclical atmospheric river events occurring every five to six years, experts emphasize the need for updated water infrastructure to handle extreme weather and rapid snowmelt. With better water management and infrastructure, California has the opportunity to capture excess water during wet periods for groundwater recharge and reduce downstream flooding risks.

Water Experts Explain What Large Snowpack Levels Mean for the Valley

<https://www.fresnostatenews.com/2023/03/02/water-experts-explain-what-large-snowpack-levels-mean-for-the-valley/>

Experts at CWI caution that despite record-breaking atmospheric rivers and an above-average snowpack, drought concerns remain as the State's water capture and management pose challenges. Inadequate infrastructure and climate change contribute to excessive water runoff and the risk of flooding. Early snowmelt strains reservoir capacities, highlighting the need for collaborative efforts among water stakeholders to develop efficient water operations that can withstand conditions in both extremely dry and wet years.

Registration Open for California Water Institute's Water Bootcamp

<https://www.fresnostatenews.com/2023/04/27/registration-open-for-california-water-institutes-water-bootcamp/>

May the month of Water Awareness has arrived. This month is dedicated to educating about the importance of water conservation, the value of water as a natural resource, and the need to use it wisely and sustainably. CWI has contributed to water awareness by hosting an annual May Water Awareness Month Water Bootcamp. This free multi-day, virtual series is dedicated to water education. The bootcamp, hosted in partnership with World Ag Expo and open to all, is held every Wednesday in May. It tackles topics including hydrology, groundwater, surface water, water rights and stormwater quality.

Can Californians Keep Their Lawns?: California Today

<https://www.nytimes.com/2023/06/01/us/california-lawns-water-preservation.html>

Interim Director Laura Ramos was quoted in the New York Times in an article on Californian's lawns.

What to Know About California’s Boosted Water Allocations

<https://www.nytimes.com/2023/05/08/us/california-water-allocations.html>

Interim Director Laura Ramos was quoted in the New York Times in an article on California’s increased Water Allocations.

California Water Commission Second Issue

https://awra.org/ItemDetail?iProductCode=IMPACT_03_2023&utm_medium=email&utm_source=govdelivery

Interim Director Laura Ramos was highlighted in the 2023 March/April issue of the Water Resources IMPACT magazine.

Research Projects

California Partnership for the San Joaquin Valley - Water Work Group

Working with the Office of Community and Economic Development, CWI staff is helping coordinate and facilitate the San Joaquin Valley Partnership Water Work Group. In 2023, the work group is focused on developing an outreach plan and marketing materials to inform San Joaquin Valley growers about resources available to them to learn more about groundwater recharge benefits and how to get involved. A website is also being developed with resources available from city, county, state, and federal agencies. These resources will highlight groundwater recharge benefits, success stories, how to overcome limitations, and best management practices. Information on this effort will be shared on RechargeCA.org once completed.



Leaky Acres, a large scale groundwater recharge project in Fresno, is a prime example of what a beneficial land usage could be.



Solar panels used to produce energy for farm use, placed in agricultural land no longer being farmed.

Climate-Smart Farmland Transition Study

The Public Policy Institute of California has partnered with CWI to assist with stakeholder outreach and engagement for the Climate-Smart Farmland Transition Study. The objective is to fill knowledge gaps and bring together diverse stakeholders crucial to implementing elements of the farmland transition approach. The study will analyze the following gaps: (1) information on the benefits and costs of different land management options, (2) estimates of funding needs and potential funding sources for different types of beneficial land uses, and (3) an understanding of how institutions and policies can be structured to facilitate adoption of beneficial approaches. The success of a coordinated approach also hinges on collaboration of diverse stakeholders who may not normally work closely, such as growers, water managers, city and county land

use planners, and soil and air quality experts. The goal is to advance cooperative strategies for managing the Valley’s formerly irrigated croplands for greatest benefit.



Urban city street gutters with stormwater pollution warning sign.

Fresno Metropolitan Flood Control District: Stormwater Bootcamp

With support from the Fresno Metropolitan Flood Control District (FMFCD) through its 2023 Clean Stormwater Grant, CWI included a presentation on stormwater quality during its annual Water Bootcamp. Held in May during Water Awareness Month, the Water Bootcamp is a virtual multi-day series dedicated to water topics. The educational series aims to increase water knowledge and provide resources for San Joaquin Valley community members. With information and materials provided by FMFCD, CWI's presentation included information about stormwater, urban stormwater runoff, water quality and water pollution prevention.

Groundwater Recharge Feasibility Study

With funding received by Pacific Western Bank, the California Water Institute is conducting a Groundwater Recharge Feasibility Study. Due to proximity or lack of financial resources, not all small water systems and domestic wells can be consolidated into a larger municipality. While groundwater recharge work is already being done, this feasibility study will provide recommendations to help agencies strategically place recharge basins where most effective. Without a placement strategy, the investments in and efficacy of groundwater recharge cannot be fully realized or ensure a benefit to small communities.

Kings Water Alliance Community Outreach Campaign

The Kings Water Alliance (KWA) contracted with the California Water Institute in a community outreach campaign in the greater Raisin City area to increase the level awareness of the KWA, which was formed to efficiently implement new State water quality requirements including KWA's free bottled water delivery and nitrate testing program. Outreach was conducted in English or Spanish depending on the resident. CWI is also facilitating conversations with KWA's constituents to review and implement their Early Action Plan. The Early Action Plan identifies short-term drinking water solutions for residents in areas that are impacted by nitrates higher than government safe drinking water standards.



Group photo of CWI team and volunteers who participated in canvassing Raisin City.



CAP tour participants visit the San Luis Reservoir.

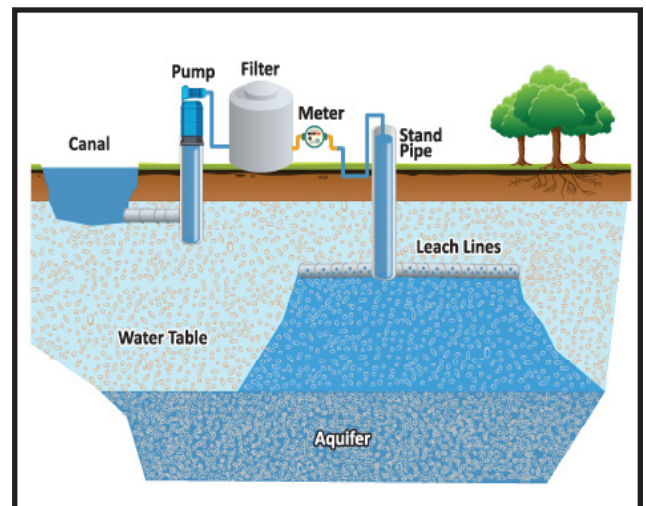
San Joaquin Valley Water Collaborative Action Program

CWI is part of the facilitation and coordination team for the San Joaquin Valley Water Collaborative Action Program (CAP) in developing recommendations for more resilient water and land management. CAP is a coalition of over 70 leaders from agriculture, water agencies, environmental justice organizations, environmental organizations, academia, and state and federal agencies. Multiple public and private organizations at the local, state, and federal levels are working to address the Valley's water challenges through on-the-ground actions and collective efforts. CAP aims to support the multiple efforts across the Valley by identifying ways to overcome barriers and accelerate action that benefits all interests.

In Phase 1, CAP participants agreed on a problem statement, identified desired outcomes, and an initial solution set necessary to achieve long-term sustainability. In Phase 2, CAP will develop actions (e.g., policies, funding, projects) that result in more resilient water and land management for Valley communities, agriculture, and ecosystems.

Shallow Subsurface Artificial Groundwater Recharge (SSARG) System Research

CWI is working with the Fresno State University Farm Laboratory to conduct research on the economic feasibility, soil health, water usage, and impacts and benefits of a Shallow Subsurface Artificial Groundwater Recharge (SSAGR) system in agricultural fields. An innovative groundwater recharge approach, SSAGR is the application of a recharge system installed below the crop's root zone. A SSAGR system is comprised of a pipe structure with perforations allowing any runoff water or excess available surface water to be transported and distributed through the pipe, facilitating the percolation of water into the groundwater aquifer.



The illustration demonstrates how the subsurface groundwater recharge operates.



Canal running through agricultural land in the San Joaquin Valley.

Unified San Joaquin Valley Water Plan

The California Water Institute Research and Education Division and the Water Blueprint for the San Joaquin Valley are working together to develop a unified water plan for the San Joaquin Valley. In consideration of the range of ongoing and at times disconnected work to identify water management solutions for areas of the Valley, the Unified Water Plan Report (Report) will leverage available information and assets to describe an approach for the development of comprehensive regional solutions. The Report will coordinate and integrate projects between San Joaquin Valley subregions in the development of a unified plan that enables and is consistent with local projects and efforts.

Contact:

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