

Assembly Committee on Water, Parks and Wildlife Informational Hearing on  
“Balancing Water Needs into the Future: The San Joaquin Valley Example”

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Testimony: Addressing Water Supply and Quality Challenges in the San Joaquin Valley

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The San Joaquin Valley produces more than half of California’s agricultural output. Irrigated farming is the region’s main economic driver and predominant water user. The region is also ground zero for many of the state’s most difficult water management problems—including long-term depletion of groundwater reserves, lack of safe drinking water in many rural communities, and accumulation of a variety of groundwater contaminants.

Over the past three years, the PPIC Water Policy Center has worked with an interdisciplinary team of researchers from Fresno State, Point Blue Conservation Science, UC Davis, and UC Merced to examine these challenges and identify promising solutions. Today, I’ll provide you with some highlights from our latest report, [Water and the Future of the San Joaquin Valley](#), including areas where the California Legislature can be most helpful in facilitating progress. Two of my coauthors on this study—Sarge Green from Fresno State and Thomas Harter from UC Davis—are also here to answer your questions.

I’ll touch on four priority areas for action: balancing water supplies and demands; ensuring safe and reliable drinking water supplies; managing groundwater quality for the long-term; and fostering beneficial water and land use transitions.

### 1. Balancing water supplies and demands

Chronic groundwater overdraft—pumping in excess of the amount that is replenished—averages nearly 2 million acre-feet per year in the San Joaquin Valley, or roughly 11 percent of the region’s net water use. The consequences include dry wells, sinking lands, damaged infrastructure, and reduced reserves to cope with future droughts.

In light of these problems, the valley is on a fast track to implement the Sustainable Groundwater Management Act (SGMA), which requires groundwater users to bring water supplies and demands into balance by the 2040s. The first local sustainability plans must be finalized and launched in early 2020. Although attaining balance will benefit the valley’s economy over the long-term, it will entail some near-term costs.

To end overdraft, local groundwater sustainability agencies (GSAs) will have to augment supplies, reduce demands, or use some combination of these approaches. We estimate that about a quarter of the historical deficit can be filled with new supplies at prices farmers can afford. The balance will likely need to be met by managing farm water demand—with the idling of at least 500,000 acres of irrigated cropland (about 10% of current acreage).

On the supply side, the most promising options are to capture and store more local runoff in groundwater basins, and to increase water imports by managing the system differently. On the demand side, increasing water trading—both within and across groundwater basins—can significantly mitigate the economic impacts of reducing water use, by allowing farmers to maintain the crops that generate the most revenue, GDP, and jobs.

Reducing overdraft gradually between now and 2040—the “glide path” approach to implementing SGMA—can also lessen the costs of adjustment by giving farmers more time to adapt.

Priority actions to facilitate the adoption of an optimal supply and demand portfolio approach include:

- Assessing which new infrastructure investments—including conveyance—are warranted to support more recharge and water trading.
- Incentivizing recharge on farmland—one of the most cost-effective ways to store water.
- Developing transparent and equitable local water trading rules, including for groundwater.
- Clarifying how much additional high winter and spring runoff is available for recharge.
- Facilitating state and federal approvals for water trading and groundwater banking projects.
- Coordinating both within and across groundwater basins to maximize benefits.

Although local and regional water users and agencies will need to take the lead on many of these actions, both the state and federal governments can play vital roles. The state can be especially helpful in clarifying how much water is available for recharge, facilitating approvals for water trading and groundwater banking projects, and working with local partners to assess infrastructure needs.

## **2. Ensuring safe and reliable drinking water**

The valley’s most urgent water issue is addressing chronic problems of unsafe and unreliable drinking water in rural communities, most of which rely on groundwater. The region is a hot spot for unsafe drinking water. With just 10 percent of the state’s population, it is home to more than half of all community water systems that have persistently contaminated tap water. Contamination is also a problem for very small water systems that are regulated by counties and for homes served by domestic wells. Some groundwater contaminants—such as arsenic and uranium—occur naturally. Others are caused by human activity. For instance, agriculture is the primary source of nitrate, a serious contaminant that is widely present in shallow wells.

The region is also a hot spot for unreliable drinking water supplies in communities that depend on shallow wells. During the latest drought, roughly half of the 150 small water systems that sought emergency assistance from the state were in the valley, as were nearly 80 percent of all residents who reported dry domestic wells. Without concerted action, this vulnerability will persist. Several thousand additional drinking water wells are vulnerable if groundwater levels fall another 30 feet—something that could easily happen during the next drought, or if local groundwater sustainability plans allow continued overdraft under a glide path approach and fail to mitigate the problem.

In recent years, various legal and administrative changes have helped address the drinking water crisis. But there is still an urgent need to build a robust, comprehensive framework for tackling it. Affected communities will require technical, financial, and managerial assistance. Here are some top priorities:

- Consolidating or aggregating systems to provide economies of scale to small water systems.
- Providing technical support.
- Planning for shortages and developing rapid response procedures to mitigate dry wells.
- Ensuring funding support for both capital investments and ongoing operations and maintenance.

A variety of local parties—including counties, urban water suppliers, irrigation districts, groundwater sustainability agencies, pollution dischargers, and NGOs—will need to play a major role in helping to address this problem. But the state must take leadership in developing funding solutions and ensuring there's a comprehensive plan for addressing both quality and supply vulnerabilities in a timely manner.

### **3. Managing groundwater quality for the long-term**

Valley farmers and other dischargers of contaminants must also meet new requirements for protecting groundwater and soils from the long-term buildup of nitrate and salts. California has been a national leader in seeking to address these problems, with a suite of new regulations adopted over the past decade. The Salt and Nitrate Control Program (SNCP)—adopted by the Central Valley Regional Water Quality Control Board in 2018 and pending approval by the State Water Board—provides an umbrella framework for addressing these challenges. SGMA also requires GSAs to protect water quality while balancing groundwater supplies and demands.

Nitrate in drinking water wells, which originates primarily from inorganic nitrogen fertilizer and manure used in farming, poses significant public health risks. Dairies face special challenges in managing manure efficiently, and solutions have remained elusive.

Salinity is a growing threat to local agricultural productivity. Roughly 250,000 acres of cropland have already been retired due to salinity in soils, and another 1.5 million acres are considered impaired.

But managing for these contaminants is costly. The SCNP seeks to find a balance between protecting water and land resources for the long run and maintaining the viability of agricultural production in the present, while also ensuring safe drinking water solutions.

Here are some top priorities for action:

- Coordinating water quality and quantity management. This will be especially important for managing groundwater recharge, which under some circumstances can accelerate the migration of chemicals in the soil into the aquifer (especially nitrate) and impair drinking water quality, at least for a time.
- Implementing new technologies to manage pollutants. This will be especially important for dairies, which need to remove excess manure and transform it for other uses.
- Providing regulatory flexibility. This includes flexibility to allow some continued loading of nitrogen and salt as long as impacts on drinking water supplies are mitigated, as proposed under the SNCP.

While local water managers, farmers, and the agricultural industry will need to take the lead in addressing these issues on the ground, the state can play a major role in providing effective and responsible regulatory flexibility, and in supporting research and development (R&D).

### **4. Fostering beneficial water and land use transitions**

Finally, the valley will need to plan for and manage the changing landscape as some cropland is idled—both to avoid negative consequences from dust, pests, and weeds, and to get the most value from these lands in other uses. Pursuing approaches that seek multiple benefits on this land can support the regional economy, public health, and the environment. There are numerous stewardship options: healthy soils, habitat, wildlife-friendly solar, recharge, flood protection, recreation.

There are already some models of how this can work. For instance, the Kern Water Bank provides thousands of acres of upland habitat for San Joaquin desert species and abundant intermittent wetlands, while also serving as a

major groundwater storage site. But to date, there is no serious planning effort to see how lands coming out of production might be used most productively, and how to provide the right incentives to realize this potential.

Here are some top priorities for action:

- Initiating broad-based, inclusive planning. For many issues—ranging from determining the best areas for habitat investments to coordinating recharge and managing salinity—taking a valley-wide perspective will be key.
- Implementing flexible regulatory approaches to make it easier to implement multi-benefit restoration projects.
- Providing incentives and funding to support activities on the ground.
- Boosting technical support and R&D.

Again, local and regional parties will need to take the lead on many aspects of this work. But state and federal agencies can facilitate good outcomes by providing regulatory flexibility, financial incentives, and support for technical assistance and R&D.

### **How can the Legislature be most helpful now?**

The valley is at a pivotal moment, and there are many ways in which the state can assist the region's residents implement efficient, equitable, and sustainable solutions to their water-related challenges. Here are some final thoughts on how the Legislature can be most helpful in the near-term:

**First, ensure a robust, comprehensive framework for safe and reliable drinking water solutions.** This is an urgent public health issue and needs urgent attention. The framework should include reliable funding, as well as a sound, timely approach to providing technical and managerial solutions on the ground.

**Second, support the building blocks for the region's transition to groundwater sustainability.** Planning for sustainable groundwater management is well underway, but this transition won't happen overnight. Early actions to promote forward momentum will be especially valuable in the next few years.

To create the preconditions for success, the state should accelerate its own efforts to provide regulatory clarity, consistency, and flexibility. Key areas include how much water is available for recharge, how to recharge in ways that are acceptable from a water quality perspective, and how to implement broad-based, multi-benefit restoration projects that put land coming out of production to best use.

Support for local and regional initiatives can also make a difference. Key areas include assistance with the assessment of smart infrastructure investments, pilot efforts to implement innovative approaches on the ground, technical support and R&D for water quality and land stewardship solutions, and broad-based planning to develop regional approaches for multi-benefit management of water and land.

California has long been a model for others in the management of natural resources. Many are now looking to see how we tackle the tough challenges of providing safe drinking water to all residents and managing our groundwater resources sustainably for the long term. The San Joaquin Valley is on the front line for addressing both of these challenges. The region's farmers and residents have a history of creatively adapting to difficult and changing conditions, and constructive solutions are in reach. The state can provide vital support to help ensure success.