

A PATHWAY FOR THE FUTURE: Sustainable Groundwater Management in the Sacramento Valley

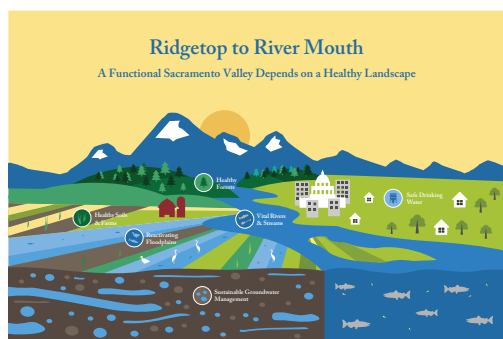


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he sustainable management of groundwater resources is critical to the economic, social and environmental fabric in the Sacramento Valley and is an essential element of ridgetop to river mouth water management. This document offers a path forward for groundwater sustainability in the Sacramento Valley and calls upon the leaders in the region to utilize our extensive and valuable natural infrastructure, including the groundwater aquifers and recharge areas, as part of a healthy landscape necessary for a functional Sacramento Valley and greater water supply resilience.

As part of ongoing efforts to achieve [regional water sustainability](#), the leadership in the Sacramento Valley is dedicated to address all the undesirable results described in the Sustainable Groundwater Management Act (SGMA). Through the Northern California Water Association (NCWA), there is a concerted effort to bring the region together to actively manage our water resources—both surface and groundwater—for multiple benefits that ensure sustainable water supplies for cities and rural communities, farms, fish, birds, recreation, and hydropower. In managing water from the ridgetop to the river mouth, we fully appreciate and embrace the Sacramento Valley's natural infrastructure, including our groundwater aquifer systems and their relation to both our rivers and creeks and the landscape that supports these vital rivers and creeks.



The past decade, which has seen a series of consecutive dry years (i.e., 2013-15; 2020-2022) interspersed with a few wet years, illuminates both the pressures on the Sacramento Valley's water resources and the importance of actively managing groundwater resources, with a focus on groundwater recharge. Groundwater directly provides nearly 30% of the region's water supplies, with this percentage increasing during dry years and during sustained droughts. The interconnection of surface water and groundwater has been evident during these dry years, as the lack of available surface water has affected every beneficial use of water and has placed greater demands on groundwater supplies and our aquifer systems, highlighting the importance of SGMA and the need for a clear pathway for groundwater sustainability.

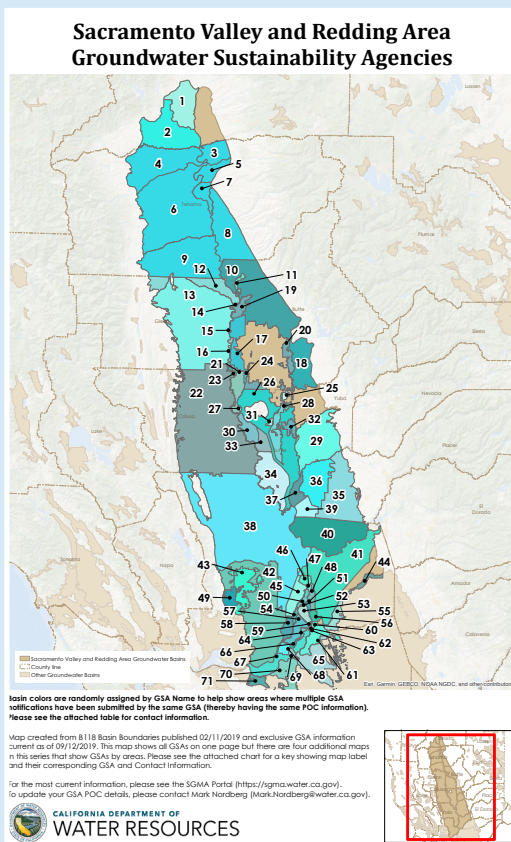
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1.

The Foundation: Groundwater Sustainability Plans (GSPs)

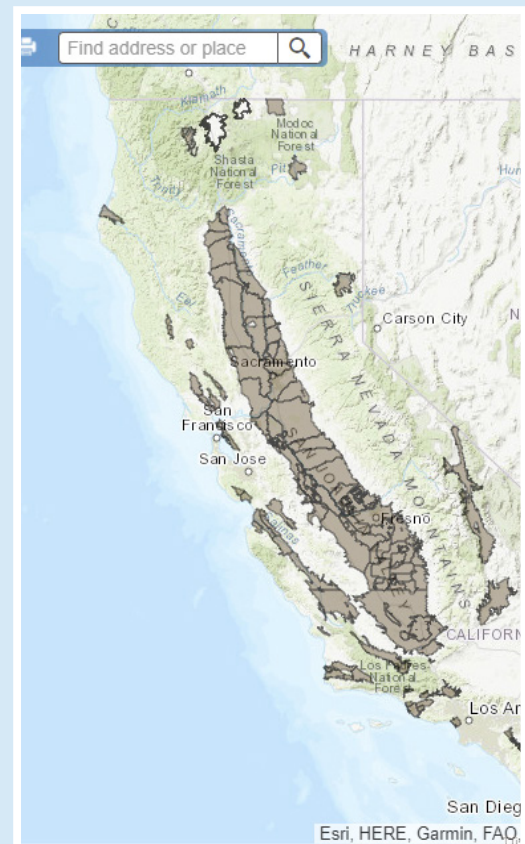
Groundwater Sustainability Agencies (GSAs) have formed and organized on every part of the Sacramento Valley floor, providing an integrated governance structure of public agencies and stakeholders who have authority and responsibility to steward groundwater resources. The GSAs have submitted eighteen (18) Groundwater Sustainability Plans (GSPs) to the Department of Water Resources (DWR) that will guide sustainable management for all high and medium priority sub-basins.

GSA Map



[GSA Map](#)

DWR GSP Status



[DWR GSP Status](#)

The Foundation: Groundwater Sustainability Plans (GSPs)

The GSPs all include a description of the physical setting and characteristics of the aquifer system underlying the basin and they include Sustainable Management Criteria (SMCs) to avoid the four most relevant undesirable results: chronic lowering of groundwater levels; degraded groundwater quality; land subsidence; and depletions of interconnected surface water.

To ensure consistency across the region while respecting local governance and conditions, there was significant regional coordination in preparing the GSPs. This included multiple plans for adjacent sub-basins developed by teams working within all of the sub-basins; and three layers of coordination: 1) the NCWA Groundwater Management Task Force meetings with policy-level GSA representatives; 2) SGMA consultant coordination meetings with GSP technical staff; and 3) the sub-regional inter-basin coordination. This active coordination and sharing of information established common ground on many parts of the GSPs, while respecting local conditions. As part of this coordination process, our technical team developed a valley-wide monitoring network of over 600 wells screened across a range of aquifer depths (see below), which will help in identifying existing data gaps, facilitate coordination of monitoring networks across sub-basins, and help prioritize future investment.

The GSPs are the foundation for future management in the Sacramento Valley. The GSAs are now working to build upon this foundation by exercising their new governance structures and prioritizing the implementation of various programs to help ensure sustainability in the region. Institutional capacity will be key for GSAs to effectively serve this role. The GSAs are committed to an open, transparent, and all-inclusive adaptive management strategy that includes active monitoring of sub-basin conditions and addressing any challenges related to maintaining groundwater sustainability by scaling and implementing projects and management actions (PMAs) in a targeted manner that reflects the needs within the sub-basin. With the dry year pressures in the Sacramento Valley, many of the planned projects contained within the GSPs are being accelerated. The GSP annual reports provide an opportunity each year for the GSAs to evaluate current sub-basin conditions and assess the need for further PMAs.



2.

Looking to the Future: Implementation

The Northern California Water Association in the fall of 2021 convened three scenario planning sessions working with state and federal agencies and conservation partners to identify early actions, cooperative approaches, and creative partnerships that can help us protect shared values that will mitigate the economic, social and environmental impacts from another dry year. This was continued in December 2022 and revisited every year to refine priorities. As part of this process, we explored opportunities to integrate ridgetop to river mouth actions to provide multiple benefits for our communities, economy and ecosystems for long-term resilience in the face of weather whiplash. Several sessions focused specifically on groundwater resources and helped prioritize short-term implementation building upon the newly submitted GSPs. Six regional priorities emerged from the discussion, which will be described below. These sessions renewed our focus on the natural infrastructure and the importance of a healthy landscape in the Sacramento Valley—including our groundwater aquifer systems—to conjunctively manage our resources and deploy [nature-based solutions](#) to achieve sustainability.



Ensure safe drinking water for communities

All Californians have a right to safe, clean, affordable and accessible water under the “human right to water” established in state law in 2012. The leaders in the Sacramento Valley have committed through the North State Drinking Water Solutions Network to ensure that all communities in our region have access to safe drinking water, including groundwater. We are working together to advance comprehensive solutions to drinking water problems and the water quality protection programs underway to [ensure high quality water for communities, ecosystems and farms](#). Some water systems and domestic wells face technical, financial, or managerial challenges—both now and in the future—that may compromise their ability to serve their communities. Our goal is to help connect these systems with the resources and expertise needed to help solve their issues. Tremendous progress has been made to improve community water supplies and there continues to be a concerted effort in every part of the region to assist communities and other domestic wells to ensure they have safe and reliable water supplies. For more information, see the [North State Drinking Water Solutions Network](#) and [Resources Available to Assist Local Communities with Water Shortages](#).

▶ Advance groundwater recharge opportunities

Water agencies and GSAs in the Sacramento Valley have a strong interest in [accelerating multi-benefit groundwater recharge](#). Conjunctive management of surface and groundwater resources has been a central part of water management in the Sacramento Valley and will continue to be important for the sustainability of our water resources into the future. (See [Sacramento Valley Groundwater Assessment](#), June 2014). [Groundwater beneath the Sacramento Valley offers hope in dry times](#). The Legislature in SGMA expressed its intent “to increase groundwater storage and remove impediments to recharge” and the Governor’s Resilience Portfolio calls on the state to “help regions secure groundwater supplies by exploring ways to further streamline groundwater recharge and banking efforts...and provide technical assistance...” (§10720.1(g); §3.4.) Although groundwater levels in the Sacramento Valley have been generally consistent—draw down during dry years and then recovery in wet years—a few areas of concern have emerged and the recent dry periods are revealing certain areas where groundwater levels are not recovering as they have in the past. As part of the water budgets for GSPs, many GSAs are prioritizing more deliberate groundwater recharge opportunities as a preferred option to achieve balanced and sustainable groundwater conditions.



▶ Protecting our water and community infrastructure: Taking action to prevent subsidence

The leaders in the Sacramento Valley are committed to protect our water and community infrastructure through sustainable groundwater management and to prevent the undesirable result of subsidence now and into the future. We are taking seriously the recent [InSAR reports](#) that suggest subsidence may be occurring in certain parts of the Valley, particularly in areas where surface supplies are not available. Water resources managers and Groundwater Sustainability Agencies (GSAs) are very concerned about subsidence and are working hard to address these issues and are taking necessary actions to prevent subsidence to protect our local infrastructure, including aquifers, water conveyance and flood protection facilities, and communities.



The NCWA Board of Directors in November 2024 adopted a [policy statement](#) on subsidence that will help guide our actions in the subareas within the region that are vulnerable to subsidence. The GSAs are now focused on the implementation of SGMA and the GSPs, which includes avoiding undesirable results such as subsidence, and taking actions to bring these areas into balance with respect to their water supplies and sustainable groundwater management. The GSAs in these vulnerable subareas are actively working on corrective actions for their GSPs that will include necessary actions and best management practices to prevent subsidence. The GSAs will work closely with DWR on developing sound best management practices and provide corrective actions over the next several years.

Better understand and manage surface water and groundwater interaction

In addition to advancing groundwater recharge opportunities, concerted efforts are underway in the Sacramento Valley to better understand and then manage surface water and groundwater interaction. This is a highly complex dynamic that will require technical expertise and a regional approach to inform the GSPs and the ensuing actions for sustainability. A technical team convened by NCWA—working closely with the GSAs, conservation partners and DWR—continues to work on a regional approach for GSAs to [better understand](#) and focus on how to sustainably manage surface water and groundwater that includes the following:



- 1** Develop a methodology for SGMA undesirable result number six (6) regarding surface depletions in the Sacramento Valley that will address the SGMA requirements (i.e., 23 CCR 354.16(f)) and enable GSAs, water suppliers, conservation partners, and other interested parties to work together in a concerted and consistent way to avoid this undesirable result throughout the region. We will learn from the DWR comments on the GSPs and the methodology will allow each GSA to tailor the approach for their local area and will call upon the best available tools to estimate the location, quantity and timing of depletions in a practical manner in consideration of existing uncertainties. The GSAs will provide this to DWR by 2025.
- 2** Build upon the current regional monitoring network to coordinate both surface water and groundwater monitoring across the region and help water resources managers develop effective monitoring in a coordinated and cost-effective manner.

To view the regional monitoring network, [please click here](#).

We will work with the respective GSAs to help assess what data are needed to support the methodology and then develop a plan for any additional groundwater monitoring, surface water gauges, or other data collection over the next five years to support this methodology and the respective GSPs that will be updated in either 2025 (Yuba) or 2027. This plan will also identify available programs and funding to support this effort.

3

Actively pursue more integrated management of surface water and groundwater resources in the Sacramento Valley. (See [Integrating Storage in California's Changing Water System](#)).



▶ Help coordinate effective well permitting programs across the region

With the recent dry years and lower groundwater levels, the leaders in the region are coordinating and working to better craft local approaches to well permitting. There has been an increased focus on well permitting requirements, including the Governor's Drought Executive Order N-7-22 that included new well permitting requirements for local agencies to prepare for and lessen the effects of drought conditions (Action 9). The counties and the GSAs throughout the Sacramento Valley are working closely together to implement the important new provisions in the Executive Order on well permitting in the context of local sustainable groundwater management. Regulatory authority over well construction, alteration, and destruction activities resides with local agencies (cities, counties, or water agencies), who have the authority to adopt a local well ordinance. Well permits are administered and enforced by local agencies (or local enforcing agencies, LEAs), often the Department of Environmental Health within a given county. The local GSAs have included in their GSPs a discussion of how they will coordinate these efforts with local land use authorities, including local well permitting agencies.



Align state and federal priorities with local and regional needs

The leadership in the Sacramento Valley, through our Strategic Planning and Priorities, is making a concerted effort to work with state and federal agencies to align our respective local and regional priorities in the region with state and federal actions. With respect to groundwater, this includes:



Financial assistance from DWR and others has been very helpful for GSAs to organize and advance the GSPs in the Sacramento Valley. Additional assistance will be important to effectively implement many of the projects and management actions (PMAs).



The state simplifying and expediting the **regulatory process** for many actions, such as groundwater recharge, would make it more feasible to implement the legislative intent of SGMA and the water resilience portfolio and achieve groundwater sustainability in the Sacramento Valley.



Several state agencies have proposed to **redirect surface water** away from the various beneficial uses of water in the Sacramento Valley, which will place additional pressure on groundwater resources and further challenges sustainability in the region. The counties on the Sacramento Valley floor sent [letters](#) to the Governor expressing this concern. Moving forward with the Healthy Rivers and Landscapes (HRL) program will be helpful to align our priorities.



Maximizing surface storage in the region, including the proposed Sites reservoir, would help with the conjunctive management of our surface and groundwater resources—a critical element of groundwater sustainability.



3.

Regional Coordination

The Northern California Water Association, through the leadership of its [Board of Directors](#), will continue to convene our Groundwater Management Task Force to coordinate these various efforts and to help implement these regional approaches to implementation. Our objective is to continually learn and better understand the water resources in the region and use this information to actively manage our water resources—both surface water and groundwater—to ensure sustainable water supplies for cities and rural communities, farms, fish, birds, recreation, and hydropower. To help coordinate and foster the technical work necessary to build upon the GSPs and to support implementation of SGMA, we will also convene a groundwater resources manager group.



The [NCWA Strategic Planning document is available here](#). For more information or to provide ideas for sustainable water management in the Sacramento Valley, please contact us at info@norcalwater.org.

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NCWA Groundwater Management Task Force

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#SourcingOurSustainableFuture:

The Sacramento Valley is sourcing our sustainable future through responsible management of the essential resource that millions of birds, hundreds of thousands of fish, thousands of farms and millions of people all rely on—water.

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