



# California Agriculture Regulatory Update:

Water Supply, Nitrate and Salinity



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PREPARED BY:



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## Introduction

California agriculture is increasingly regulated for health and safety, air quality, water quality and quantity of water usage. State regulations have resulted in changes in farm management, record keeping, technologies, equipment, economics, and increased time spent understanding and keeping up with new fees, reporting requirements, and education. Regulations on agriculture seem to be changing all the time and are becoming more complex. This update focuses on regulations on agriculture related to water (quality and quantity) and nutrient management mandated by the Central Valley Regional Water Quality Control Board (Regional Board) and the State Water Resources Control Board (State Board).

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## SGMA – Sustainable Groundwater Management Act

### Background

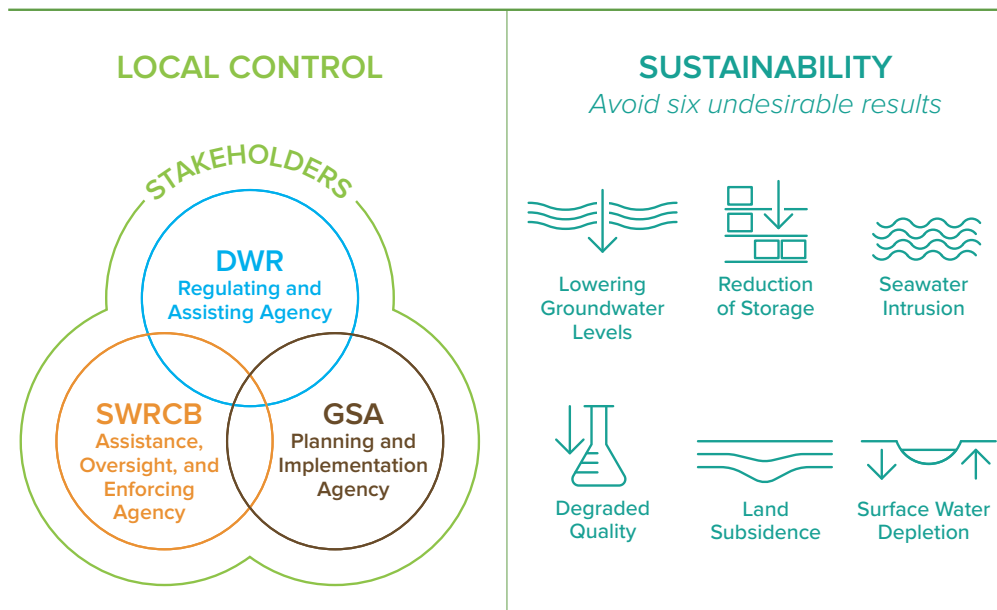
In 2014, California became the last state in the U.S. to formally regulate groundwater. Prior to SGMA, California saw groundwater adjudications that brought competing interests together for a court-supervised negotiation and settlement over groundwater rights in a basin. California also created voluntary groundwater regulation through AB 3030 and other programs in the 1990s that encouraged, but did not mandate, aggressive groundwater regulation and management. These efforts had positive impacts in specific areas in California but did not address the statewide crisis of overdrafted groundwater basins.

### What is SGMA?

After years of debilitating drought, the state of California enacted SGMA to ensure sustainable annual withdrawals by measuring sustainability metrics in groundwater basins. Local agencies, known as Groundwater Sustainability Agencies (GSAs), were given authority to regulate groundwater subject to stakeholder input. GSAs are mandated to develop a Groundwater Sustainability Plan (GSP) for approval by the California Department of Water Resources (DWR).

- California’s 515 groundwater basins encompass 40 million acres (over 40% of California’s land area), 82% of the population, and 97% of the State’s agricultural lands.
- Ninety-four of these basins were identified as high or medium priority.
- Twenty-one of these basins (called Priority 1 basins) are subject to conditions of critical overdraft, which means that continuing current water management practices would likely result in significant adverse overdraft-related environmental, social, or economic impacts.
- All 94 medium and high priority basins have formed GSAs and must adopt and submit a GSP. The remaining 421 basins are not required to form GSAs and submit GSPs.

## SGMA Overview



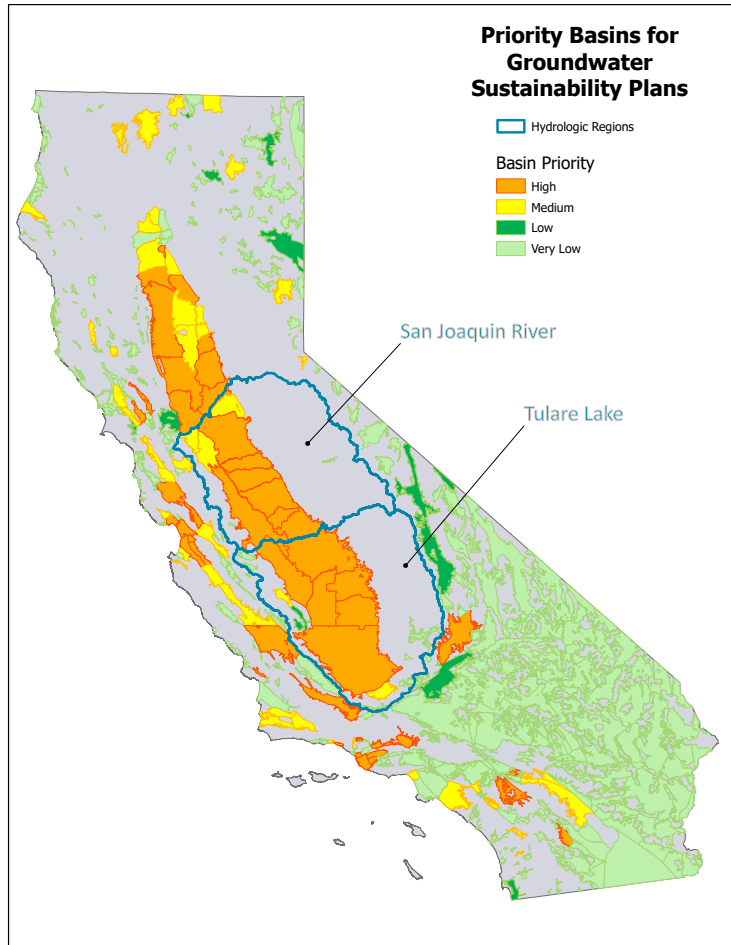
GSAs possess broad authority to regulate groundwater to reach sustainable yield for their designated groundwater basin, including the ability to regulate exchanges of water and the health of a groundwater basin. They are also responsible for preventing further harm, referred to as “undesirable results,” in the groundwater basins that are currently overdrafted and/or labeled as high or medium priority.

A GSA may implement fees to achieve the sustainable yield objective required by SGMA and combat these undesirable results. The powers are broad, but SGMA requires a GSA to issue a Groundwater Sustainability Plan by 2020 for basins in overdraft, and 2022 for medium- and high-priority basins.

The GSP clarifies how the GSA will manage water in the basin. GSAs must consult with water right holders, agricultural operations, and relevant stakeholders as part of the GSP creation process. Failure of the GSA to engage all stakeholders will likely result in a rejection of the GSP by DWR until proper stakeholder input is gathered. GSAs have the power to restrict groundwater pumping and impose new fees on groundwater extraction.

## What is the Impact of SGMA on Agriculture?

- Farmers and other water users alike will need to account for water usage more accurately under SGMA. As the saying goes, “you can’t manage what you don’t measure.” As part of their GSPs, GSAs must estimate the sustainable yield for their subbasins and determine how to achieve balance between inputs and outputs. This determination is accomplished through modeling and monitoring described in the GSP that will continue to provide data for adaptive management. In overdrafted basins, sustainable yield has been exceeded, and it is up to the GSA to figure out how to bring pumping back into balance. For this reason, measuring water usage, especially by agriculture has become critical in Priority 1 basins. As the largest human use of water in California, agriculture will be asked to account for water use, determine how water can be conserved, and account for pumping.
- According to the Water Blueprint for the San Joaquin Valley, it is estimated that between 500,000 and 1,000,000 acres of farmland will be taken out of production to conserve groundwater. Assembly Bill 252 (waiting consideration in the California Senate) would create a land repurposing program under the Department of Conservation to provide grants for local groundwater agencies to incentivize farmers to take land out of production. That retired farmland could be repurposed for a variety of uses such as solar, grazing, groundwater storage or restoring habitat for native species.



## What is the Benefit of SGMA to Agriculture?

Research and development that refines our understanding of what we are trying to manage is prioritized more than ever, including increased focus on:

- Water accounting, leading to development of new data resources and technologies that can be used to better understand individual groundwater basins and how to manage them so that agriculture and the economy it supports thrives. This understanding is being improved through additional data collection and modeling to understand how different scenarios (pumping, climate change, urban growth) impact sustainable yield of aquifers.
- The important role that agricultural irrigation plays in groundwater recharge, a perspective that balances the continual demand for conservation in agricultural water use. Without an understanding of agricultural recharge, conservation can do more harm than good for water supplies and water quality management.

## What's Happening and What's Coming Up?

- In January 2020, 46 GSPs from critically overdrafted basins were submitted to DWR. The number of GSPs per basin ranged from three to seven in basins where multiple GSPs were submitted.
- In January 2022, the remaining 64 GSPs from medium and high priority basins (not critically overdrafted) were submitted.
- From the time of submittal, DWR has two years to complete GSP review, which includes a public comment period and responding to those comments. After review, DWR will either approve the GSP, deem it incomplete and ask the GSA to correct deficiencies in the plan within 6 months, or deem the plan incomplete, at which point the State Water Board can intervene.
- Though the review process can take up to two years, GSA's are required to implement their plans immediately. Implementation includes complying with annual reporting requirements, addressing data gaps with additional monitoring, data collection at existing wells in identified representative monitoring networks, inter-basin coordination with neighboring GSAs, investigating potential projects and management actions, and securing funding for projects.

### Learn More



#### California Department of Water Resources

<https://water.ca.gov/programs/groundwater-management/sgma-groundwater-management>



## ILRP - Irrigated Lands Regulatory Program

### Background

A range of pollutants can be found in runoff from irrigated lands, such as pesticides, fertilizers, salts, pathogens, and sediment. At high enough concentrations, these pollutants can harm aquatic life or make water unusable for drinking water or agricultural uses.

- In 1999, the California Legislature passed Senate Bill 390, requiring the Water Boards to develop programs to regulate agricultural lands in accordance with the Porter-Cologne Water Quality Control Act (California Water Code Division 7).
- The Central Valley Long-term Irrigated Lands Regulatory Program (ILRP) was initiated in 2003 to regulate agricultural discharges to surface waters.
- In 2012, the Regional Board extended the regulations to cover discharges to both surface and ground waters. Waste discharge requirements (also known as “WDRs” or “Orders”), which protect both surface water and groundwater, address irrigated agricultural discharges throughout the Central Valley.
- Through the ILRP, the Regional Board issues permits and conducts compliance and enforcement activities to ensure growers with commercial irrigated lands comply with their Orders.

Commercial irrigated lands are subject to ILRP. These are lands that are irrigated to produce crops or pasture for commercial purposes and nurseries. Regulatory coverage is required if you own or operate land that is irrigated to produce crops for commercial purposes, without regard for source of the water supply. Regulatory coverage is only required if the property is used for commercial purposes, is never irrigated, or if it is covered under a separate program such as the Dairy Program.

### What is ILRP?

The ILRP is a program to regulate nitrogen discharges from agricultural lands to ensure that surface and ground waters are not adversely impacted. Growers have two options to obtain regulatory coverage:

1. Join a third-party agricultural water quality coalition who works with the Regional Board on behalf of the grower; or
2. Obtain coverage as an individual grower.

Both programs are fee-based and are assessed each year. Growers who join a coalition benefit from assistance with complying with Regional Board requirements and sharing the cost and effort of monitoring and reporting with other coalition members. Though each grower remains fully responsible for complying with ILRP requirements, this option greatly reduces the cost and effort of complying with regulations. A grower may seek individual coverage by submitting a Notice of Intent (NOI) and fee directly to the Regional Board. Growers who choose this individual path work directly with Regional Board staff and bear the full cost and responsibility for compliance, monitoring and reporting.

Because most growers have chosen to comply with the ILRP by joining water quality coalitions, they are required to implement ILRP requirements and be in good standing with their coalition.

- The role of growers
  - Work to prevent sediment, fertilizer, pesticides, manure, and other materials used in farming from leaving their fields in irrigation or storm water and entering surface waters, or from leaching below the root zone to groundwater.
  - Develop and implement on-farm plans and submit reports to their coalition; these reports are then summarized and reported to the Regional Board.
- Role of coalitions
  - Communicate with regulators, assist and educate growers, monitor and develop work plans for water quality exceedances, develop and submit required reports, represent growers to and work with the Regional Board, and collect fees.

### What is the Impact of ILRP on Agriculture?

The main impacts of ILRP on agriculture are increased fees, reporting and continuing education requirements.

#### Fees and Fines

The Regional Board determines fees per acre for the ILRP.

- If a grower is enrolled in a water quality coalition all agricultural activity (except for managed wetlands, irrigated pasture, and rice) is assessed a fee of \$1.29 per acre. Excepted activities are assessed a fee of \$1.04 per acre.
- Growers not enrolled in water quality coalitions are assessed much higher fees; \$32.25 per acre up to 300 acres plus \$16.13 per acre for each acre over 300 acres.
- For managed wetlands and irrigated pasture these fees are \$25.80 and \$12.90, respectively.

The Central Valley Water Board enforces regulatory coverage, reporting, and addressing site-specific water quality problems. Most often, compliance and enforcement are conducted at an informal level. In some cases, formal enforcement is necessary to ensure compliance. Fines have been issued for non-enrollment, non-reporting, and discharges of excessive sediment, ranging from \$10,000 to \$300,000.



## Reporting

Growers are required to submit the following farm information to their coalition:

1. Farm Evaluation (every five years), and
2. Irrigation Nitrogen Management Plan (INMP) Summary Report (annually). (INMP Worksheet is also required to be completed and maintained at farming operations headquarters or primary place of business and must be provided to Central Valley Water Board staff if requested.)

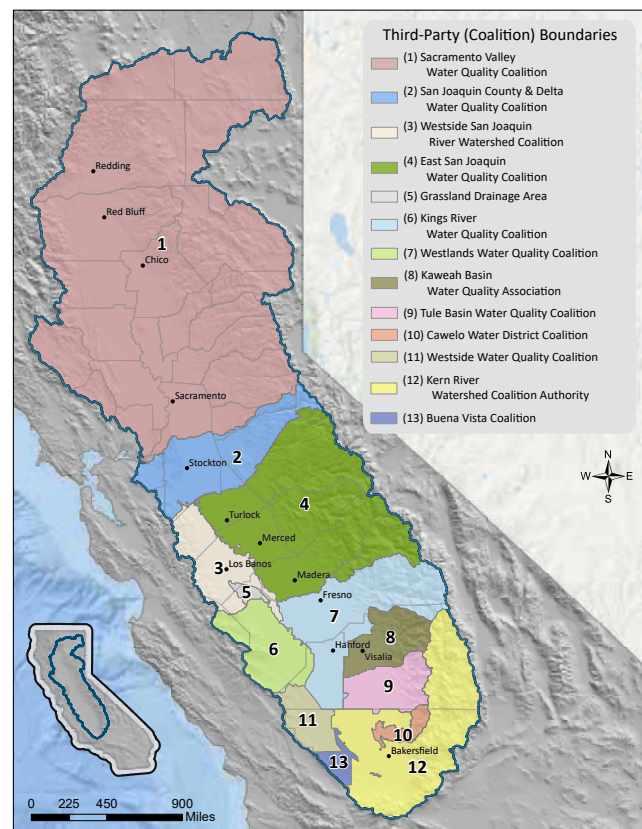
## Continuing Education

Coalitions are required to provide, and growers are required to attend, a minimum number of continuing education hours each year. These education hours must be related to nitrogen management.

## What is the Benefit of ILRP to Agriculture?

The main intended benefit of ILRP is to protect groundwater and surface water from becoming adversely impacted with nitrate so much that it is no longer suitable for drinking and/or other beneficial uses.

- Because nitrate leaching is influenced by a variety of factors, including soil type, crop type, irrigation practices, weather, etc., it is difficult to determine how much nitrate leaches from a specific field. Measurements of nitrate leaching are highly variable and may not even be representative of a single field. For this reason, substantial amounts of California research funding and effort have recently been focused on crop nitrogen use. Other management practices that influence nitrogen uptake, such as cover cropping, are also under investigation with current farming practices in mind. The result of this research is that nitrogen requirements for crops are becoming known in very specific ways. This new information makes it easier, more practical, more efficient, and more beneficial for farmers to implement the 4 Rs of fertilizer application (right source, right rate, right time, right place).



- Crop genetics and breeding programs are increasingly centered on developing varieties that maximize nitrogen use efficiency.
- Lastly, there is more education available than ever before on management practices that improve nitrogen use efficiency. Growers can learn about them through their water quality coalitions and Certified Crop Advisors (CCAs) are now educated to develop and evaluate nitrogen budgets.

All of these tools – research, crop development, and education – are ultimately anticipated to prevent further regulatory restrictions and have potential to improve productivity and the bottom line.

### What's Happening and What's Coming Up?

Regulations in the Orders for both the Sacramento and San Joaquin Valleys have been revised several times since their adoption in 2012 to accommodate comments from the agricultural, environmental, and environmental justice communities as well as regulations resulting from CV-SALTS. In addition, several elements of ILRP are ongoing or are still in development stages.

- The Management Practices Evaluation Program (MPEP) is a multi-year data collection and modeling effort for all agricultural areas in the Central Valley that will help provide information on practices that are the most effective at minimizing nitrate leaching from irrigated lands. The first MPEP report is due to be submitted in 2023.
- The Groundwater Protection Values and Targets are elements of Orders that were envisioned in the development of the ILRP to determine how much nitrate is leached to groundwater and how to control that amount. However, the regulations did not include a formula for how these values and targets should be determined.
  - In January 2021, a formula developed by water quality coalitions was conditionally approved by the State Water Resources Control Board (State Board).
  - In July 2021, groundwater protection values were developed for all irrigated areas using the formula.
  - Now, groundwater protection targets are being developed for each township. These targets - amounts of nitrate that can be discharged to groundwater without exceeding the drinking water standard - will be used to determine if management practices developed through the MPEP are being used to achieve the goal of protecting groundwater quality. In the meantime, growers are required to report on management practice implementation if they are in high vulnerability areas, in addition to the reporting requirements listed above. The targets are due to the State Board in July, 2022.

#### Learn More



**California Department of Water Resources**  
[www.waterboards.ca.gov/centralvalley/water\\_issues/  
irrigated\\_lands/ilrp\\_decision\\_tree.pdf](http://www.waterboards.ca.gov/centralvalley/water_issues/irrigated_lands/ilrp_decision_tree.pdf)



## CV-SALTS - Central Valley Salinity Alternatives for Long-Term Sustainability

### Background

Agricultural, industrial, and municipal growth in the Central Valley is paralleled by increases in groundwater, surface water and soil salts and nitrates. High levels of salt in waters and soils throughout the Central Valley impair water quality, impact crop production, affect drinking water supplies, and influence ecological functions and habitats. In the Central Valley, salt concentrations are naturally high in some areas, low in others, and increasing in some. Drinking water is unsafe in some communities because of high nitrates. Salts are concentrated in water and soils by human activities and evaporation. Activities in homes, farms, businesses, cities, and towns all contribute by adding or concentrating salts.

The old regulatory system for salts was outdated and didn't allow any flexibility to implement regulation in a cost-effective manner. It didn't work for cities, industry, agriculture, the environment, or the Regional Board, who regulates water quality in the Central Valley. There are new ways to manage salinity that don't fit into the old regulatory framework. For example, recycled water is an essential new source of water for the Central Valley but cannot be fully implemented unless its constituent salts and nutrients are carefully managed.

CV-SALTS is a process required by the State Board to develop scientific and regulatory tools to plan for managing salinity and nutrients for the Central Valley.

### What is CV-SALTS?

A broad coalition of agriculture, cities, industry, and regulatory agencies collaborated to develop a vision and plan for managing salts and nutrients. CV-SALTS began in 2006 to find solutions to the complex salt problem in the Central Valley with these goals:

- Sustain the Valley's lifestyle
- Support regional economic growth
- Retain a world-class agricultural economy
- Maintain a reliable, high-quality urban water supply
- Protect and enhance the environment



## Nitrate Control Program

The Nitrate Control Program of CV-SALTS aims to provide safe drinking water supplies, reduce nitrate impacts to water supplies and restore groundwater quality, where reasonable and feasible.

Dischargers must comply with the Nitrate Control Program either by:

1. choosing a collective approach by joining a Management Zone, or
2. choosing an individual approach to regulation.

Because it would be difficult for an individual grower to meet the new regulations, agricultural dischargers can be part of a Management Zone and be represented by their ILRP coalitions.



## Management Zones

Management Zones represent dischargers from several industries within a defined geographical area, including agriculture, dairies, wineries, food processing, oil and gas, and municipal (community wastewater treatment facilities). The idea behind the Management Zone approach is similar to a watershed approach in managing surface water – since water knows no jurisdictional boundaries, it is better managed collectively by all those who use and impact it.

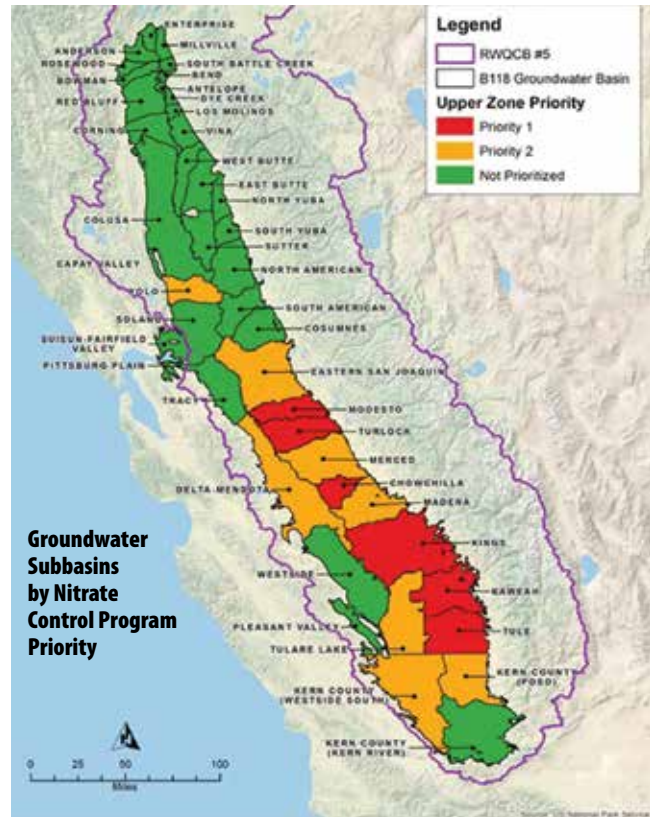
Management Zones are required to develop and implement plans and monitoring strategies to show how nitrate is being managed in the Management Zone, including an Early Action Plan, which describes how the Management Zone is going to supply water to those without safe drinking water. The Preliminary Management Zone Plan describes how the Management Zone will be governed and funded, and how it plans to provide outreach and monitor and implement actions to address nitrate problems in its groundwater. Central Valley basins were prioritized to determine where Management Zones needed to be formed first. Prioritization was based on nitrate exceedances in drinking water wells. Priority 1 basin Management Zones are operating and Priority 2 basins are currently forming.

<b>Priority 1 Groundwater Subbasins</b> Implementing Early Action Plans since May, 2021	<b>Priority 2 Groundwater Subbasins</b> Currently Preparing for a Notice to Comply in 2022-2024
<b>Chowchilla</b>	Delta Mendota
<b>Kaweah</b>	Eastern San Joaquin
<b>KINGS</b>	Kern County (west side south)
<b>Modesto</b>	Kern County (Peso)
<b>Tule</b>	Madera
<b>Turlock</b>	Merced
	Tulare Lake
	Yolo

The CV-SALTS regulations resulted in changes to discharge permits for all dischargers, not just farmers. However, farmers can comply with the CV-SALTS regulations through their ILRP coalitions (unless they want to comply on their own) because the CV-SALTS new regulations are now included in the ILRP discharge permits.

## What is the Impact of CV-SALTS on Agriculture?

- Because farmers are considered dischargers of salt and nitrate, the CV-SALTS regulations apply to them and all other dischargers across the Central Valley. Farmers do not have to comply with the new regulations on their own; their membership in ILRP coalitions provides them an avenue with which to comply.
- Because of the coordination, reporting, safe drinking water supply, and plan implementation associated with the Management Zones, funding will be provided by membership dues from all Management Zone members. In many cases, farmers will see their water quality coalition dues increase because of the coalition's membership in a Management Zone. It is the responsibility of the Management Zone to collect data, decide where nitrate management and control should be prioritized, determine what actions they will take, and provide outreach to its members.
- Participation in the Salt Control Program also requires funding from participants. However, dischargers that participate in Phase 1 of the Salt Control Program by providing funding are protected from additional stricter regulations for the 10-15 year duration of the study. Ultimately, agriculture, like other industries in the Central Valley, will likely be asked to implement salt-control practices through planning and reporting. It is anticipated that the Phase 1 Prioritization and Optimization Study will provide the necessary information and direction on where salt control projects and practices should be implemented and to what degree.



## What is the Benefit of CV-SALTS to Agriculture?

Salt build-up in agricultural soils has caused 250,000 acres to be taken out of production and another 1.5 million acres to be deemed salinity impaired. If the increase in salts and nitrates continues unchecked, the estimated economic impact is over \$3 billion per year.

- Salt build-up in agricultural soils makes their management more difficult and costly, and ultimately decreases production. Local management can address about 15% of the salinity problem, but an overall salt management control program is needed to address the remaining 50%.

- For both Salt and Nitrate Control Programs, new and more flexible regulatory tools have been introduced so that all sectors can take advantage of new technologies and policies. Management Zones require all sectors, not just agriculture, to claim responsibility for nitrate in the environment, and focus their moneys and efforts on “hotspots”, deciding where management and mitigation should be prioritized.
- CV-SALTS has written into its regulations the relationship between drought, water quality and salt and nutrient concentrations. This important perspective is missing from many conversations about water use and water quality that neglect these important relationships. The Prioritization and Optimization study will show where salt problems should be prioritized instead of broadly imposing regulations suited to the worst conditions.

### What’s Happening Now and What’s Coming Up?

- The Salt Control Program Prioritization and Optimization began in November, 2021.
- Many activities are underway to comply with the new Nitrate Control Program in the Central Valley’s six Priority 1 basins, where safe drinking water must be provided in areas with high nitrate levels and nitrate management plans were adopted in May 2021.
  - o Priority 1 basin Management Zones are implementing their Early Action Plans by providing safe drinking water via kiosks or bottled water, and conducting outreach through community activities, working with community leaders, in-person and virtual educational events, schools, food banks, mailings, and social media.
  - o Management Zones are also conducting data collection and cost assessments.
  - o Irrigated lands, dairies, and bovine operations have chosen the Management Zone approach and are actively working together to form nitrate Management Zones in all six Priority 1 basins.
  - o Other regulated entities, including wineries, food processors, and community wastewater treatment facilities, are also joining the Management Zones.

### Learn More



#### CV-SALTS

[www.cvsalinity.org](http://www.cvsalinity.org)

#### Valley Water Collaborative (Modesto and Turlock subbasins)

<https://valleywaterc.org>

#### Chowchilla Management Zone

<https://www.maderacountywater.com/cv-salts>

#### Kings Water Alliance

<http://kingswateralliance.org>

#### Kaweah Water Foundation

<http://www.kaweahwater.org>

#### Tule Basin Management Zone

<https://www.tulemz.com>



## Bay-Delta Plan

### Background

The San Francisco Bay/Sacramento-San Joaquin Delta Estuary Water Quality Control Plan (Bay-Delta Plan) sets water quality objectives to protect drinking water, irrigation supply, fish and wildlife habitat and other uses of water in the Bay-Delta watershed. Its main purpose is to address the decline of native aquatic species in the Bay-Delta and related ecosystems.

### What is the Bay-Delta Plan?

The State Water Resources Control Board (State Water Board) updates the Bay-Delta Plan through two separate processes:

- 1. Phase 1** - Lower San Joaquin River (LSJR) flow objectives (including San Joaquin, Stanislaus, Tuolumne, and Merced Rivers) and revised southern Delta salinity objectives from a 2018 amendment are now in effect.
- 2. Phase 2** - Amendments focused on flow and temperature in the Sacramento River and its tributaries (including American, Yuba and Feather rivers), Delta eastside tributaries (Mokelumne, Calaveras, and Cosumnes Rivers), Delta outflows and interior Delta flows are being considered and developed.

The goal of the Phase 1 amendment is to improve the balance of instream needs and human uses by maintaining a portion of flow instream from February through June each year. This unimpaired flow is defined as the rate and volume of water that would gather instream in the absence of reservoirs and diversions. Each tributary is required to maintain an average of 40% of unimpaired flow within a range of 30 to 50%. The expected result is a 7 to 23% reduction in water available for human use. The salinity objective was set at 1.0 dS/m electrical conductivity year-round.



### **What is the Impact of the Bay-Delta Plan on Agriculture?**

The State Water Board evaluated the effect that this regulation could have on the agricultural industry in California: “The potential impacts on the agricultural economy increase as the unimpaired flow percentage increases. The 40% unimpaired flow requirement is projected to result in an average annual decrease in economic output of \$69 million. This represents a 2.5% reduction from baseline annual average agricultural economic sector output of \$2.6 billion. The impact would be lower at 30% (\$35 million) and higher at 50% (\$123 million). However, these impacts do not consider the mitigation actions water users would likely use to lessen economic effects, such as water efficiency, conservation, changes in crop type, or groundwater recharge projects.”

### **What is the benefit of the Bay-Delta Plan on Agriculture?**

The impacts to agriculture described above don’t account for the mitigation actions water users would likely use to lessen economic effects, such as water efficiency, conservation, changes in crop type, or groundwater recharge projects. Complying with the Bay-Delta plan necessitates not only water conservation activities but water quality improvements that will ultimately benefit agriculture by curbing salinization of irrigation water.

### **What’s Happening Now and What’s Coming Up?**

To date, several activities have been implemented related to Phase 1 amendments, including initial compliance methods for LSJR flow objectives; final water quality certification for Merced River and Merced Falls hydroelectric projects; and final water quality certification for Don Pedro and La Grange hydroelectric projects on the Tuolumne River.

Possible elements of Phase 2 implementation include inflow objective for the Sacramento River and Delta tributaries; cold water habitat objective for tributaries; Delta outflow objective; interior Delta flow objective; and changes to the program of implementation such as voluntary agreements.

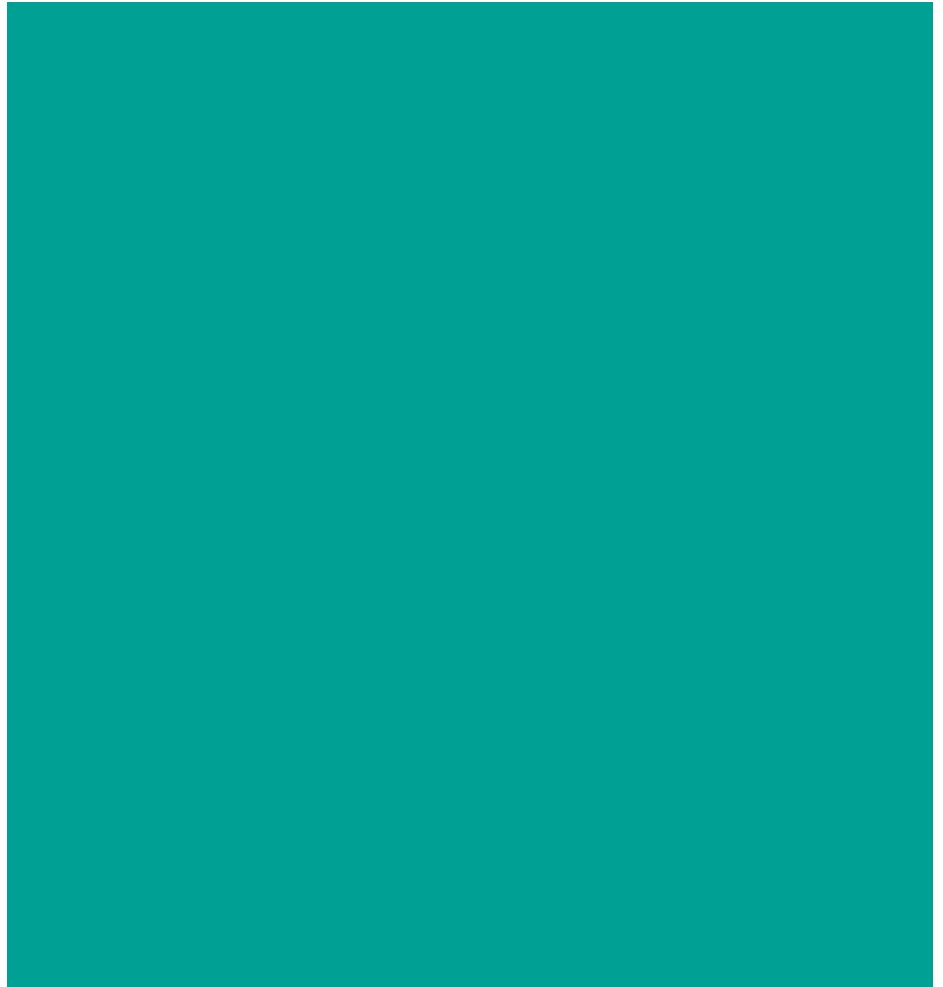
Voluntary agreements are adaptive implementation methods of managing flows and biological resources through means other than solely by flow objectives. Voluntary agreements may include managing flows as total volume of water, timing of releases of water, and/or adjustments to flow requirements within the 30-50% unimpaired flow range based on nonflow actions, such as habitat improvement through physical projects on rivers. In March 2022, numerous water suppliers north and south of the Delta and state and federal water agencies signed a Memorandum of Understanding (MOU) advancing a term sheet for voluntary agreements to update and implement the Bay-Delta Plan. The purpose of the term sheet is to establish the essential terms that the Parties will use to finalize voluntary agreements.

**Learn More**



**California Water Boards**

[https://www.waterboards.ca.gov/waterrights/water\\_issues/programs/bay\\_delta/](https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/)



2020 L STREET, SUITE 210  
SACRAMENTO, CA 95811  
916.265.6330  
LANDIQ.COM