

MODESTO SUBBASIN FAQs

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Groundwater and the Modesto Subbasin

What is a groundwater basin?*

- A groundwater basin is an underground reservoir of water which may contain a single aquifer or a series of aquifers and has reasonably well-defined boundaries.
- A subbasin is a part of groundwater basin that has been divided into smaller units.

What is the Modesto Subbasin?*

- The Modesto Subbasin is a groundwater subbasin located in the northern San Joaquin Valley.
- The Modesto Subbasin is bounded by the Tuolumne River on the south, the San Joaquin River on the west, the Stanislaus River on the north, and the bedrock of the Sierra Nevada on the east.
- It is primarily located in Stanislaus County, with small areas in the eastern part of the Subbasin in Tuolumne County.
- The Cities of Modesto, Oakdale, Riverbank, and Waterford as well as the communities of Empire, Salida, and Del Rio overlie and use groundwater resources from the Subbasin.
- It is designated by the state as a high-priority basin, but is not a critically-overdrafted basin as defined by the California Department of Water Resources.

How is groundwater from the Modesto Subbasin used?*

- Groundwater from the Modesto Subbasin is used for drinking water, business and industrial purposes, and local agriculture.
- Groundwater is used conjunctively with surface water supplies in the region to grow food, support dairies, and maintain the long-term vitality of the region's agricultural economy.
- Three out of the four cities in the Modesto Subbasin—Oakdale, Riverbank and Waterford—rely solely on groundwater for their water supply. The City of Modesto relies on groundwater as well, but also has access to surface water supplies.

What is the condition of the Modesto Subbasin?*

- Due to the collaboratively managed activities of both local districts and water purveyors, the Modesto Subbasin has provided safe and reliable groundwater for decades to homes, businesses, and local agriculture.

* = Suggested FAQ for website

- Recent analysis has shown that groundwater storage in the Modesto Subbasin has declined by an average of about 43,000 acre-feet per year.
- The Subbasin as a whole is *not* considered to be in a condition of critical overdraft; however, parts of the it, primarily in the eastern section where water users rely solely on groundwater, are currently unsustainable.
- The single Groundwater Sustainability Plan (GSP) being developed for the Modesto Subbasin will identify projects and management actions to bring the basin into sustainability and continue the reliability of the region’s groundwater resources now and into the future.

Do all parts of the Modesto Subbasin have the same groundwater conditions?

- For the purposes of developing the Groundwater Sustainability Plan, the Modesto Subbasin has been divided into multiple zones. The zone boundaries are based on where water users in the zone get their water.
- “Non-district” zones are regions within in the Subbasin outside the service areas of the local surface water service providers. Water users in these zones primarily rely on groundwater as their water source.
- Groundwater conditions vary across the zones.
- Zones within the Subbasin that are managed by Modesto Irrigation District and Oakdale Irrigation District, along with the Non-District West zones, are all net-contributors to groundwater in the basin.
 - This means water users in these zones put the same amount or more water into the groundwater basin than they extract, or take out.
- However, in part because of its sole reliance on groundwater, the Non-District East zone is a net-extractor of groundwater.
 - This means that water users in this zone extract more groundwater than is put into the basin in that zone. The Non-District East zone must be brought into balance over the next 20 years as required by the Sustainable Groundwater Management Act.

SGMA and the Modesto Subbasin

What is the Sustainable Groundwater Management Act?*

- The Sustainable Groundwater Management Act (SGMA) is a package of three bills signed into law in 2014.
- SGMA sets the framework for statewide groundwater management in California.

What does the Sustainable Groundwater Management Act require?*

- SGMA requires local and regional authorities in medium- and high-priority groundwater basins to form a locally-controlled and governed Groundwater

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Sustainability Agency (GSA), which will prepare and implement a Groundwater Sustainability Plan (GSP).

- In high- and medium-priority basins that are not in a condition of critical overdraft, such as the Modesto Subbasin, the GSA must submit a GSP to the State no later than January 21, 2022 and bring the basin into sustainability by 2042.
- If these requirements are not met, or if the GSP is found to be inadequate, then the State can intervene.

Groundwater Sustainability Agencies

What is a Groundwater Sustainability Agency?*

- A Groundwater Sustainability Agency (GSA) is one or more local agencies that collaborate and coordinate with one another to form a governing body that, on a basin-wide scale, sustainably manage groundwater at a local level per the requirements of the Sustainable Groundwater Management Act (SGMA).

What Groundwater Sustainability Agencies have formed in the Modesto Subbasin?*

- In 2017, member agencies of the Stanislaus and Tuolumne Rivers Groundwater Basin Association (STRGBA)—City of Modesto, Modesto Irrigation District, City of Oakdale, Oakdale Irrigation District, City of Riverbank, City of Waterford, and Stanislaus County—formed as a GSA.
- The STRGBA GSA has the authority and responsibility to manage the groundwater basin.
- The Tuolumne County GSA is responsible for the small portions of the Modesto Subbasin that falls within Tuolumne County.
- The STRGBA GSA and Tuolumne County GSA are coordinating with one another to develop a single Groundwater Sustainability Plan for the Modesto Subbasin and meet the requirements of SGMA.

Groundwater Sustainability Plan

What is a Groundwater Sustainability Plan?

- A Groundwater Sustainability Plan (GSP) is a roadmap for how local water managers will manage the basin's groundwater resources now and into the future.
- The GSP for the Modesto Subbasin is due to the State on or before January 31, 2022.
 - Sections of the draft GSP are being released for public review when completed. It is anticipated that all of the sections will be released by the Stanislaus and Tuolumne Rivers Groundwater Basin Association

(STRGBA) Groundwater Sustainability Agency (GSA) for public review by November 2021.

What is included a Groundwater Sustainability Plan?*

- The GSP will include:
 - a description of groundwater basin and groundwater conditions;
 - historic, current, and projected (future) basin water budgets;
 - criteria for defining and measuring the sustainability of the basin;
 - goals and milestones for achieving sustainability; and
 - a list of projects and management actions to bring the basin into sustainability.

How can I provide input on the Groundwater Sustainability Plan?*

- You can provide input on the GSP by attending monthly STRGBA GSA meetings and public workshops and providing comments on the draft GSP sections.
- Draft sections are released as they are developed and posted on the [STRGBA website](#) for public review and comment.

Water Budget/Balance

What is a water balance?*

- The “balance” of the basin is analyzed through a series of water budgets, including a groundwater budget.
- A groundwater budget is a water accounting method which involves a balance of the physical inflows and outflows to the groundwater system—similar to a balance of money coming into and out of a checking account.
- Inflows into the groundwater basin include percolation of rainfall, infiltration of surface water irrigation, seepage from unlined canals and reservoirs, and water from the overlying rivers and surface water bodies. Inflows also occur below the ground, such as inflows from the eastern Sierra foothills or from the adjacent groundwater basins.
- Outflows from the groundwater system include groundwater pumping and below surface outflows into adjacent basins. The basin also ‘loses’ water to the overlying rivers.
- The difference between these inflows and outflows over a period of years representing average hydrologic conditions can be used to evaluate whether or not the groundwater basin is in balance

What is Critical Overdraft?*

- Groundwater overdraft occurs where the average annual amount of groundwater extraction (groundwater taken from the basin, or outflows) exceeds the long-term average annual supply of water into the basin (inflows).
- Put simply, overdraft occurs when more water is being extracted or taken from the basin than being put in on a long-term, average basis.
- As defined by the Sustainable Groundwater Management Act (SGMA), a basin is subject to *critical overdraft* when continuation of present water management practices would probably result in significant adverse overdraft-related environmental, social, or economic impacts.
- The Modesto Subbasin has *not* been identified as being in a condition of critical overdraft.
- SGMA directs the California Department of Water Resources to identify groundwater basins and subbasins in conditions of critical overdraft.

What is the balance of the Modesto Subbasin?

- Recent analysis has shown that groundwater storage in the Modesto Subbasin has declined by an average of about 43,000 acre-feet per year.
- The Subbasin as a whole is *not* considered to be in a condition of critical overdraft; however, parts of the Subbasin, primarily in the eastern portion of the basin where water users rely solely on groundwater, are currently unsustainable.

Why is the Modesto Subbasin out of balance?

- Although not critically overdrafted, the Modesto Subbasin has experienced overdraft conditions, which indicate that the Subbasin is currently “out of balance.” Conditions leading to the overdraft include:
 - Increased irrigation and municipal groundwater pumping during recent drought,
 - Increase in agriculture development in the eastern portion of the Subbasin that relies almost solely on groundwater to meet irrigation demands, and
 - Water flowing out to adjacent subbasins due to higher groundwater levels in the Modesto Subbasin

How do the Stanislaus and Tuolumne Rivers impact the balance of the Modesto Subbasin?

- The Modesto Subbasin is bounded by the Stanislaus River to the north, the San Joaquin River to the west, and the Tuolumne River to the south. The surface water from these rivers interact with the Subbasin’s groundwater system and are accounted for in the water budget as both inflows and outflows , which vary over time and in various reaches of the river.

What are local agencies doing to bring the Modesto Subbasin into balance?*

- As part of the Groundwater Sustainability Plan (GSP) development process, the Stanislaus and Tuolumne Rivers Groundwater Basin Association (STRGBA) Groundwater Sustainability Agency (GSA) will identify sustainability goals and interim milestones and develop projects and management actions to meet those goals.
- The GSA will also monitor conditions in the Subbasin to ensure that the Modesto Subbasin continues to provide a safe and reliable water supply for beneficial uses and users.

When will the Modesto Subbasin be in a balance?

- SGMA requires the GSAs in medium- and high-priority, non-critically overdrafted basins to achieve sustainability by 2042. However, the STRGBA GSA will initiate projects and management actions that should enable the Modesto Subbasin to become sustainable prior to that deadline.

Sustainable Management Criteria

How does SGMA define sustainability?*

- The Sustainable Groundwater Management Act (SGMA) defines *sustainable groundwater management* as the management and use of groundwater in a manner that can be maintained without causing undesirable results.
- SGMA identifies six *sustainability indicators* to evaluate the sustainability of a basin. These sustainability indicators define adverse groundwater conditions that, when significant and unreasonable, become undesirable results.
- The decision about when these conditions become “undesirable” is made at the local level. Each Groundwater Sustainability Agency (GSA) must come up with criteria to determine when a sustainability indicator becomes an undesirable result.

What are Sustainable Management Criteria?*

- “Sustainable Management Criteria” collectively refers to four components of the Groundwater Sustainability Plan (GSP) that are used to quantify sustainability in the basin: sustainability goal, undesirable results, minimum thresholds, and measurable objectives.
- GSAs use these components, or criteria, to define sustainability goals for the basin and determine when undesirable results have occurred.
- Sustainable Management Criteria must be set for each of the sustainability indicators that apply to the basin.

Why is seawater intrusion excluded as one of the sustainability indicators for the Modesto Subbasin?

- One of the six sustainability indicators identified in SGMA is seawater intrusion.
- SGMA regulations allow the GSAs to determine whether or not an indicator is applicable to conditions in the basin.
- Through technical and regulatory analysis, it has been determined that seawater intrusion is not occurring and not likely to occur in the Modesto Subbasin. Specifically, the technical and regulatory analysis conducted by the consultant team concluded:
 - The Modesto Subbasin is not a coastal basin and does not have a direct connection to the ocean.
 - The Modesto Subbasin is not currently impacted and is not likely to be impacted in the future by high salinity waters from the Sacramento-San Joaquin Delta.
 - Seawater intrusion, as defined and regulated by SGMA, is not occurring and not likely to occur in the future in the Modesto Subbasin.
- Based on this analysis, it was decided at the April 14 Stanislaus and Tuolumne Rivers Groundwater Basin Association (STRGBA) GSA Meeting that seawater intrusion is not applicable to the Modesto Subbasin. Therefore, sustainable management criteria will not be selected for that sustainability indicator.

Projects and Management Actions

How will projects and management actions to manage the Subbasin be identified?*

- The first step is to define the specific issues that we are trying to address in the Modesto Subbasin. Once we have defined the water budget and sustainable management criteria, we will look at projects and actions to address the identified issues.
- A preliminary list of projects and management actions has been developed based on results of the Groundwater Sustainability Plan (GSP) development process to date and examples in other subbasins. This list will be discussed and decided upon at public Modesto Subbasin Technical Advisory Committee meetings held by the Stanislaus and Tuolumne Rivers Groundwater Basin Association (STRGBA) Groundwater Sustainability Agency (GSA).

What type of projects and management actions are being considered?

- At this time, we have not yet decided on which projects and management actions will be needed in the GSP to achieve sustainability.
- Preliminary projects and management actions consider a variety of strategies including enhancing recharge in the groundwater basin, optimizing conjunctive use, making best use of multiple water sources, conservation, and managing

* = Suggested FAQ for website

demand for groundwater. It is anticipated that a mix of project types and actions will be identified in the plan.

- If you are interested in participating in the discussion about projects and management actions, we encourage you to attend monthly, public STRGBA GSA meetings or reach out directly to your local GSA representative.

Will projects and management actions be implemented across the Subbasin or only in areas that are overdrafted or may be causing undesirable effects?

- At this time, the STRGBA GSA has not decided which projects and management actions will be identified in the GSP and where the projects will be located.
- In general, projects will be developed to best manage the Subbasin to avoid undesirable results and will likely involve both Subbasin-wide and locally-focused projects and actions. Location of project components will consider how best to optimize how the groundwater basin responds to management activities.

Funding and Implementation

What happens after the Groundwater Sustainability Plan is submitted to the State?*

- After the Groundwater Sustainability Plan (GSP) is submitted to the State, regulators will review the plan and have two years to provide an assessment of the GSP. In the interim, the Stanislaus and Tuolumne Rivers Groundwater Basin Association (STRGBA) Groundwater Sustainability Agency (GSA) will proceed with GSP implementation.
- The GSA will continue monitoring the health of the Subbasin and will implement projects and actions to achieve and maintain sustainability.
- Annual reports will be submitted to the State to document GSP implementation, monitoring results, and progress toward the Sustainability Goal.
- The GSP will be updated every five years to address changing conditions and new information.
- The STRGBA GSA will also be working to fill data gaps that were identified during the GSP development process.

How is development of the Groundwater Sustainability Plan being paid for?*

- The STRGBA GSA has received \$1 million in Proposition 1 grant funds from the California Department of Water Resources to aid with GSP preparation and community outreach.
- Only a small fraction of the costs associated with GSP development are being passed along to stakeholders within the Modesto Subbasin.

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How are the costs to construct, operate, and maintain the new groundwater monitoring wells being paid for?

- Construction of the new groundwater wells is being funded through a \$1 Million Proposition 68 grant administered by the California Department of Water Resources. This grant is in addition to the first \$1 Million Proposition 1 grant being used to pay for GSP development.
- Operation and maintenance costs for the groundwater wells will be included in the STRGBA GSA's annual operating budget.
- At this time, the annual cost for operating and maintaining the wells has not yet been determined. Also, we have not yet decided how these costs will be allocated among the STRGBA GSA member agencies.

How will implementation of the Groundwater Sustainability Plan be paid for?*

- We have not yet decided how implementation of the GSP will be funded.
- We will evaluate multiple funding options to ensure that costs associated with SGMA compliance are distributed equitably and fairly across the Subbasin.
- If you are interested in engaging in the discussions around funding for SGMA compliance, we encourage you to attend our monthly public STRGBA GSA meetings or talk directly to your local GSA representative.

Groundwater Dependent Ecosystems

What is a groundwater dependent ecosystem (GDE)?*

- Groundwater dependent ecosystems (GDE) are plant and animal communities that require groundwater to meet some or all of their water needs.
- The Sustainable Groundwater Management Act (SGMA) requires Groundwater Sustainability Agencies (GSA) to identify and assess potential impacts to GDEs.

How are groundwater dependent ecosystems being identified in the Modesto Subbasin?*

- The Stanislaus and Tuolumne Rivers Groundwater Basin Association (STRGBA) GSA's technical team used the California Department of Water Resources' Natural Communities Commonly Associated with Groundwater (NCCAG) dataset to identify potential GDEs within the Modesto Subbasin.
- Potential GDEs are being further assessed through an analysis of depth to groundwater beneath the NCCAG communities under various hydrologic conditions.
 - If groundwater is too deep for communities to access the water table, these areas are not likely to be GDEs. Those areas will be considered for elimination from the Modesto Subbasin dataset.

- Because a large majority of the potential GDE's are located near rivers, impacts to potential GDEs will be considered in the selection of sustainable management criteria for interconnected surface water.

How are impacts to groundwater dependent ecosystems being assessed?

- The STRGBA GSA's technical team is analyzing potential impacts to GDEs using groundwater elevation data collected as part of the groundwater level monitoring program.
- Changes to water levels beneath GDEs as a result of the GSP could potentially affect the ability of GDEs to access groundwater.
- Additional analysis will incorporate results from sustainability runs using the Modesto Subbasin groundwater model.
- Data gaps will remain with respect to confirmation of GDEs and a complete analysis of impacts.
- Conservative assumptions of potential GDEs and preliminary analyses are being included in the GSP. Potential GDE's located in areas that are likely to be supported by groundwater will be ground-truthed and analyzed at a later date.

Other

How are the Groundwater Sustainability Agencies filling data gaps, particularly in the eastern part of the Modesto Subbasin?

- Over the next five years, the Stanislaus and Tuolumne Rivers Groundwater Basin Association (STRGBA) Groundwater Sustainability Agency (GSA) will be working to gather additional data on groundwater use and conditions throughout the Modesto Subbasin with a focus on data gaps required to support the sustainable management of the basin.
- The STRGBA GSA has installed groundwater monitoring wells at 11 locations throughout the Modesto Subbasin.
 - The well locations were targeted in areas with sparse groundwater data, including the eastern part of the basin and along the river boundaries. Wells were also installed in underrepresented communities.
 - These new monitoring wells will be incorporated into the Groundwater Sustainability Plan (GSP) monitoring network to improve understanding of groundwater conditions in areas where data and knowledge gaps occur within the basin.
- In addition to the new wells, the GSAs will attempt to access data from existing wells to fill data gaps in the western basin, especially wells extracting groundwater from the below the Corcoran Clay (referred to in the GSP as the Western Lower Aquifer).

- The data from new and existing monitoring wells, along with other monitoring points, will greatly enhance the ability of the GSA to evaluate groundwater conditions in the basin and adapt the GSP accordingly.