



KAWEAH SUBBASIN PROBATIONARY HEARING DRAFT STAFF REPORT EXECUTIVE SUMMARY

May 2024

This Executive Summary briefly summarizes key sections of the Draft Kaweah Subbasin Groundwater Sustainability Plan (GSP) Assessment Staff Report (Draft Staff Report). A full discussion of these sections is provided in the Draft Staff Report. Where appropriate, the section titles in this Executive Summary refer to the corresponding section in the Draft Staff Report. For example, the “SGMA and State Intervention (Section 2)” section of this Executive Summary covers Section 2 of the Draft Staff Report.

Introduction

The mission of the State Water Resources Control Board (State Water Board) is to preserve, enhance, and restore the quality of California’s water resources and drinking water for the protection of the environment, public health, and all beneficial uses, and to ensure proper water resource allocation and efficient use, for the benefit of present and future generations. The State Water Board is committed to racial equity and working towards a California where race no longer predicts a person’s access to, or quality of, water resources.

In 2014, the state Legislature passed the historic Sustainable Groundwater Management Act (SGMA) that established a new framework for how groundwater would be managed locally at the basin scale to achieve long-term sustainability. Under SGMA, local agencies are responsible for the sustainable management of their groundwater basins; however, state agencies are responsible for ensuring local groundwater management achieves SGMA's goals. SGMA provides the State Water Board and the California Department of Water Resources (DWR) with oversight of groundwater resources to protect them for use by the communities, farms, and environmental resources that depend upon them. The Kaweah Subbasin (subbasin) is critically

overdrafted: on average, water is being pumped out of the basin faster than it is recharged by rain and other sources. Overdraft can cause the land surface to sink, potentially damaging infrastructure and reducing aquifer storage.

In addition, overdraft threatens groundwater levels and drinking water quality and could have disparate impacts on communities that rely on shallow wells. Due to historic and political factors, many of these are economically disadvantaged and communities of color.

The State Water Board recognizes that local public agencies in the Kaweah Subbasin have made significant efforts since the passage of SGMA to form three groundwater sustainability agencies (GSAs) and then develop detailed technical and other information supporting the adoption and implementation of three groundwater sustainability plans (GSPs) for the subbasin. Despite those efforts, in January of 2020, DWR reviewed the three GSPs to determine if the GSPs met SGMA's requirements and found the GSPs to be incomplete. Following revisions made by the GSAs in the subbasin, DWR reevaluated the GSPs in March of 2023, determined the GSPs to be inadequate, and referred the subbasin to the State Water Board, as required by SGMA. Consistent with SGMA, the State Water Board may now consider whether to designate the Kaweah Subbasin as a "probationary basin," a term that is used in SGMA to describe a basin in the first stage of state intervention.

The goals of this executive summary are to:

- Describe SGMA and the State Water Board's state intervention process to provide context for the State Water Board's upcoming Kaweah Subbasin Probationary Hearing (Probationary Hearing).
- Briefly describe the demographics, geology, and hydrology of the Kaweah Subbasin; and
- Summarize the recommendations by State Water Board staff, which are actions the State Water Board could take at the Kaweah Subbasin Probationary Hearing. These recommendations are to:
 - Designate the entire subbasin probationary. In the short-term, this would mean most groundwater pumpers in the basin would need to start: 1) measuring their groundwater extractions, 2) reporting extractions to the State Water Board, 3) and paying groundwater extraction fees to the State Water Board. Board staff recommend that most domestic household users (people who use less than two acre-feet per year for domestic purposes only) be exempt from reporting extractions and paying fees.
 - Identify certain deficiencies (issues with the subbasin's current groundwater sustainability plans) and potential actions that the GSAs could take to address them.

- Not exclude any portions of the subbasin from the probationary status.
- Require people who extract more than 200 acre-feet per year of groundwater from the subbasin to install and use meters to measure groundwater extractions.
- Require people extracting groundwater from the wells located in the Friant Kern Canal subsidence management areas to install and use meters to measure their groundwater extractions.
- Shift the reporting deadline for groundwater extractors from February 1 of each year to December 1.

SGMA and State Intervention (Section 2)

SGMA established a new framework for groundwater management in California. SGMA requires local agencies to form GSAs in high- and medium-priority basins and to develop and implement GSPs. GSAs are responsible for achieving long-term sustainable management of their groundwater basins that avoids certain undesirable results within 20 years of implementing their GSPs.

When DWR, in consultation with the State Water Board, deems the GSP or GSPs in a high-priority or medium-priority basin inadequate,¹ DWR refers the basin to the State Water Board for a determination as to whether to begin the state intervention process.² State intervention is additional to local management and intended to be temporary, and is a two-step process:

- The first step of state intervention under SGMA is for the State Water Board to determine, through a public process, whether to place the basin on probation.
- In the second step, through a public process, the State Water Board may implement an interim plan for the basin. This can only happen if deficiencies are not fixed after at least one year of the basin being on probation.

In determining whether to put a basin on probation, the State Water Board analyzes whether deficiencies identified by DWR were sufficiently addressed prior to the probationary hearing. As part of its analysis, and as reflected in State Water Board Resolution 2021-0050, Condemning Racism, Xenophobia, Bigotry, and Racial Injustice and Strengthening Commitment to Racial Equity, Diversity, Inclusion, Access and Anti-Racism, the State Water Board considers the impacts of basin non-compliance on vulnerable communities, including communities of color.

¹ Wat. Code, § 10735.2, subd. (a)(3).

² Wat. Code, § 10735, et seq.

During a probationary period, GSAs would have time to resolve deficiencies identified in their GSPs and the State Water Board would collect data on groundwater extractions, collect fees from certain groundwater users, and may conduct additional investigations. Importantly, the GSA retains its authorities and responsibilities and must continue to implement its GSP regardless of if the basin is in probation.

The State Water Board acknowledges that the Kaweah Subbasin GSAs have stated their intent to make draft amended GSPs available for public comment in May 2024 with a goal of incorporating public comments and submitting amended GSPs to the online DWR SGMA portal in July 2024. This draft staff report reflects Board staff review of the Kaweah Subbasin’s 2020 and 2022 GSPs. It will take additional time for Board staff to review and provide feedback if and when amended GSPs are available.

Basin Description (Section 3)

Located in California’s Central Valley in the southern portion of the San Joaquin Valley, the Kaweah Subbasin (**Figure ES-1**) is bounded to the north by the Kings Subbasin, the west by the Tulare Lake Subbasin, the south by the Tule Subbasin, and the east by the Sierra Nevada Mountains. The subbasin covers approximately 441,000 acres or about 689 square miles.³

The subbasin contains seven localized urban areas, Visalia and Tulare (Mid-Kaweah GSA), Exeter, Farmersville, Woodlake, and a portion of City of Hanford (Greater Kaweah GSA) and City of Lindsay (East Kaweah GSA). According to the American Community Survey 2022 five-year estimate, the Kaweah Subbasin has an estimated population of 296,632 people as of 2022. Most of the land within the subbasin and surrounding areas is used for growing crops and raising livestock. The primary land use designations for urban land are residential, commercial, and industrial. The Kaweah Subbasin is currently managed by the three GSAs, and the full list of member agencies can be found in Section 3.

Groundwater in the subbasin is used for drinking water, agriculture, and wildlife habitat. The subbasin contains several aquifers, which are bodies of rock and/or sand and soil that hold groundwater. These aquifers are separated by layers of clay, which slow the movement of water between aquifers and can act as a barrier.

- The upper aquifer is the shallow unconfined to semi-confined portion of the aquifer. An unconfined aquifer is an aquifer that is not confined, or “trapped,” by a layer of less porous sediment or rock. The upper aquifer is present in the west side of the subbasin and shallows toward the middle and is approximately 400 feet deep.

³ California Department of Water Resources, 2016.

- The lower aquifer occurs below the Corcoran Clay (E-clay). It is confined within the entirety of the western portion of the subbasin, meaning that a layer of less porous sediment or rock “traps” the aquifer. This aquifer is approximately 500 to 1000 feet deep.
- The third aquifer, referred to as a single aquifer system is mainly located in the easter portion of the subbasin where the Corcoran Clay is discontinuous or is absent. This aquifer is approximately 600 feet deep in the middle of the subbasin and shallows toward the east to approximately 400 feet deep.

Groundwater is the main source of water for agricultural and urban land uses, but surface water is also available as a resource. The Kaweah River is the largest and most consistent source of surface water in the subbasin with a 630 square mile watershed area.

For more information on the history, demographics, economy, governance context, groundwater levels, groundwater quality, and subsidence in the subbasin, please refer to Section 3 of the Draft Staff Report.

Recommendations for State Water Board Action (Section 4)

SGMA states, “in those circumstances where a local groundwater management agency is not managing its groundwater sustainably, the State needs to protect the resource until it is determined that a local groundwater management agency can sustainably manage the groundwater basin or subbasin.” In March 2023, DWR determined the Kaweah Subbasin 2022 GSPs to be inadequate. Board staff agree with this determination. Now, the State Water Board may determine whether a probationary designation is warranted. Board staff have reviewed the GSPs, Coordination Agreements, and the DWR staff reports documenting DWR’s review of the GSPs.

Staff recommends the State Water Board designate the subbasin as probationary, and find the following:

The GSPs will allow substantial impacts to people who rely on domestic wells for drinking, bathing, food preparation, and cleaning, as well as impacts to critical infrastructure such as canals (e.g., Friant-Kern Canal), levees, and the aquifer itself within the subbasin. These undesirable results are likely to occur to an extent in the subbasin that will prevent the subbasin from reaching sustainability by 2040, as required by SGMA. Designating the subbasin probationary is needed to ensure the subbasin gets back on track to achieve sustainability by 2040.

Section 4 of the Draft Staff Report explains Board staff recommendations for a potential probationary designation of the subbasin. These recommendations are summarized below.

GSP Deficiencies and Potential Actions to Address Deficiencies (Section 4.1)

Board staff have identified specific deficiencies in the Kaweah Subbasin 2022 GSPs and have outlined potential corrective actions to address those specific deficiencies. The Draft Staff Report also incorporates deficiencies identified by DWR's determination. Deficiencies that have been identified within the GSPs relate to:

- Chronic lowering of groundwater levels with insufficient management criteria.
- Continued land subsidence (sinking).
- Further degradation of groundwater quality.
- Depletion of interconnected surface water.

A summary of the GSP deficiencies and corrective actions are described in further detail below.

Defining and Avoiding Undesirable Results Related to Chronic Lowering of Groundwater Levels (Deficiency GL – Section 4.1.1)

Under SGMA, one piece of achieving the sustainability objective for a basin is avoiding “chronic lowering of groundwater levels indicating a significant and unreasonable depletion of supply if continued over the planning and implementation horizon.”⁴ Declining groundwater levels can cause shallow wells to go dry or reduce their productivity, increase the energy costs of pumping, bring polluted water closer to well screens (the area where groundwater enters a well), or reduce water available for deep-rooted plants. Declining groundwater levels also makes it more difficult to avoid other, related undesirable results caused by groundwater conditions, including land subsidence and depletions of interconnected surface water.

DWR identified deficiencies in the 2022 GSPs related to Chronic Lowering of Groundwater Levels. Key deficiencies included: 1) the GSPs' goals appear to allow significant and unreasonable impacts to domestic wells and the people that rely on them 2) the GSP's goals do not achieve sustainability, and 3) GSPs plan to measure progress against modeled projections rather than goals that achieve sustainability and avoid harm caused by declining groundwater levels.

Board staff agree with DWR's analysis and further identify deficiencies with 1) the way the GSPs plan to address wells that they would allow to dry (well mitigation plan) and 2) the way that GSPs determined sustainability.

⁴ Wat. Code, § 10721, subd. (x)(1).

The Staff Report identifies deficiencies and potential actions based on DWR and Board staff analysis. Key deficiencies and potential actions are summarized below:

- **Deficiency:** The GSP's goals do not achieve sustainability.
Potential Action: Revise goals to prevent overdraft. Ensure feasibility of GSP projects and actions to achieve sustainability goals.
- **Deficiency:** GSPs plan to measure progress against modeled projections rather than goals that avoid harm caused by declining groundwater levels.
Potential Action: Measure progress toward sustainability relative to goals that avoid harm caused by declining groundwater levels.
- **Deficiency:** The GSPs' goals appear to allow significant and unreasonable impacts to domestic wells and the people that rely on them potentially leading to many wells going dry.
Potential Action: Revise goals so that they do not allow significant and unreasonable impacts.
- **Deficiency:** Well mitigation plans lack crucial detail.
Potential Action: Provide additional details to the well mitigation plans such as implementation schedule, funding source, and eligibility.

Defining and Avoiding Undesirable Results Related to Land Subsidence (Deficiency LS – Section 4.1.2)

Another consideration under SGMA is avoiding “significant and unreasonable land subsidence that substantially interferes with surface land uses.”⁵ Subsidence is the sinking of land caused by groundwater removal. Land subsidence from excessive groundwater extraction can cause irreversible damage to infrastructure (bridges, roads, pipelines, canals, levees, and buildings) and aqueduct operations. Land subsidence can also diminish the storage capacity of an aquifer, which reduces the available groundwater storage for the future. Importantly, subsidence and its reductions on groundwater storage are often irreversible.

In the Kaweah Subbasin, subsidence is primarily caused by the removal of water from clay layers by groundwater extraction, which causes irreversible subsurface compaction and sinking of the land surface. In the subbasin, pumping from the lower aquifer under the Corcoran Clay, a deep thick clay layer that confines a deeper aquifer system, is likely the primary cause of subsidence. However, subsidence within clay layers outside the extent of the Corcoran clay still occurs and should be addressed.

⁵ Wat. Code, § 10721, subd. (x)(5).

DWR identified deficiencies in the 2022 GSPs related to subsidence. The key deficiencies included: 1) The GSPs do not justify subsidence sustainable management criteria regarding impacts to the subbasin's conveyance infrastructure and 2) Groundwater level sustainability goals are inconsistent with avoiding subsidence impacts and should be reevaluated.

Board staff agree with and build upon DWR's analysis. Board staff have identified further potential actions to address DWR deficiencies and have identified additional deficiencies regarding 1) subsidence management along the Friant-Kern Canal and 2) efforts to prevent significant impacts to the subbasin's conveyance infrastructure, including the Friant-Kern Canal, which delivers drinking water to over 250,000 people and irrigation water to over 1 million acres of farmland.

The Staff Report identifies deficiencies and potential actions based on DWR's and Board staff's analysis. Key deficiencies and potential actions are summarized below:

- **Deficiency:** The GSPs do not justify subsidence sustainable management criteria regarding impacts to the subbasin's conveyance infrastructure.
Potential Action: Better quantify subsidence impacts to conveyance infrastructure and adopt more protective sustainable management criteria along the Friant-Kern Canal and elsewhere within the subbasin.
- **Deficiency:** Subsidence impacts are likely to occur due to continued groundwater level declines.
Potential Action: Establish groundwater level sustainable management criteria that will not cause significant subsidence impacts.
- **Deficiency:** The GSPs and mitigation agreement lack detail on how they plan to avoid subsidence impacts to conveyance infrastructure.
Potential Action: Develop and implement plans to limit pumping near critical infrastructure with clear triggers for action. Consider not allowing new wells near critical infrastructure. Plan ahead to avoid significant impacts and develop plans to repair damages to critical infrastructure caused by subsidence.

Degraded Groundwater Quality (Deficiency GWQ – Section 4.1.3)

Another consideration under SGMA is avoiding "significant and unreasonable degraded water quality, including the migration of contaminant plumes that impair water supplies."⁶ Degradation of water quality can limit local drinking water supplies and other beneficial uses, and SGMA requires GSAs to consider the interests of all beneficial uses and users of groundwater, including municipal well operators and public water systems.⁷

⁶ Wat. Code, § 10721, subd. (x)(4).

⁷ Wat. Code, § 10723.2.

Water quality degradation that significantly and unreasonably affects the supply or suitability of groundwater for use in drinking water systems is an undesirable result.

DWR did not have deficiencies for Degraded Water Quality, and the GSAs revised portions of the groundwater quality sections of their 2022 GSPs. Board staff reviewed the 2020 and 2022 GSPs and have concerns regarding the potential impacts that the groundwater quality sustainable management criteria, monitoring network, and projects and management actions would have on beneficial uses and users in the subbasin. Key deficiencies and associated potential actions are summarized below:

- **Deficiency:** The GSPs goals are not well described, so it is unclear if the goals would prevent significant and unreasonable impacts.
Potential Action: Clearly describe the impacts that would be considered significant and unreasonable.
- **Deficiency:** The GSPs do not address uranium, a constituent (pollutant) that can be impacted by basin management and that is detected throughout the basin.
Potential Action: Address uranium in addition to the constituents already addressed.
- **Deficiency:** The GSPs would allow drinking water in some domestic drinking water wells to degrade below drinking water standards because the GSPs apply agricultural water standards to drinking water wells in agricultural areas.
Potential Action: Revise plans so that drinking water in domestic wells does not degrade below drinking water standards.
- **Deficiency:** The GSAs are not consistent on how they will monitor groundwater quality. They do not clearly monitor impacts to domestic drinking water wells and have inconsistencies in their monitoring networks and reported data.
Potential Action: Clearly describe how groundwater quality will be monitored for all types of beneficial uses and users. Update tables and figures in the GSPs, Coordination Agreement, and annual reports.
- **Deficiency:** The GSPs do not include plans to help people whose well water is allowed to degrade below drinking water standards. The GSPs do not plan the additional sampling necessary to understand the extent of degraded water.
Potential Action: Collect and analyze more water samples when drinking water degrades below drinking water standards.
- **Deficiency:** The GSPs do not include plans to help people whose well water is allowed to degrade below drinking water standards. The GSPs do not include the well mitigation planning necessary to restore well water to drinking water standards.
Potential Action: Develop clear plans to restore access to clean drinking water when it degrades below drinking water standards.

Interconnected Surface Water (Deficiency ISW – Section 4.1.4)

Another consideration under SGMA is avoiding “[d]epletions of interconnected surface water that have significant and unreasonable adverse impacts on beneficial uses of the surface water.”⁸ Depletions of interconnected surface water within the basin may have adverse impacts on surface water uses, such as degradation or loss of groundwater dependent ecosystems and reduced downstream surface water flow to beneficial users.

DWR identified depletions of interconnected surface water in their 2020 GSP Incomplete Determination as a deficiency; however, DWR did not include this as a deficiency in their 2022 GSP Inadequate Determination. DWR made the following conclusion after their review of the GSPs in 2022:

While not yet fully consistent with the requirements of the GSP Regulations, the Agencies’ efforts to address this deficiency are sufficient at this time, although further efforts and revisions will be required in subsequent GSP updates to align the sustainable management criteria for interconnected surface water with the GSP Regulations and Department guidance.

(2022 GSP Inadequate Determination, p. 3).

Board staff acknowledge the Kaweah Subbasin’s efforts to address data gaps related to depletions of interconnected surface water and their plans to incorporate changes in the 2025 GSP update, however, the current GSPs do not meet the requirements in SGMA statute and GSP Regulations. Key deficiencies and potential actions are summarized below:

- **Deficiency:** The GSPs did not adequately consider beneficial uses and users.
- **Potential Action:** Consider all beneficial uses and users when setting goals for depletions of interconnected surface water and specifically describe the impacts depletions of interconnected surface water would have on beneficial uses and users.
- **Deficiency:** The GSPs did not provide sufficient justification for minimum thresholds (the lowest acceptable level) for depletions of interconnected surface water.
- **Potential Action:** Reevaluate minimum thresholds using best available information and best available science and provide compelling information to demonstrate that the thresholds are established at an appropriate limit.

⁸ Wat. Code, § 10735, subd. (d).

- **Deficiency:** The GSPs did not establish a monitoring network designed to address depletions of interconnected surface water.
- **Potential Action:** Create an interconnected surface water monitoring network within the Kaweah Subbasin.

Additional Staff Recommendations for State Water Board Action (Sections 4.2-4.4)

Exclusions from Probationary Status

SGMA directs the State Water Board to exclude from probationary status any portions of the basin for which a GSA demonstrates compliance with the sustainability goal.⁹ Staff believe no GSAs in the Kaweah Subbasin have demonstrated compliance with the sustainability goal. All three GSAs have adopted and are implementing three GSPs, which DWR has determined to be inadequate. Board staff recommend the State Water Board not exclude any portions of the subbasin from the probationary designation.

Modification to Water Year and Reporting Dates

Board staff do not recommend the State Water Board modify the water year, but staff do recommend modifying the extraction reporting deadline for groundwater extraction reports required pursuant to Water Code Section 5202 by changing it from February 1 to December 1.

Requirements for Installation and Use of Measuring Devices

As part of a probationary designation, the State Water Board may require groundwater extraction reporters to install and use measuring devices, such as flow meters, for measuring their groundwater extractions.

Board staff recommend the State Water Board:

- Require people extracting more than two acre-feet per year for any reason and people extracting water for other than domestic purposes to report their groundwater extractions.
- Require people extracting more than 200 acre-feet per year to install and use meters that meet the requirements of Cal. Code Regs., tit. 23, § 1042 on all their production wells within the subbasin.

⁹ Wat. Code, § 10735.2, subd. (e).

- Require people extracting groundwater from the wells located in the Friant Kern Canal subsidence sustainable management criteria band to install and use meters that meet the requirements of Cal. Code Regs., tit. 23, § 1042 on all their production wells within the subbasin.
- Exclude people who extract two acre-feet or less per year for domestic uses only (de minimis users) from reporting requirements. This exception includes most household users.

Conclusion

Despite significant efforts by GSAs in the Kaweah Subbasin, Board staff's analysis supports DWR's determination that the Kaweah Subbasin 2022 GSPs are inadequate. The current plans allow substantial impacts to communities who rely on domestic wells and to critical infrastructure. The Kaweah Subbasin is therefore unlikely to achieve sustainability by 2040, as required by SGMA.

Addressing deficiencies related to lowering groundwater levels and groundwater quality degradation is also consistent with the State Water Board's mission to ensure every Californian has safe and affordable drinking water as reflected in its commitment to the Human Right to Water and administration of the Safe and Affordable Drinking Water Fund.

Board staff recommend probationary status as a next step for getting the Kaweah Subbasin back on track to achieve sustainability and protect groundwater resources for the communities, farms, and environmental resources that depend on them.

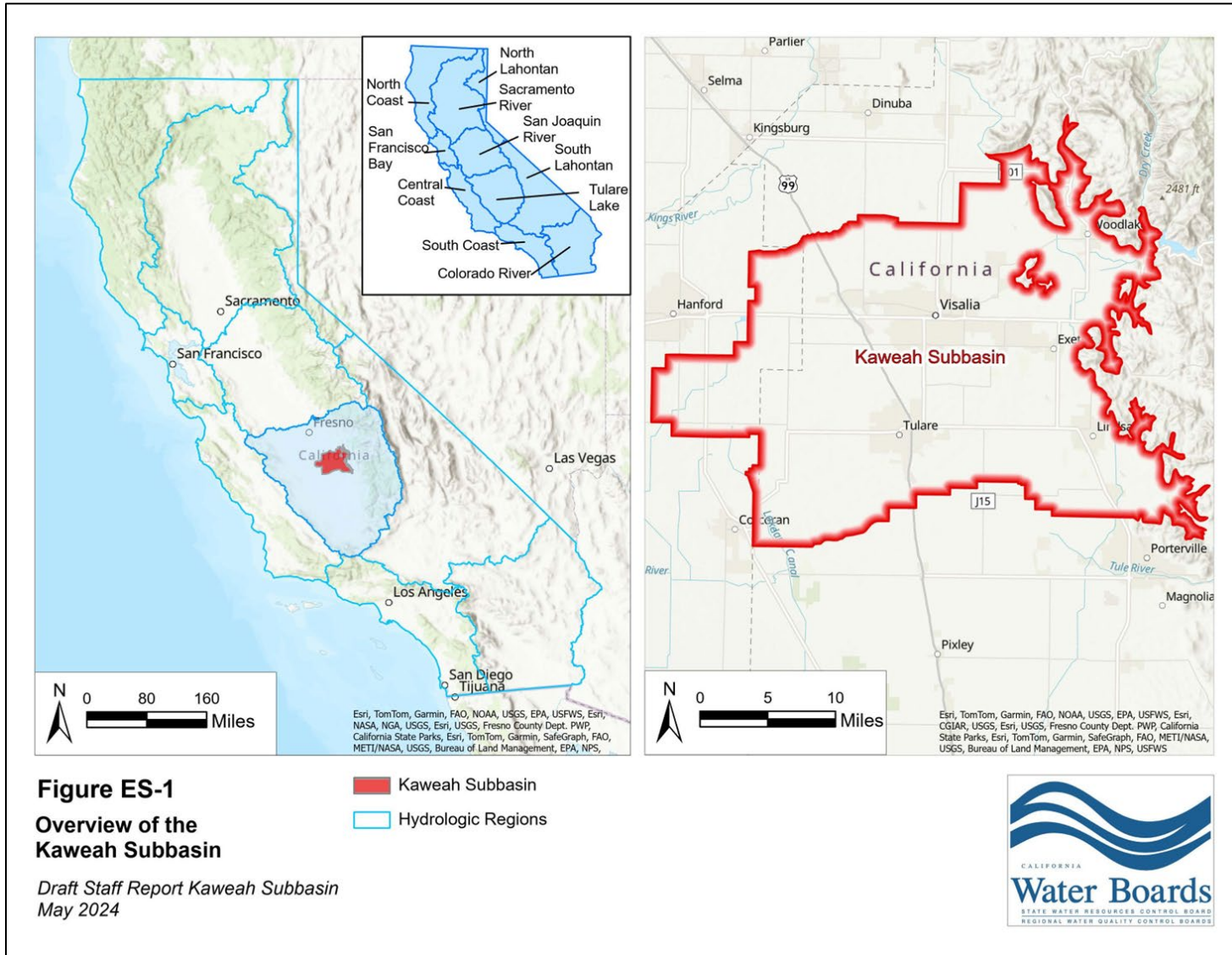


Figure ES-1: Location of the Kaweah Subbasin