



STATE WATER RESOURCES CONTROL BOARD
REGIONAL WATER QUALITY CONTROL BOARDS

TULE SUBBASIN PROBATIONARY HEARING DRAFT STAFF REPORT EXECUTIVE SUMMARY

March 2024

This Executive Summary briefly summarizes key sections of the Draft Tule Subbasin 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 sections 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 Tule 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 Tule Subbasin have made significant efforts since the passage of SGMA to form groundwater sustainability agencies (GSAs) and develop detailed technical and other information supporting the adoption and implementation of six groundwater sustainability plans (GSPs) for the subbasin. Despite those efforts, in January 2022, DWR determined that the subbasin's GSPs did not meet SGMA's requirements and were therefore 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 for possible state intervention. Consistent with SGMA, the State Water Board may now consider whether to designate the Tule 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 intervention process to provide context for the upcoming Tule Subbasin Probationary Hearing (Probationary Hearing);
- Briefly describe the demographics, geology, and hydrology of the Tule Subbasin;
- Summarize the actions State Water Board staff (Board staff) recommend the State Water Board could take at the subbasin Probationary Hearing. These recommended actions 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 recommends 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 plan) and potential actions that the GSAs could take to address them.
 - Require people who extract more than 500 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 framework for groundwater management in California. SGMA requires local agencies to form GSAs in high-priority 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 inadequate¹, DWR refers the basin to the State Water Board for a determination as to whether to begin the state intervention process². 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.

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.

¹ Wat. Code, § 10735.2, subd. (a)(3)

² Wat. Code, § 10735, et seq.

Basin Description (Section 3)

Located in California's Central Valley in the southern portion of the San Joaquin Valley, the Tule Subbasin (Figure 1) is bounded to the north by the Kaweah Subbasin, the west by the Tulare Lake Subbasin, the south by the Kern Subbasin, and the east by the Sierra Nevada Mountains. The Subbasin covers approximately 475,895 acres or about 744 square miles³.

The subbasin contains 13 localized urban areas, including the city of Porterville, and the communities of Allensworth, Alpaugh, Ducor, Earlimart, East Porterville, Pixley, Poplar-Cotton Center, Richgrove, Terra Bella, Teviston, Tipton, and Woodville. According to the Census Block Group Data 2022, the Tule Subbasin has an estimated population of 152,577 people. 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 Tule Subbasin is currently managed by seven GSAs, and the full list of member agencies can be found in Section 3. On June 28, 2023, the Delano-Earlimart Irrigation District GSA terminated its oversight of the Western Management Area. The Tulare County GSA has since expanded its boundaries to include the Western Management Area, and Tri-County Water Authority GSP will cover the area (Communication with GSAs).

Groundwater in the subbasin is used for drinking water, agriculture, wildlife habitat, and oil and gas extraction. 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. In 2022, the Tule Subbasin GSAs executed a Coordination Agreement that divides the subbasin into three different aquifer zones relevant to groundwater management:

- 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 occurs in the upper 100 feet of sediment in the east side of the basin and deepens to the west of the subbasin where it occurs at a maximum depth of 450 feet below the surface.
- 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. The lower aquifer is semiconfined within the northeastern portion of the subbasin. This aquifer is approximately 400 feet deep in the east and 2,000 feet deep in the west.
- The third aquifer zone, the Santa Margarita Formation and the Olcese sand, which exist only within the southeastern portion of the Tule Subbasin, below the

³ DWR, 2016.

Pliocene sediments. This aquifer is considered to be completely separated (hydraulically disconnected) from the deep aquifer.

Groundwater is the main source of water for agricultural and urban land uses, but surface water is also available. Surface water sources include Lake Success, Tulare Lake, the Tule River, Deer Creek, and the White River (2022 Coordination Agreement, Attachment 2, p.7). Of the three rivers within the subbasin, the Tule River is the largest and most consistent source of surface water to the subbasin, averaging 118,000 acre-feet of inflow from 1986 to 2017.

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 Tule 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 Tule 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 GSPs deficiencies and corrective actions are described in further detail below.

To end State Water Board intervention in a groundwater basin, GSAs in that basin must demonstrate their ability and willingness to manage groundwater sustainably and address the issues that caused state intervention to occur. The State Water Board will evaluate any updated and adopted GSPs and determine whether the GSAs have addressed the deficiencies, whether the GSPs are consistent with SGMA, and whether the GSAs are implementing the GSPs in a manner that will likely achieve sustainability in the subbasin.

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.

⁴ Wat. Code, § 10721, subd. (x)(1).

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 plan to reduce groundwater pumping (demand management).

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 GSPs' goals appear to allow significant and unreasonable impacts to domestic wells and the people that rely on them. For example, GSPs would allow hundreds of wells to go dry.
Potential Action: Revise goals so that they do not allow significant and unreasonable impacts.
- **Deficiency:** The GSP's goals do not achieve sustainability.
Potential Action: Revise goals to prevent overdraft. Evaluate feasibility of projects that GSPs rely on to increase water supply.
- **Deficiency:** GSPs plan to measure progress against modeled projections rather than goals that avoid harm caused by declining groundwater levels.
Potential Action: Revise how progress toward sustainability is measured.
- **Deficiency:** Well mitigation plans lack crucial detail.
Potential Action: Add detail to well mitigation plans.
- **Deficiency:** Demand management plans lack crucial detail.
Potential Action: Add detail to demand management plans.

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 amount of available groundwater storage for the future. Importantly, subsidence and the resulting reduction of groundwater storage are often irreversible.

In the Tule Subbasin, subsidence is primarily caused by the removal of water from the clay layers by groundwater extraction, which causes irreversible compaction and sinking of the land surface. In the subbasin, pumping from the lower aquifer is likely the primary cause of subsidence.

DWR identified deficiencies in the 2022 GSPs related to Subsidence. Key deficiencies included: 1) the GSPs claim without justification that their goals would prevent

⁵ Wat. Code, § 10721, subd. (x)(5).

significant and unreasonable impacts, 2) GSPs plan to measure progress against modeled projections rather than goals that achieve sustainability while avoiding harm caused by declining groundwater levels, 3) the GSPs allow more subsidence along the Friant-Kern Canal than the maximum subsidence allowed in an agreement between GSAs and the Friant Water Authority, 4) the GSPs lack crucial detail about how they plan to meet their goals, and 5) the GSPs allow subsidence to continue beyond 2040.

Board staff agree with DWR's analysis and further identify deficiencies with: 1) inconsistencies in the GSPs' goals and 2) efforts to prevent significant and unreasonable impacts along the Friant-Kern Canal, which delivers drinking water to over 250,000 people and irrigation water to over 1 million acres of farmland. The 1.5 feet of subsidence since 2020 already threatens the ongoing efforts to repair canal damage that was caused from earlier subsidence.

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

- **Deficiency:** The GSPs claim without justification that their goals would prevent significant and unreasonable impacts.
Potential Action: Revise goals so that they demonstrably prevent significant and unreasonable impacts.
- **Deficiency:** GSPs plan to measure progress against modeled projections rather than goals that achieve sustainability while avoiding harm caused by declining groundwater levels.
Potential Action: Revise how progress toward sustainability is measured.
- **Deficiency:** The GSPs allow more subsidence along the Friant-Kern Canal than the maximum subsidence allowed in an agreement between GSAs and the Friant Water Authority.
Potential Action: Limit subsidence to, at most, the limits in other agreements.
- **Deficiency:** GSPs lack crucial detail about how they plan to meet their goals and subsidence since 2020 indicates that GSAs are not on track to meet their goals.
Potential Action: Develop and implement plans to limit pumping near critical infrastructure. Do not allow new wells near critical infrastructure. Develop plans to repair damage caused by subsidence.
- **Deficiency:** GSPs allow subsidence to continue beyond 2040.
Potential Action: Do not allow subsidence beyond 2040.

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 water supplies and beneficial

⁶ Wat. Code, § 10721, subd. (x)(4).

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 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 concluded the GSAs took sufficient actions to correct the deficiencies by redefining groundwater quality conditions suitable for agricultural and domestic use based on existing regulatory agency standards.

Board staff acknowledge the effort the subbasin made in resolving the DWR deficiency. However, Board staff also reviewed the 2022 GSPs and identified multiple deficiencies. 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 would allow continued and unmanaged degradation of groundwater quality in areas where groundwater quality degraded below drinking water standards before SGMA was passed.
Potential Action: Identify representative monitoring wells in areas where groundwater quality has already degraded below drinking water standards and develop goals that prevent it from further degradation.
- **Deficiency:** The GSPs do not address some constituents (pollutants) that can be impacted by basin management and that are detected throughout the basin.
Potential Action: Address uranium and nitrite in addition to the constituents already addressed. Also consider addressing PFAS and PFOA.
- **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 GSPs are not consistent on how they will monitor groundwater quality. They also do not monitor frequently enough.
Potential Action: Clearly describe how groundwater quality will be monitored. Monitor frequently enough to detect short-term and seasonal trends.
- **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: 1) plan the additional sampling necessary to understand the extent of degraded water or 2) include the well mitigation planning necessary to restore well water to drinking

⁷ Wat. Code, § 10723.2.

water standards.

Potential Action: Collect and analyze more water samples when drinking water degrades below drinking water standards. 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.”¹⁰ 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 (GDEs) and reduced downstream surface water flow to users.

The GSP regulations allow GSPs to not develop plans to protect interconnected surface water if GSPs demonstrate that significant and unreasonable impacts to interconnected surface water are unlikely to occur. The Tule GSPs claim that there is no interconnected surface water in the basin and therefore did not establish sustainable management criteria, and DWR did not identify a deficiency associated with interconnected surface water. However, Board staff also reviewed the GSPs and identified multiple deficiencies. These deficiencies and associated potential actions are summarized below:

- **Deficiency:** The GSPs do not demonstrate that there is no interconnected surface water in the Tule basin. Instead, the GSPs rely on inadequate analyses that do not consider the best available data.
Potential Action: Use the best available data to evaluate whether interconnected surface water exists in the basin. Explain the monitoring data used in the analysis.
- **Deficiency:** The GSPs use an incorrect definition of interconnected surface water when evaluating whether there is interconnected surface water in the basin.
Potential Action: Use the correct definition of interconnect surface water when evaluating whether it is in the basin.
- **Conditional Deficiency:** The GSP currently does not include plans to avoid significant and unreasonable impacts related to interconnected surface water. If GSAs identify interconnected surface water, using the best available data and correct definition of interconnected surface water, then the lack of plan is a deficiency.
Conditional Potential Action: If the basin identifies interconnected surface water, then the GSP should be revised to avoid significant and unreasonable impacts related to interconnected surface water.

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,⁸ Staff believe no GSAs in the Tule Subbasin have demonstrated compliance with the sustainability goal. All seven GSAs have adopted and are implementing six GSPs, which DWR has determined to be inadequate. Board staff do not recommend excluding any portions of the subbasin from the probationary designation.

Modification to Water Year and Reporting Dates

Board staff do not recommend modifying the water year for reporting of extractions, but 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 any person extracting more than two acre-feet per year or extracting groundwater for any reason other than domestic purposes to report their groundwater extractions and pay fees.
- Require people extracting more than 500 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.
- Require people extracting groundwater from the wells located in the Friant Kern Canal subsidence management areas to install and use meters that meet the requirements of Cal. Code Regs., tit. 23, § 1042 on all their production wells within the basin.
- Exclude people who extract two acre-feet or less per year for domestic uses only (de minimis users) from reporting requirements and paying fees. This exception includes most household users, including those extracting from wells located in the Friant Kern Canal subsidence management areas.

Conclusion

Despite significant efforts by GSAs in the Tule Subbasin, Board staff's analysis supports DWR's determination that the Tule Subbasin 2022 GSPs are inadequate. The current plans do not achieve sustainability and allow substantial impacts to critical infrastructure

⁸ Wat. Code, § 10735.2, subd. (e).

and communities who rely on domestic wells. The Tule Subbasin is therefore unlikely to achieve sustainability by 2040 while avoiding undesirable results, as required by SGMA.

Addressing deficiencies related to lowering groundwater levels and groundwater quality degradation is also consistent with the State Water Board's goal 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 subbasin back on track to achieve sustainability and protect groundwater resources for the communities, farms, and environmental resources that depend on them.

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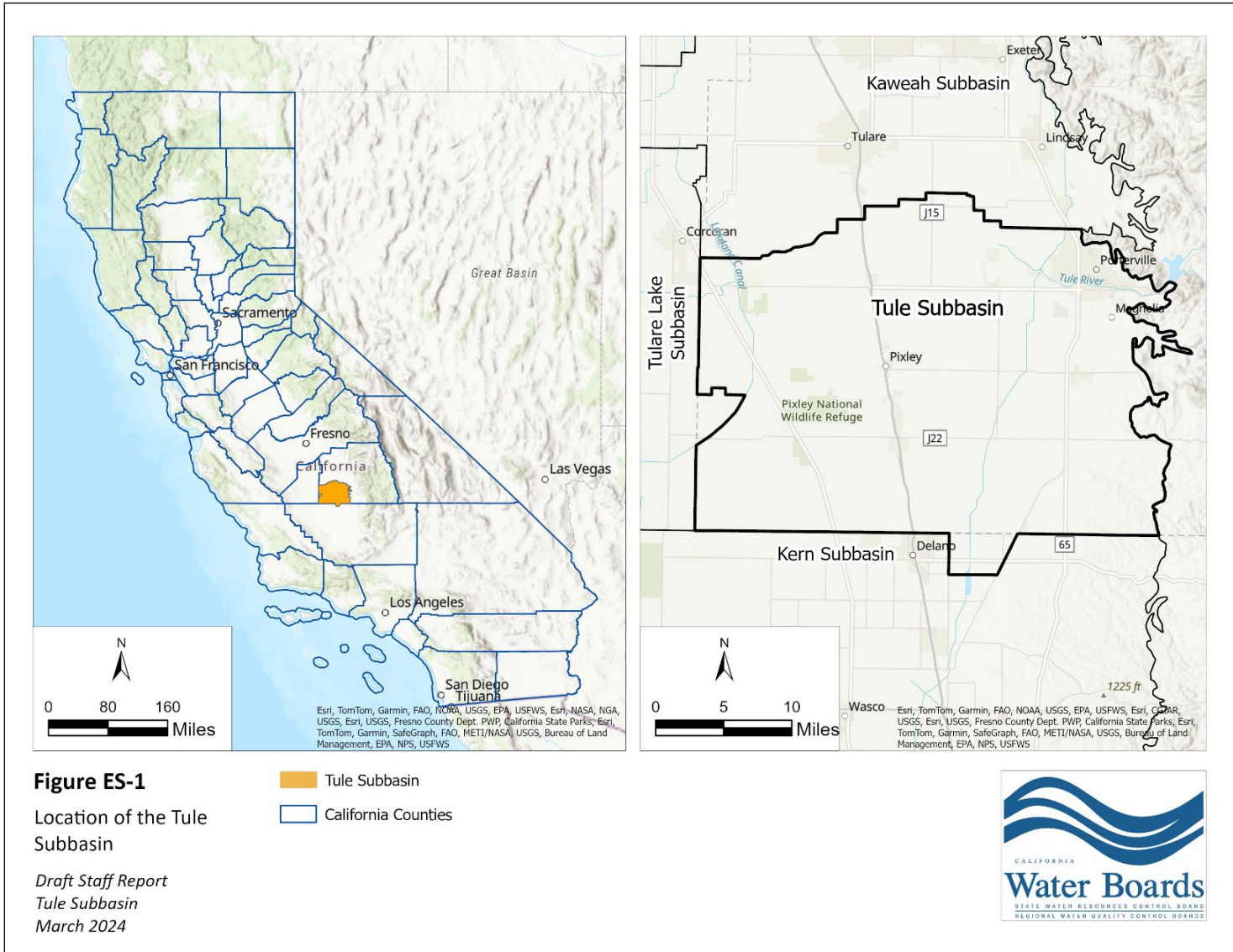


Figure ES-1: Location of the Tule Subbasin