

Kern County Subbasin Probationary Hearing

Public Hearing for Proposed
Designation of Kern County Subbasin
as a Probationary Basin

February 20, 2025



Office of Sustainable Groundwater Management

Language Interpretation In Person

Interpretación en persona

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Please visit the table outside this room for a headset or if you have technical difficulties.

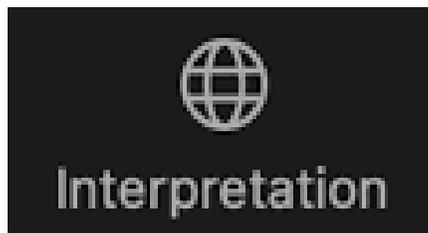
Diríjase a la mesa fuera de esta sala para solicitar un auricular o si tiene dificultades técnicas.

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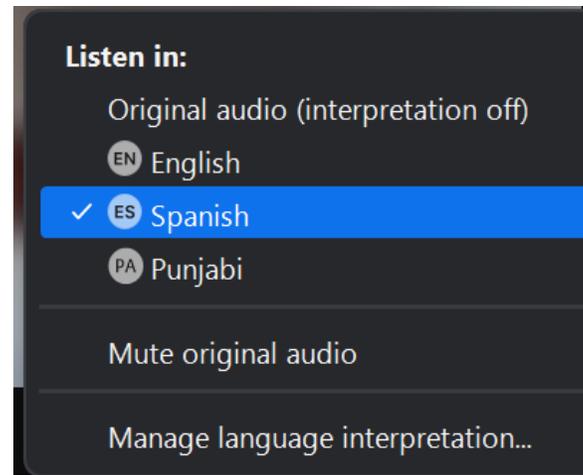
Opción de Interpretación en Zoom

- Seleccione el icono de interpretación desde los controles de la pantalla
- Seleccione español (*Spanish*)
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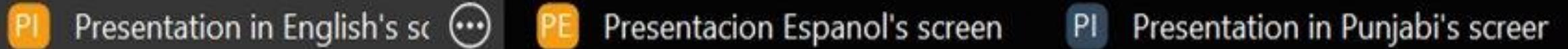
Language Interpretation through Zoom

- Click the Interpretation icon in your meeting controls
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ਜ਼ੂਮ ਰਾਹੀਂ ਭਾਸ਼ਾ ਅਨੁਵਾਦ

- ਆਪਣੇ ਮੀਟਿੰਗ ਕੰਟਰੋਲਾਂ ਵਿੱਚ ਅਨੁਵਾਦ ("Interpretation") ਆਈਕਨ ਤੇ ਕਲਿੱਕ ਕਰੋ
- ਸਪੈਨਿਸ਼ ਜਾਂ ਅੰਗਰੇਜ਼ੀ ਜਾਂ ਪੰਜਾਬੀ ਚੁਣੋ
- ਮੂਲ ਆਡੀਓ ਨੂੰ ਮਿਊਟ (ਆਵਾਜ਼ ਬੰਦ) ਕਰੋ



PI Presentation in English's screen PE Presentacion Espanol's screen PI Presentation in Punjabi's screen

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ਸਲਾਈਡਾਂ ਨੂੰ ਆਪਣੀ ਪਸੰਦੀਦਾ ਭਾਸ਼ਾ ਵਿੱਚ ਦੇਖਣ ਲਈ, ਸਕ੍ਰੀਨ ਦੇ ਉੱਪਰ "Presentation in English," "Presentación en español," or "Presentation in Punjabi" 'ਤੇ ਕਲਿੱਕ ਕਰੋ।

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ਤਕਨੀਕੀ ਸਹਾਇਤਾ ਲਈ, ਇਸ ਵੈੱਬਸਾਈਟ 'ਤੇ ਈਮੇਲ ਕਰੋ

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Hearing Agenda

- 1. Comments by elected officials or California Native American Tribes**
- 2. State Water Board staff presentation**
- 3. Kern County Subbasin GSAs panel presentation**
- 4. Public comments and panels**
- 5. Board discussion and potential vote on resolution**

Kern County Subbasin Probationary Hearing

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Office of Sustainable Groundwater Management

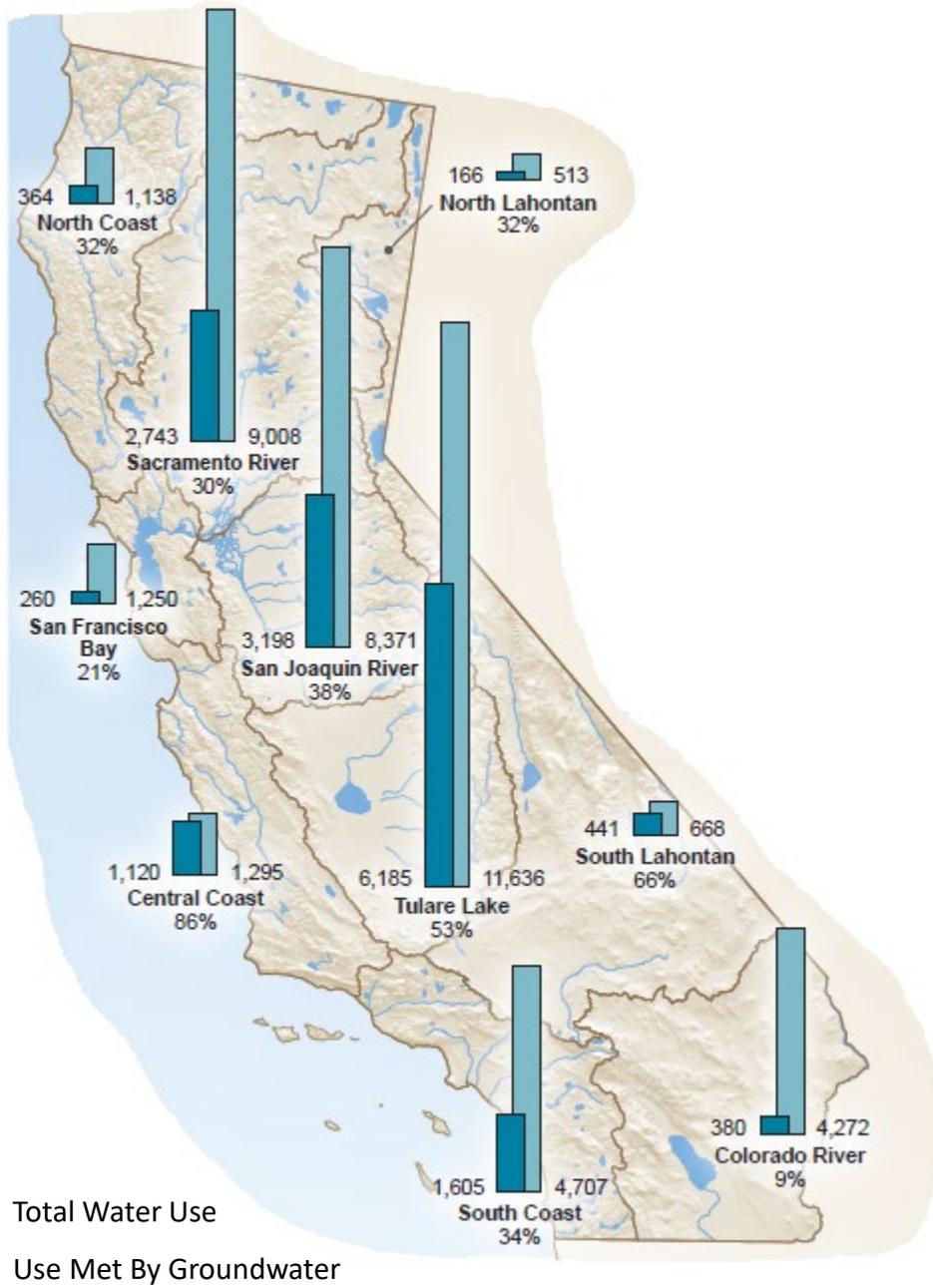
A photograph of a large pipe discharging water into a body of water, with a road and trees in the background. The pipe is white and the water is splashing. The background shows a road and some trees.

Staff Presentation

1. **State Water Board SGMA Intervention Basics**
2. **Kern County Subbasin Background**
3. **SGMA Process in Kern County Subbasin**
4. **Sustainability Plan Deficiencies and Likelihood of Future Impacts**
5. **Current Status of Kern County Subbasin**
6. **Staff Recommendations to the Board**
 - **Two options for consideration— Probation or continuation of hearing**
 - **Next Steps**
 - **Board Considerations for Ending State Intervention**

The image is a composite graphic. The background is a landscape photograph showing a body of water with reeds in the foreground and a sunset sky with scattered clouds. A dark blue rectangular overlay is positioned on the left side of the image, containing the title text in white. The text is arranged in three lines, with the first line being the largest and the second and third lines being smaller. The overall aesthetic is clean and professional, suitable for a presentation or report.

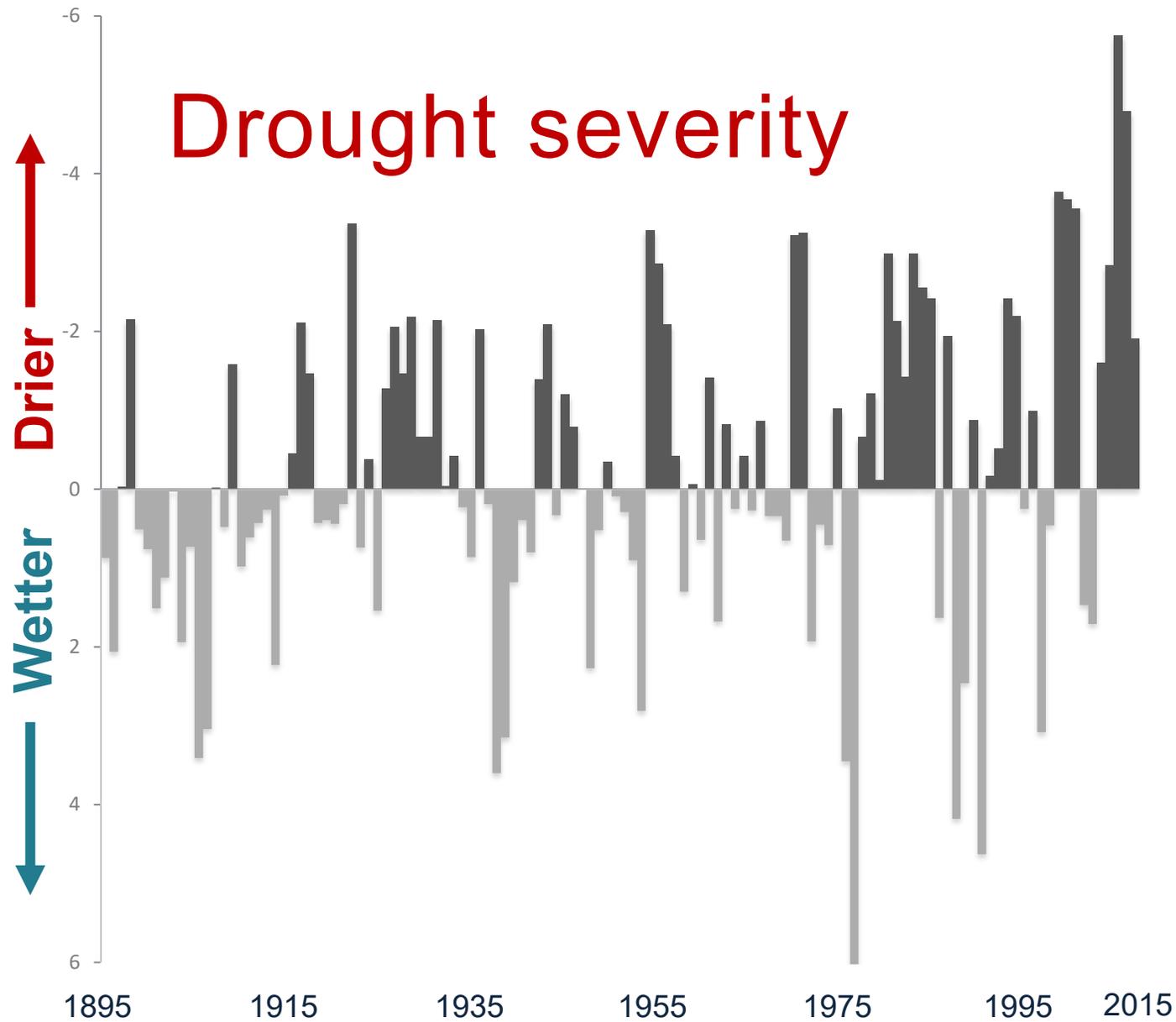
State Water Board SGMA Intervention Basics



80%

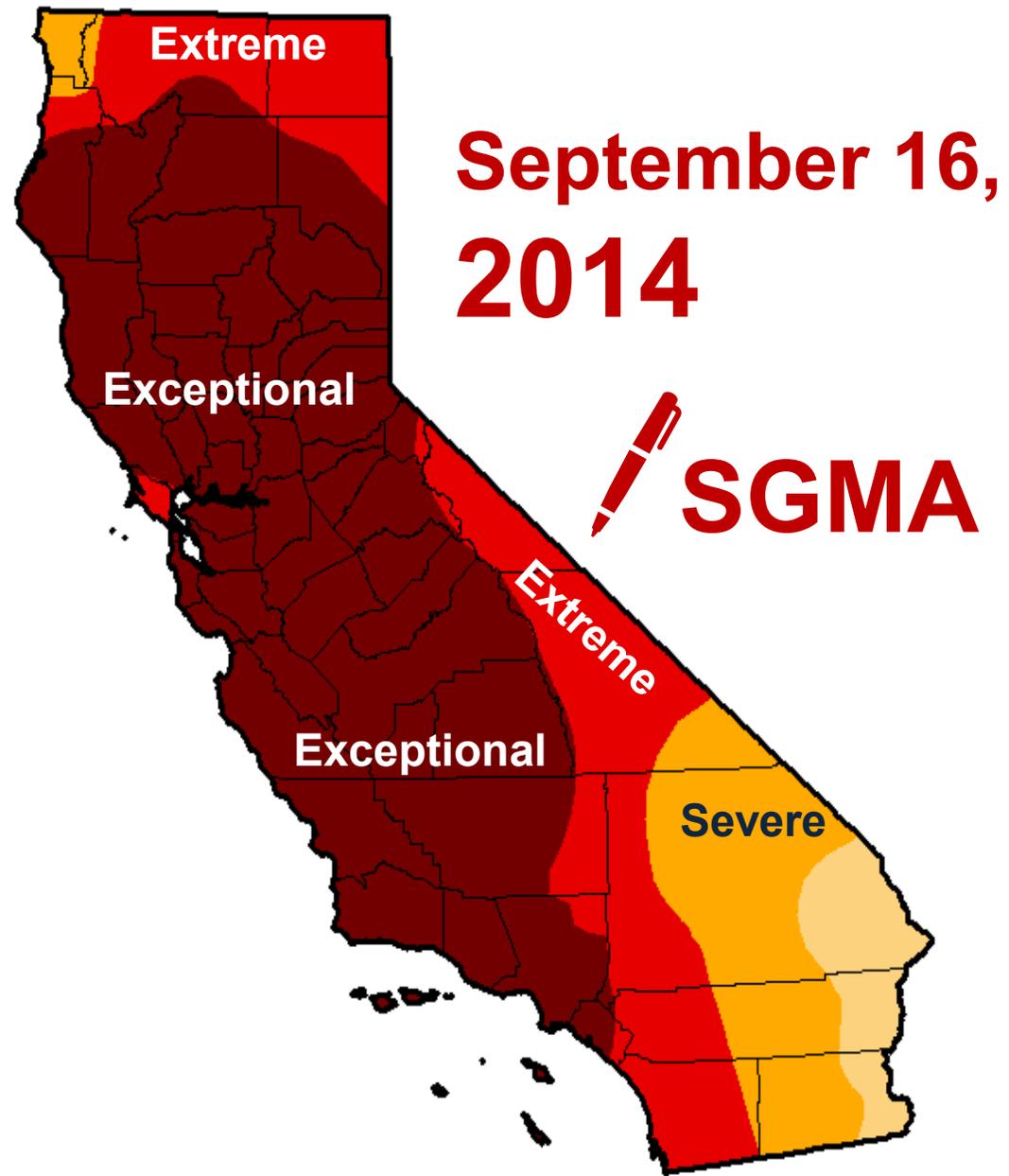
of Californians rely on
GROUNDWATER
 for part of their water supply

Source: California Water Plan Update 2013



Source: PDSI from NOAA

Source: NOAA

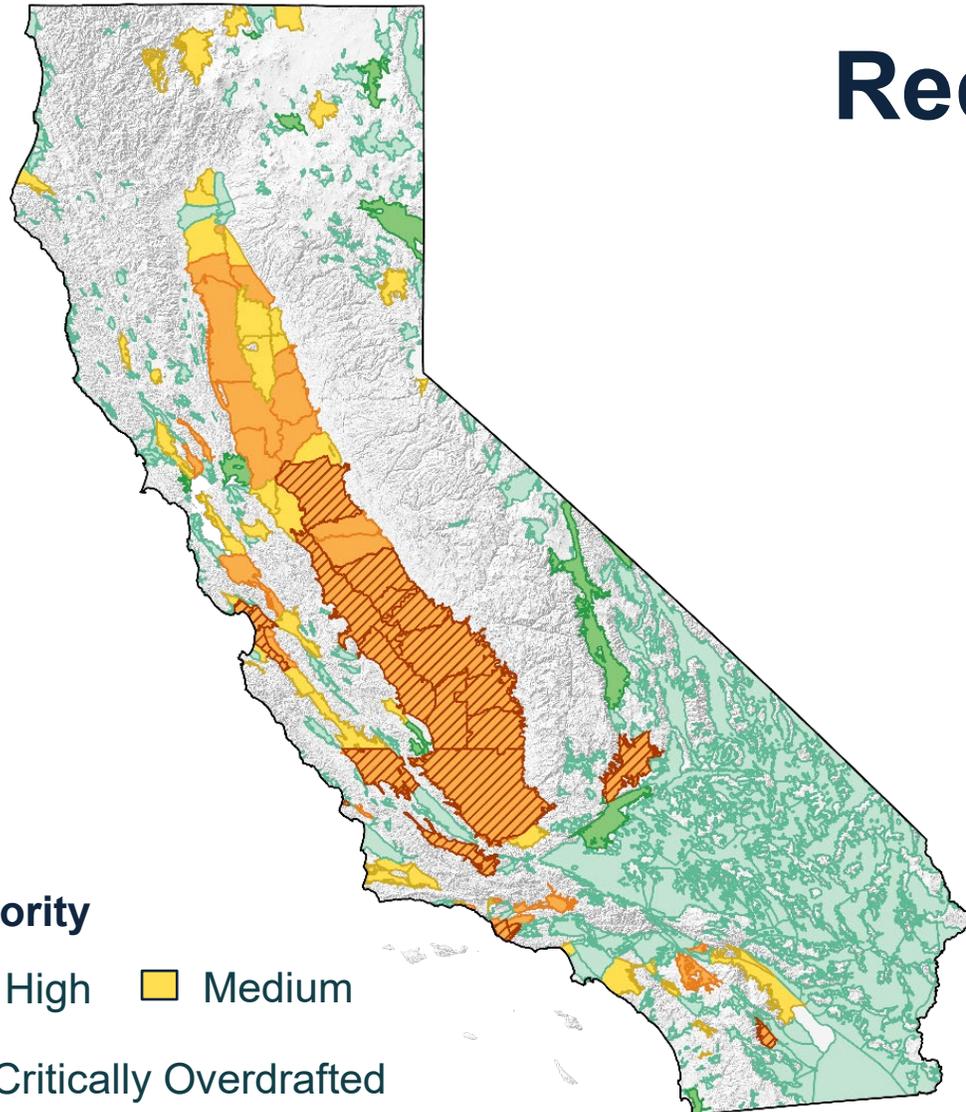


Source: California Drought Monitor

Sustainable Groundwater Management Act

Requirements for SGMA basins:

- Groundwater sustainability agencies
- Groundwater sustainability plans
 - Sustainable management criteria
- Annual reports
- Five-year updates to GSPs
- Achieve sustainability goal by 2040/2042



What is Sustainability under SGMA?

Basin operated within its *sustainable yield* and not experiencing *undesirable results*, which are the significant and unreasonable occurrences of:



Groundwater
Level Declines



Reduced
Storage



Seawater
Intrusion



Degraded
Quality



Land
Subsidence

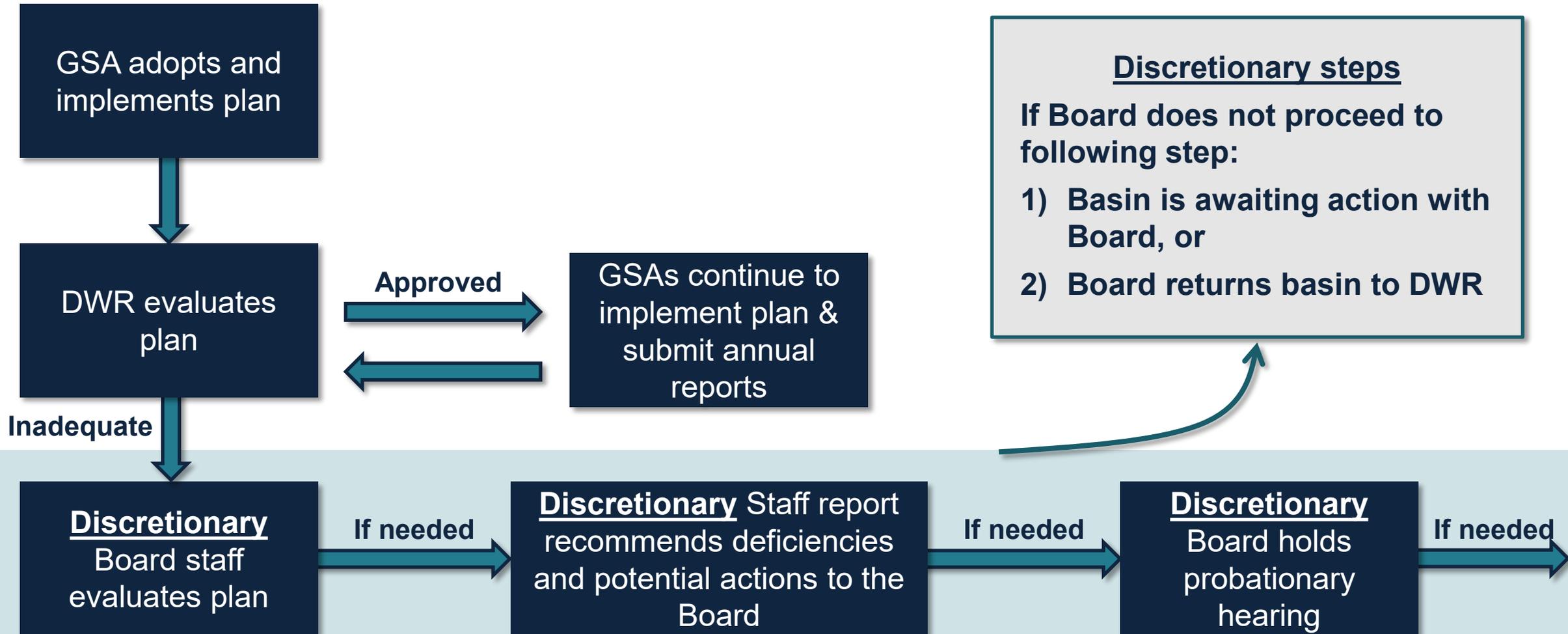


Surface Water
Depletion

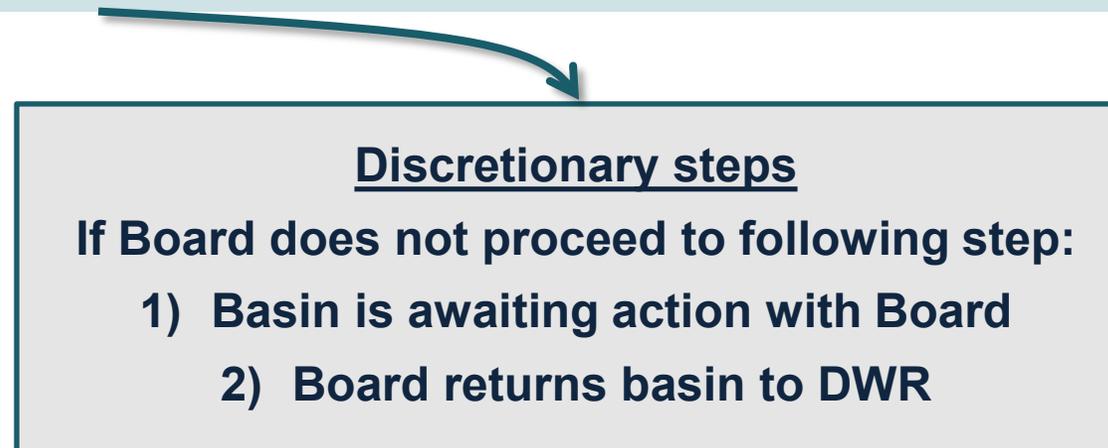
...caused by groundwater conditions occurring throughout the basin.

GSAs aren't required to address undesirable results that occurred prior to 2015

GSP Review Process: DWR and State Water Board Roles



GSP Review Process: DWR and State Water Board Roles



Probationary Hearing

- **Requires a triggering event (such as an "inadequate plan" finding by DWR)**
- **Discretionary**
- **Public process**
- **Board identifies plan deficiencies & potential actions to fix them**
- **Determination is made**



Probationary Hearing Outcomes

- **Board can choose to**
 - **Adopt a resolution declaring the basin probationary and setting requirements regarding reporting, or**
 - **Continue the hearing, deferring a final decision for a specified period, or**
 - **Return the basin back to DWR oversight**
- **Probationary Designation can be amended in the future:**
 - **Make exclusions**
 - **Update requirements**
 - **Modify deficiencies**



Probation: Key Points

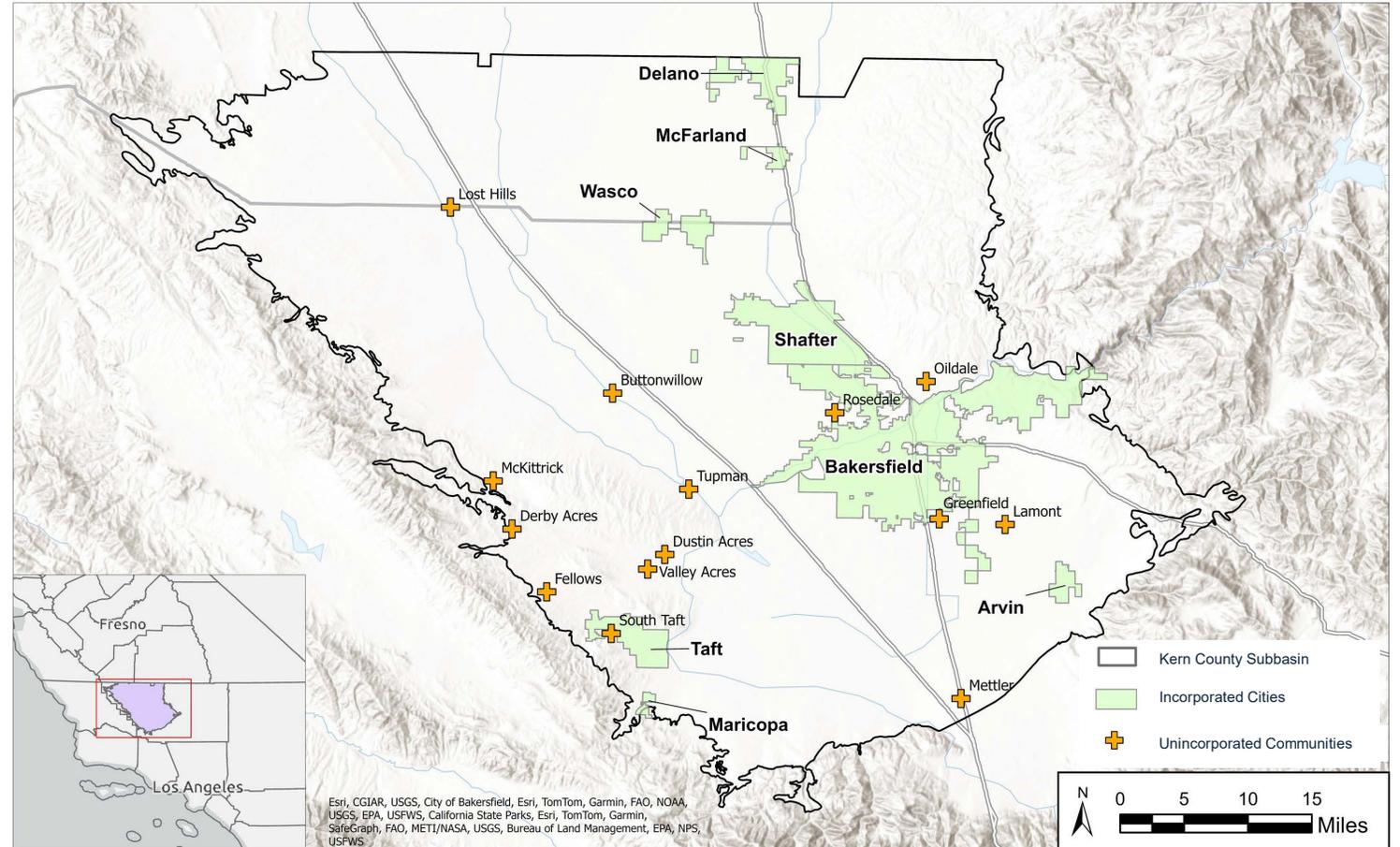
- **Lasts only as long as it takes for GSAs to fix issues**
- **Does not limit GSA authorities**
- **Extractors begin reporting & paying fees**
- **No Board-required pumping limits at this phase**
- **If issues aren't fixed after 1 year, Board can develop and adopt an interim plan**



Kern County Subbasin Background



Kern County Subbasin: Physical Setting



Kern County Subbasin: Hydrologic Setting

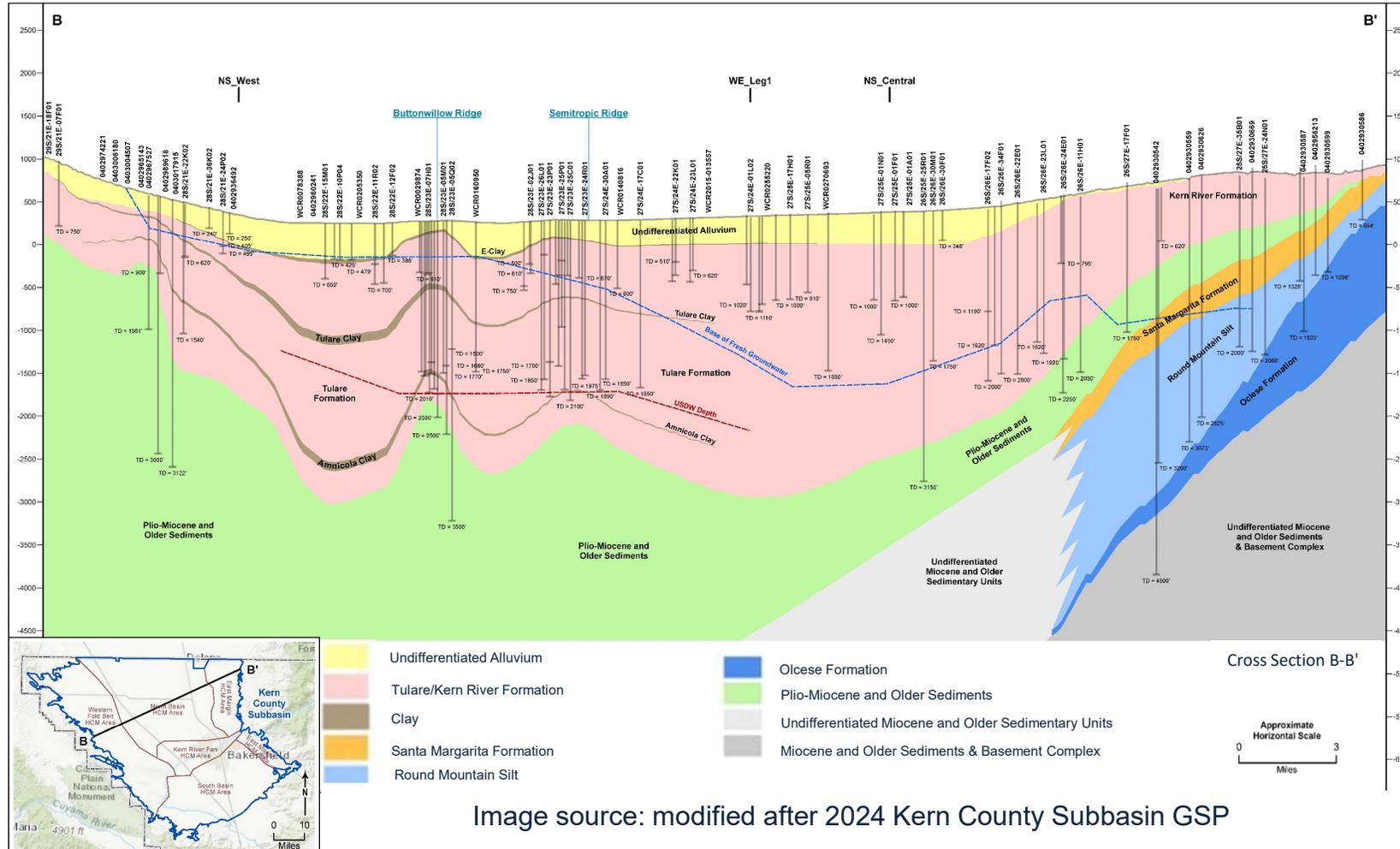


Image source: modified after 2024 Kern County Subbasin GSP

Three Principal Aquifers

Primary Alluvial Aquifer:

- Unconsolidated nonmarine deposits
- Unconfined, semi-confined and confined

Santa Margarita Aquifer*:

- Marine deposits
- Confined

Olcese Aquifer*:

- Marine deposits
- Confined

**Exclusively in the eastern portion of the subbasin*

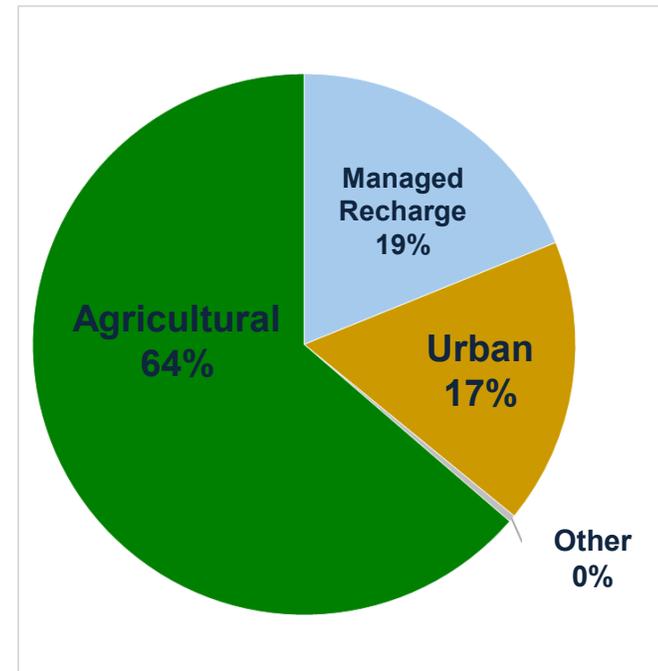
Kern County Subbasin: Beneficial Uses

Groundwater Uses

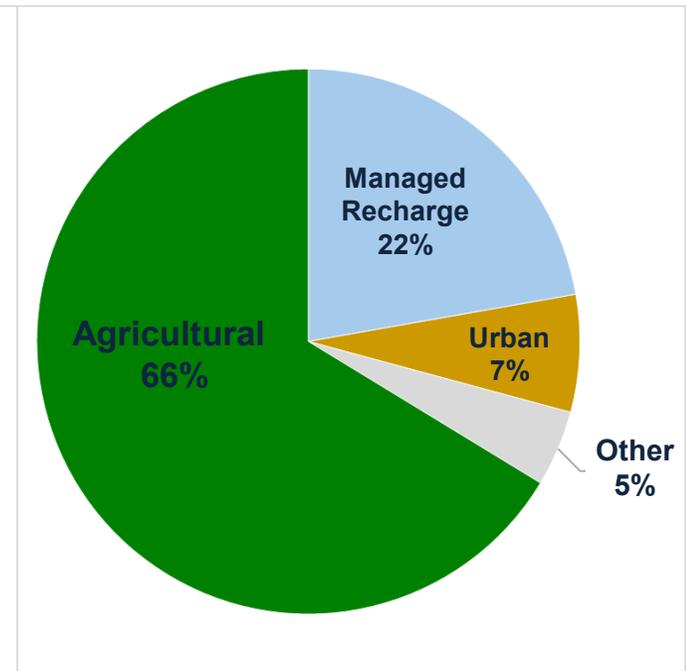
- Urban supply
 - Drinking and residential uses
 - Commercial and municipal uses
 - Landscaping
- Agricultural supply
- Managed recharge
- Industrial supply

Groundwater Extractions

Water Year 2022 (Critical)
Total: 2,343,630 acre-feet



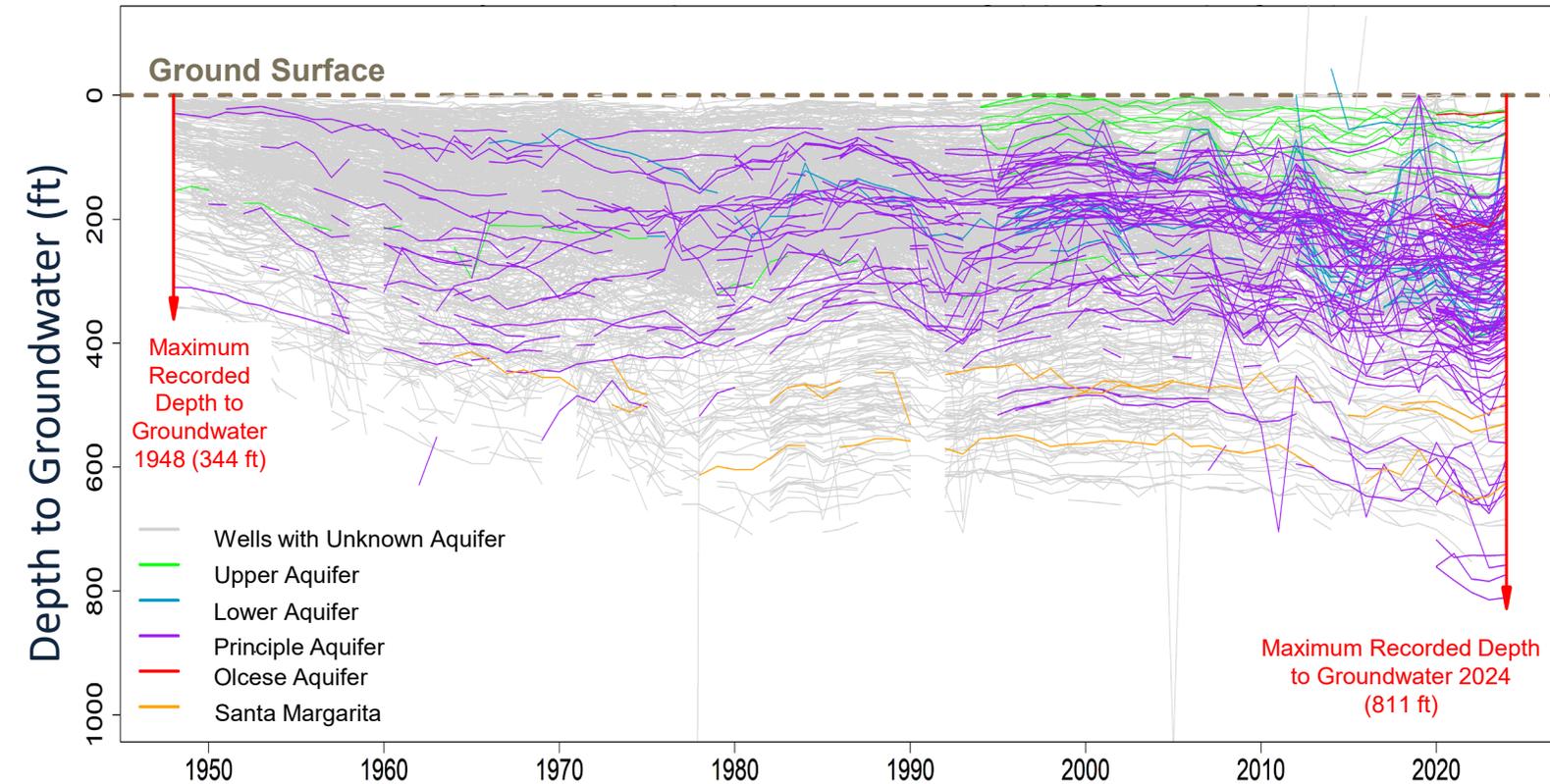
Water Year 2023 (Wet)
Total: 925,464 acre-feet



Data Source: Kern County Subbasin Annual Reports WY 2022 and WY 2023

Kern County Subbasin: Groundwater Overdraft

Kern County Subbasin - Depth to Groundwater Change (Spring 1948 – Spring 2024)



Long-term sustainable yield:

1,312,218 acre-feet per year

Average groundwater extraction:

1,586,417 acre-feet per year

Average storage decline:

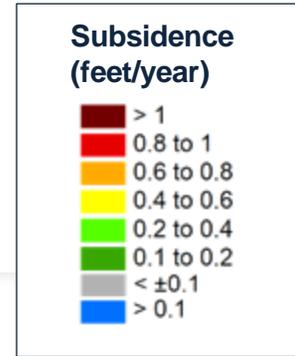
274,200 acre-feet per year

Estimates are based on WY 1995-2014 data

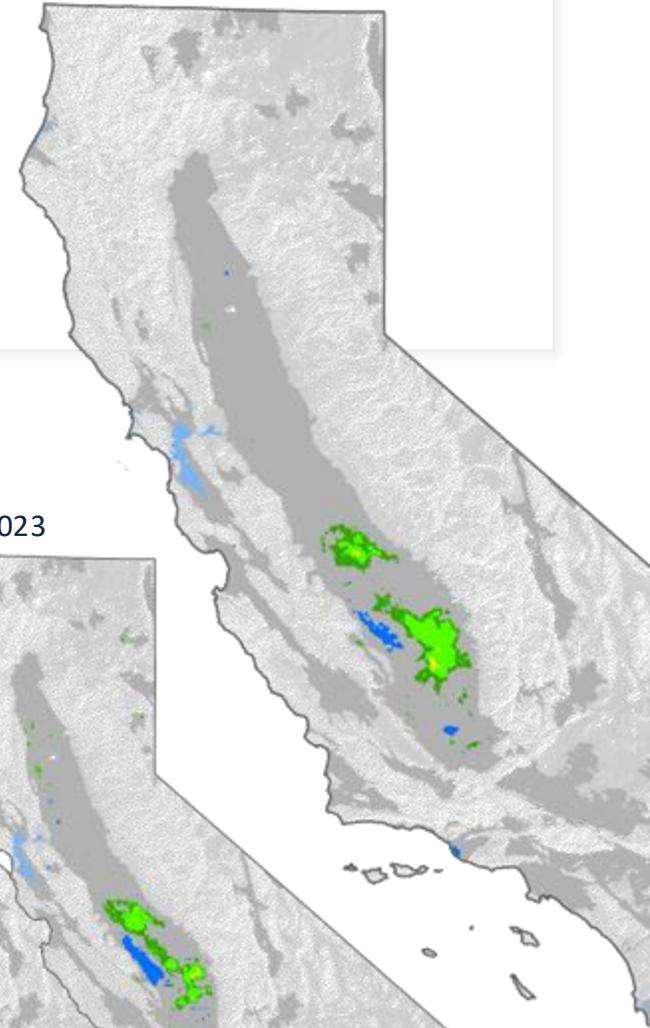
Source: 2024 Kern County Subbasin GSP

Water level data source: DWR periodic groundwater level measurements

Recent Subsidence Data



WY 2024



WY 2016

WY 2017

WY 2018

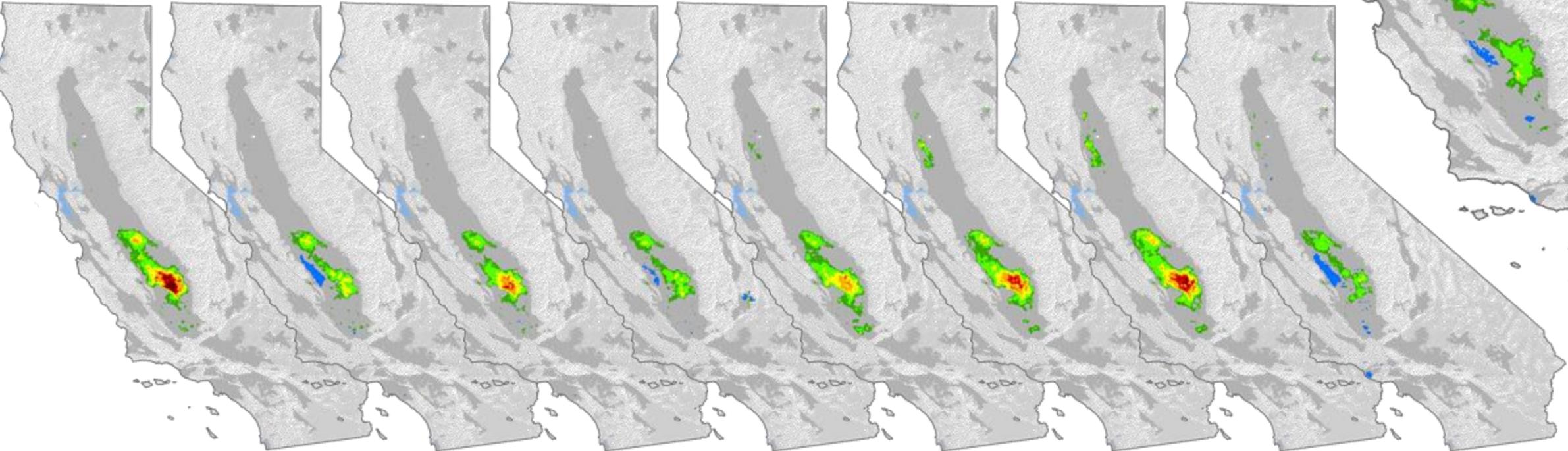
WY 2019

WY 2020

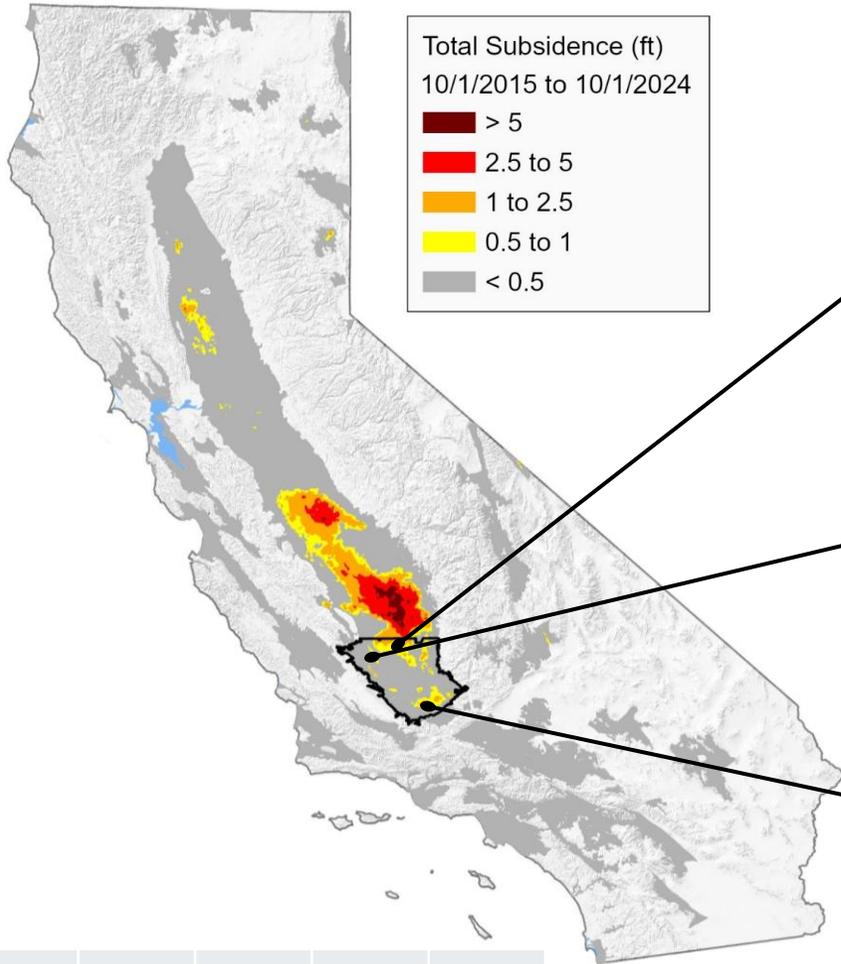
WY 2021

WY 2022

WY 2023

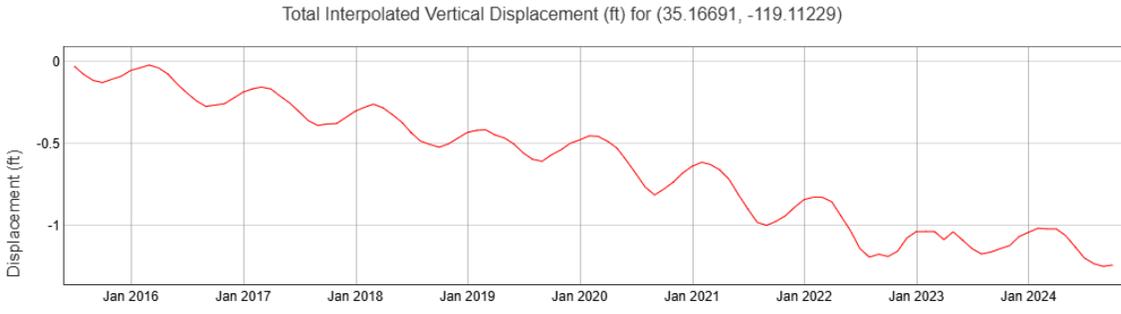
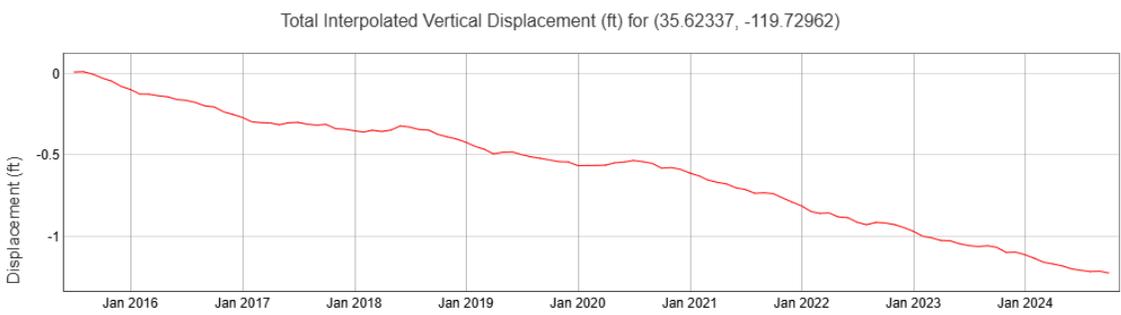
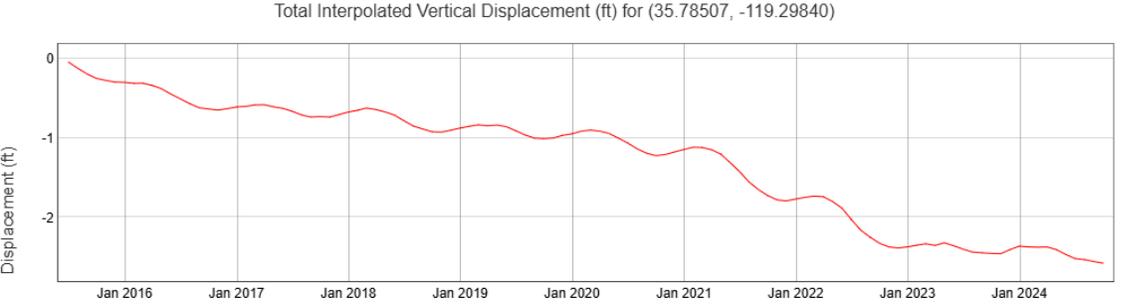


Recent Subsidence Data



Total Subsidence (ft)
10/1/2015 to 10/1/2024

- > 5
- 2.5 to 5
- 1 to 2.5
- 0.5 to 1
- < 0.5

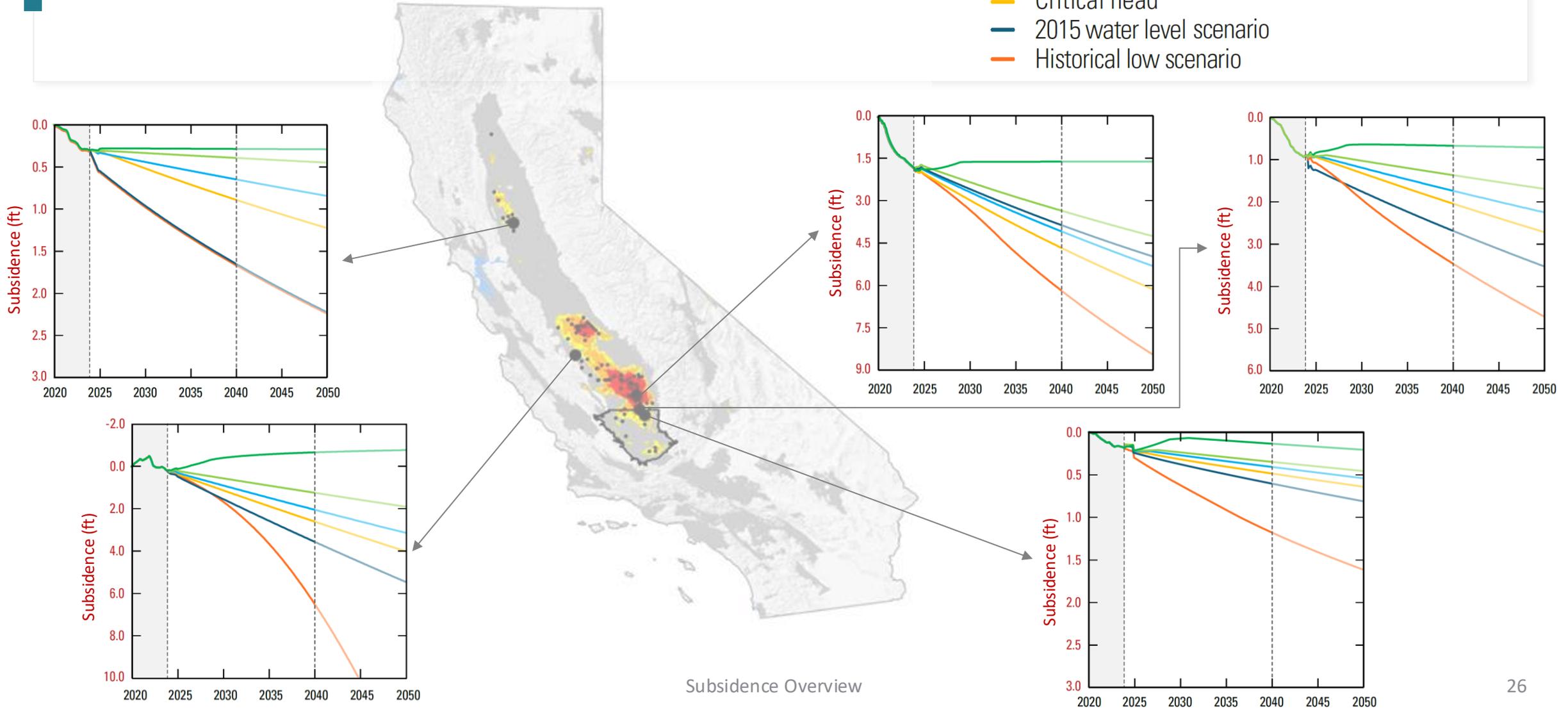


Subsidence (ft) since 2015	>0.5	>1	>2.5	>5
Total Area (sq mi)	4,959	3,256	1,384	258

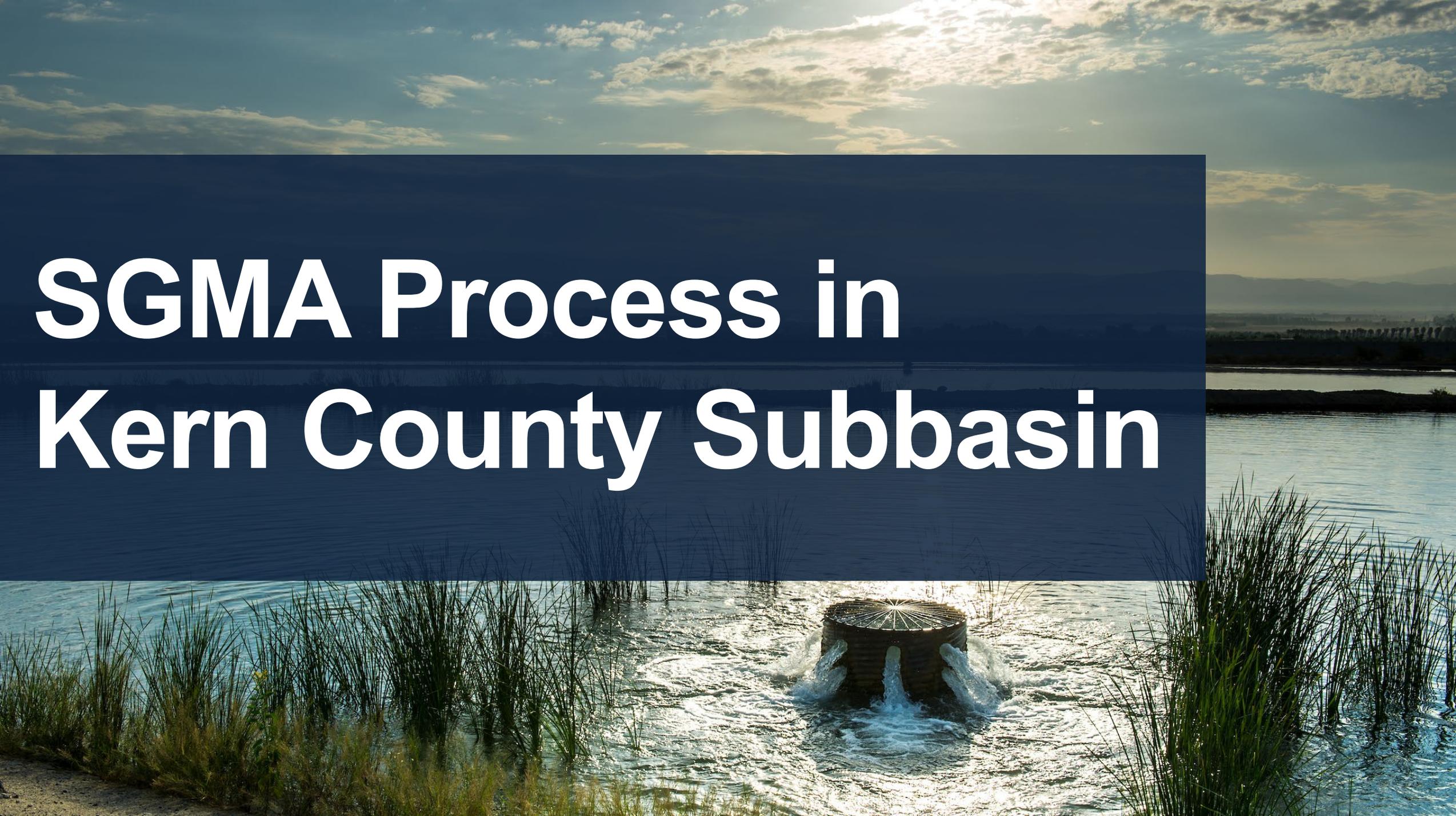
Residual Subsidence

Subsidence Simulation Groundwater Level Scenario Examples

- Rebound scenario
- Critical head + 50 feet
- Critical head + 20 feet
- Critical head
- 2015 water level scenario
- Historical low scenario



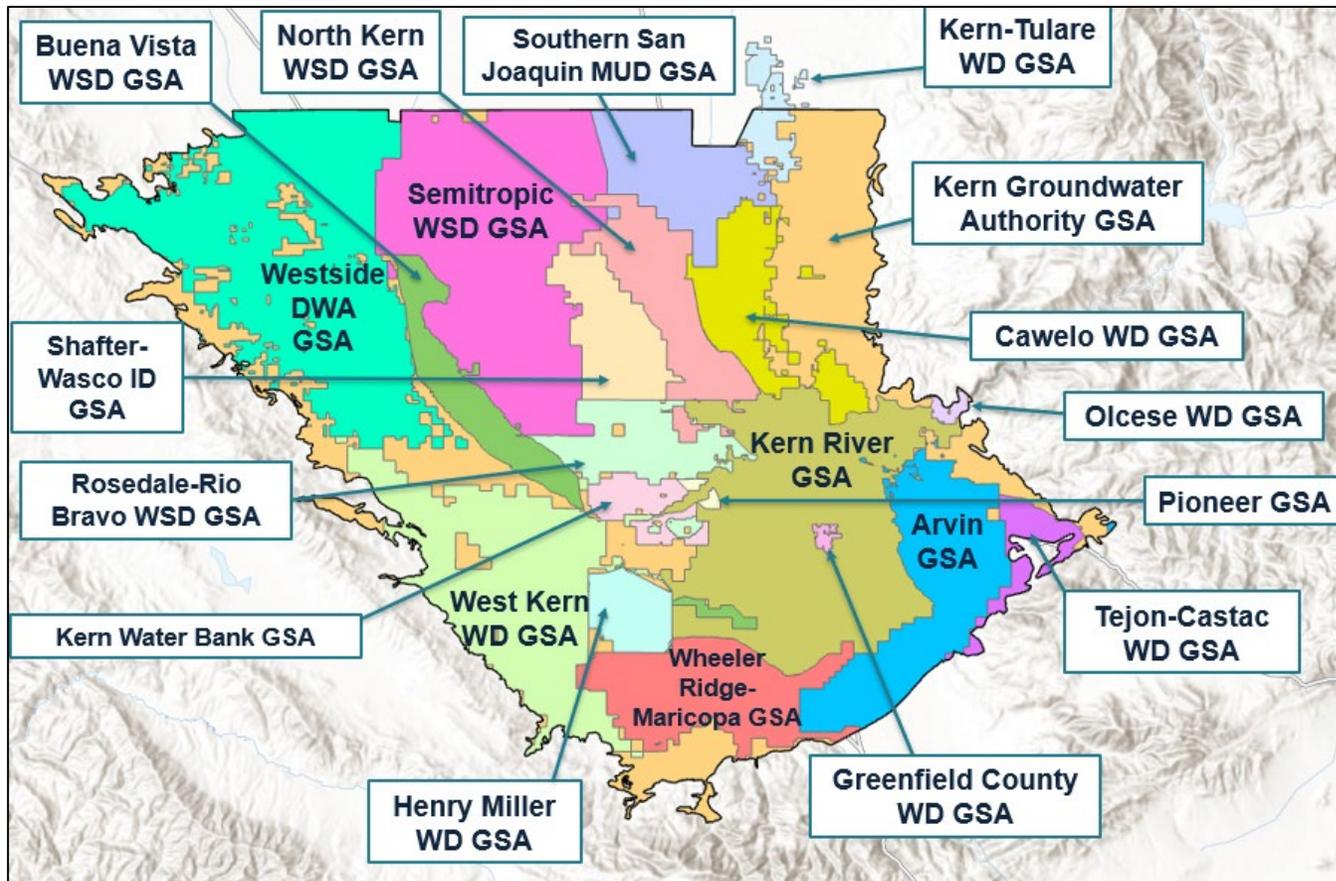
SGMA Process in Kern County Subbasin



Kern County Subbasin: GSAs and GSPs

20 Groundwater Sustainability Agencies (GSAs)

7 Groundwater Sustainability Plans (GSPs)



GSA	GSP
Arvin GSA Cawelo Water District GSA Kern Non-districted Land Authority GSA Kern River GSA Kern Water Bank GSA Greenfield County Water Districts GSA North Kern Water Storage District GSA Pioneer GSA Rosedale-Rio Bravo Water Storage District GSA Shafter-Wasco Irrigation District GSA Southern San Joaquin Municipal Utility District GSA Tejon-Castac Water District GSA West Kern Water District GSA Wheeler Ridge-Maricopa GSA	Kern County Subbasin GSP
Buena Vista Water Storage District GSA Henry Miller Water District GSA Kern-Tulare Water District GSA Olcese Water District GSA Semitropic Water Storage District GSA Westside District Water Authority GSA	

Kern County Subbasin GSP with Supplemental GSA-specific information on "Blue pages"

Kern County Subbasin: SGMA History



Engagement and Public Input

Since July 2024



- **Staff workshops – virtual and in-person with Spanish and Punjabi interpretation**
- **Public comment period – comments addressed in final staff report**
- **Offered consultations to California Native American Tribes**
- **Discussions, by request**

State Water Board Final Staff Report

Final staff report content:

- Deficiencies in 2024 Draft GSPs related to:
 -  Coordination across the subbasin and GSAs
 -  Chronic lowering of groundwater levels
 -  Land subsidence
 -  Water quality degradation
 -  Depletion of interconnected surface water
- Initial evaluations of 2024 Final GSPs
- Potential actions to correct deficiencies
- Responses to public comments on draft staff report (Appendix C)

Board Review of 2024 GSPs

Full review of 2024 Draft GSPs Preliminary review of 2024 Final GSPs

-  Deficiency appears to be addressed
-  Deficiency appears to be partially addressed
-  Deficiency does not appear to be addressed

Plan Deficiencies – Coordination



Lack of Coordination

Potential Consequences

- **Lack of coordination across the subbasin and GSAs hinders the subbasins progress towards sustainability.**

Deficiencies - Coordination

Deficiency

Potential Action



1. Undesirable results and sustainable management criteria are not coordinated.

No further action is necessary.



2. Coordination Agreement, GSPs, and Management Area Plans lack key details necessary for coordinated implementation.

Revise methodologies that result in incompatible sustainable management criteria across GSA and HCM Area boundaries.



3. The GSAs have not demonstrated basin-wide management.

Ensure that GSAs have proper authorities to enforce SGMA within their management areas.

Plan Deficiencies – Groundwater Levels



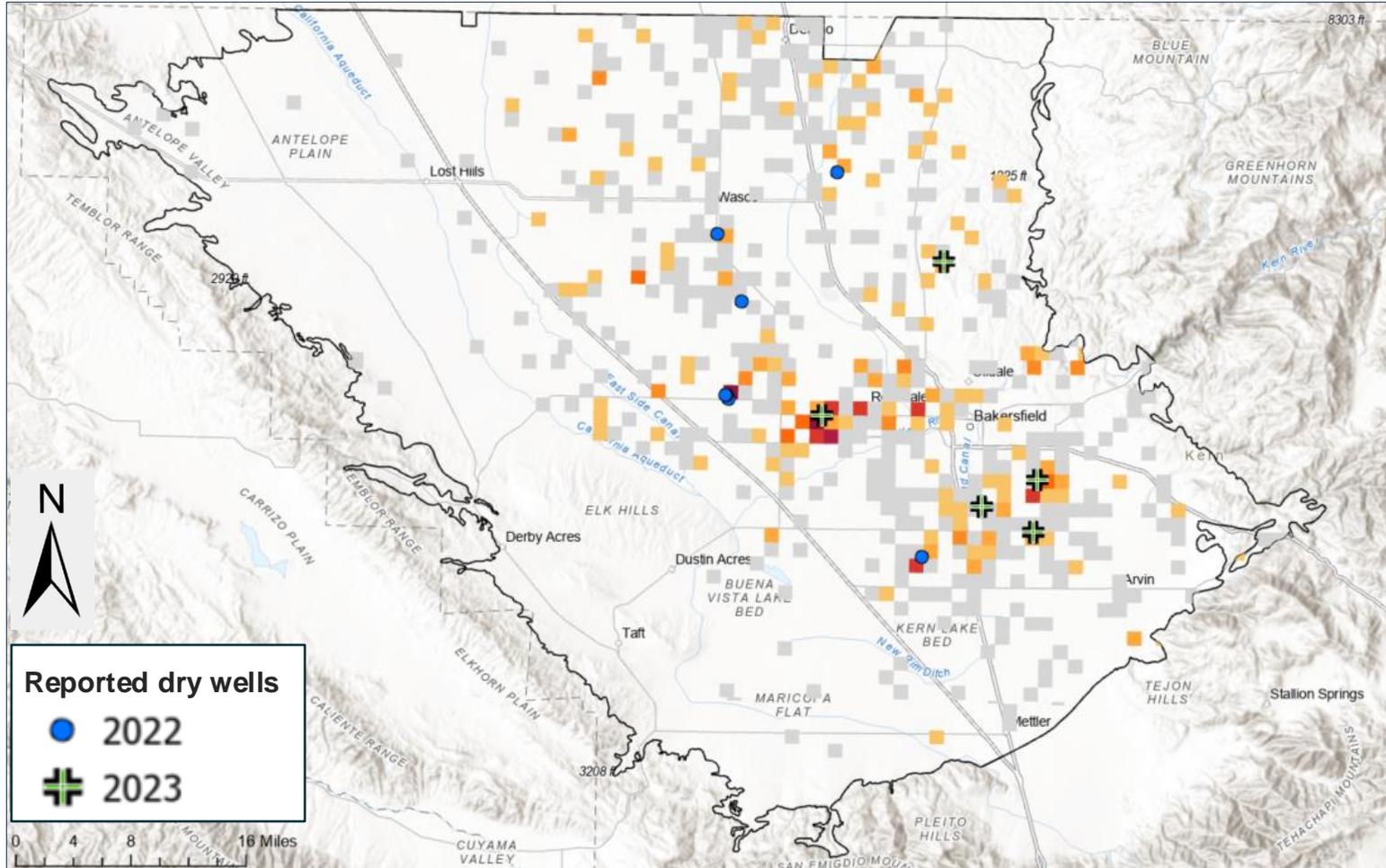
Declining Groundwater Levels

Potential Consequences

- **Threatens drinking water sources by causing wells to go dry or reducing their productivity**
 - 2024 Final GSPs allow up to 15 domestic wells per year or 255 domestic wells through 2040 (about 23% of useable domestic wells) to go dry.
 - GSAs plan to repair or replace impacted wells.
 - Feasibility of the well mitigation plan is unclear because the well impact and funding estimates rely on the water level monitoring network, which may not adequately represent domestic wells.
- **Increases energy costs of pumping**
- **Increases costs of water for everyone**
- **Can cause subsidence and degrade water quality**

Kern County Subbasin: Domestic Wells

Dry domestic well susceptibility

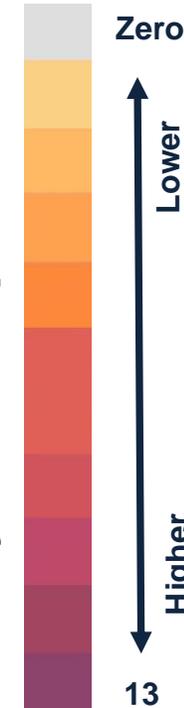


Susceptible: 215

Reported dry wells:

- 13 in 2022
- 6 in 2023
- None in 2024

Density of susceptible wells



Source:
DWR Dry Domestic Well
Susceptibility

Deficiencies - Groundwater Levels

Deficiency

Potential Action



1a. Undesirable results are not protective of beneficial uses and users.

No further action is necessary.



1b. Sustainable management criteria are not established consistent with SGMA requirements.

**Establish minimum thresholds considering variations of hydrogeological conditions.
Demonstrate minimum thresholds are adequately protective.**



2a. Groundwater level monitoring network is incomplete.

Revise monitoring network and include construction details of monitoring wells.



2b. Well impact mitigation plan is incomplete.

Update the well impact analysis and re-assess the feasibility of well impact mitigation plan.

Deficiencies - Groundwater Levels, continued

Deficiency

Potential Action



3. GSPs do not describe a feasible path for halting chronic lowering of groundwater levels.

**Evaluate the feasibility of proposed supply augmentation projects.
Re-evaluate water budgets and add details to demand management plans.**



4. Groundwater storage sustainable management criteria are not defined consistent with SGMA requirements.

Quantitatively define the undesirable result as a groundwater volume that can be withdrawn without causing significant and unreasonable impacts.

Plan Deficiencies – Subsidence



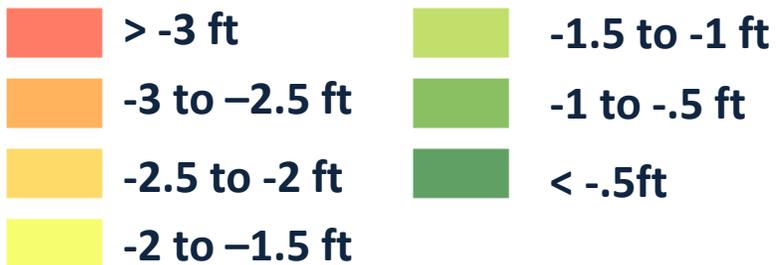
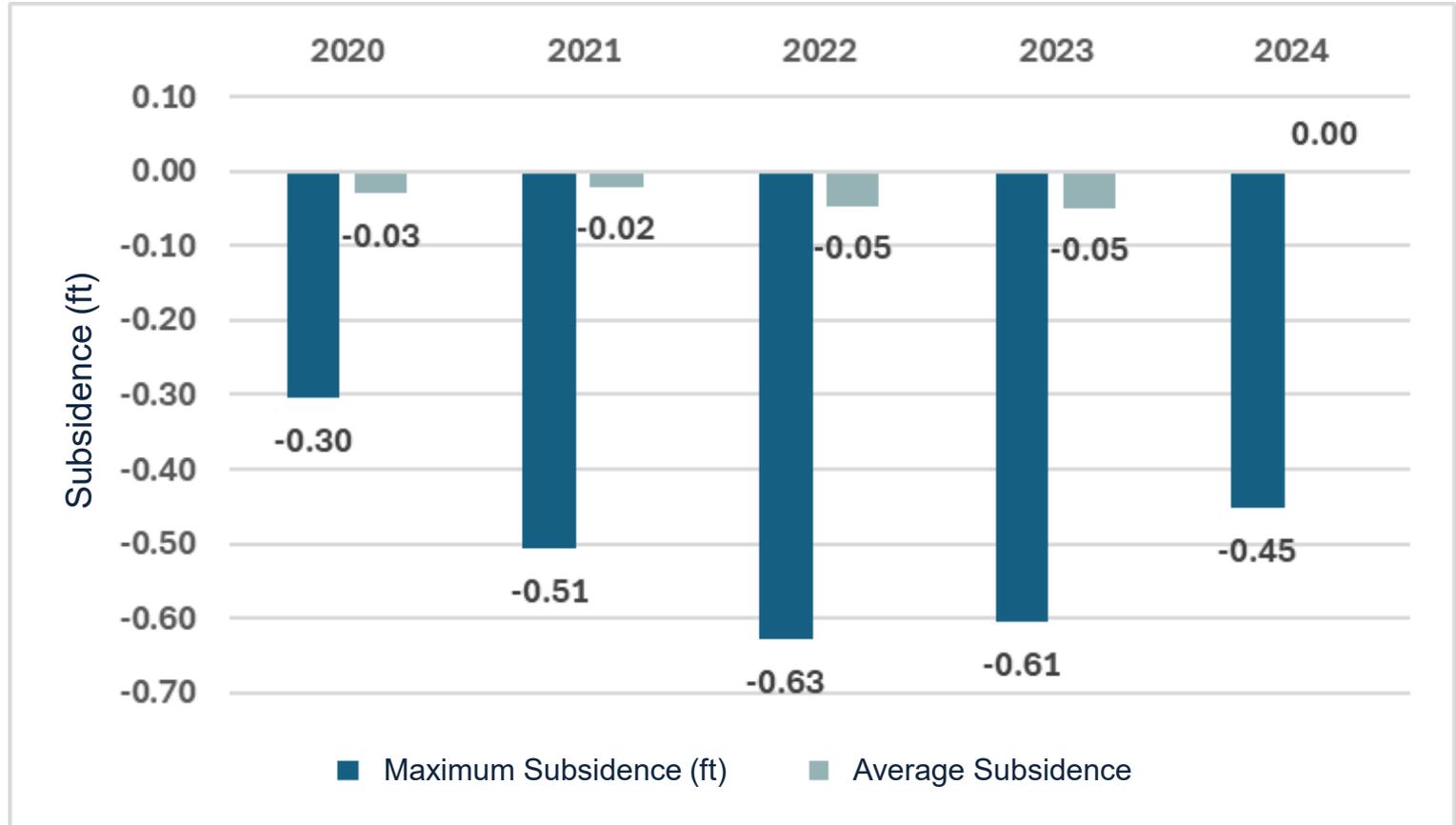
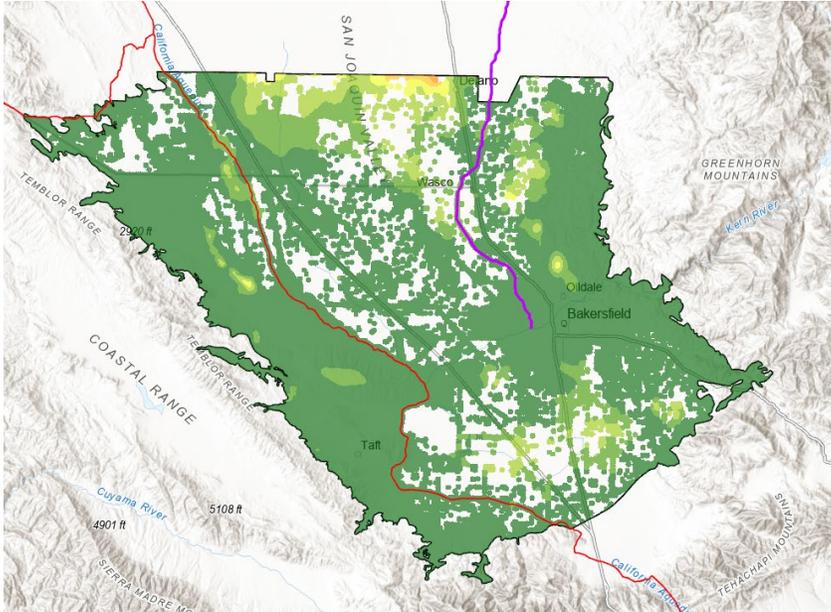
Land Subsidence

Potential Consequences

- **Reduces carrying capacity of gravity-driven water conveyance**
 - **Reduces surface water deliveries and increases flooding risks**
 - **Example: California Aqueduct and Friant-Kern Canal**
- **Damages deeper wells**
- **Damages infrastructure like roads, utilities, and pipelines**
- **Causes irreversible damage to groundwater aquifers**
- **Can cause degradation of water quality**

Subsidence Since 2015

Subsidence from InSAR June 2015 to Oct 2024



**Maximum Subsidence in Kern County Subbasin
June 2015- Oct 2024: -2.60 feet**

Deficiencies – Subsidence

Deficiency

Potential Action



1a. Undesirable results are poorly described, unworkably complex, and inconsistently implemented.

Describe how GSAs plan to quantify GSA and non-GSA caused subsidence in areas where both GSA and non-GSA activities are culpable.



1b. Sustainable management criteria were not established consistent with SGMA requirements.

Ensure that measurable objective and minimum threshold rates do not exceed their extents, and that interim milestones will not surpass minimum thresholds.



2. The GSPs do not provide adequate implementation details.

**Develop a plan to trigger sufficient management actions when subsidence exceeds defined thresholds.
Develop infrastructure mitigation programs with clear metrics and funding sources.**

A scenic view of a wetland or marsh area. In the foreground, there are tall, green grasses. In the middle ground, a circular structure, possibly a well or a small island, is partially submerged in the water, with water splashing around it. The background shows a calm body of water extending to a distant shoreline with some buildings and mountains under a sky with scattered clouds and a bright sun setting or rising. A dark blue semi-transparent banner is overlaid on the left side of the image, containing the text.

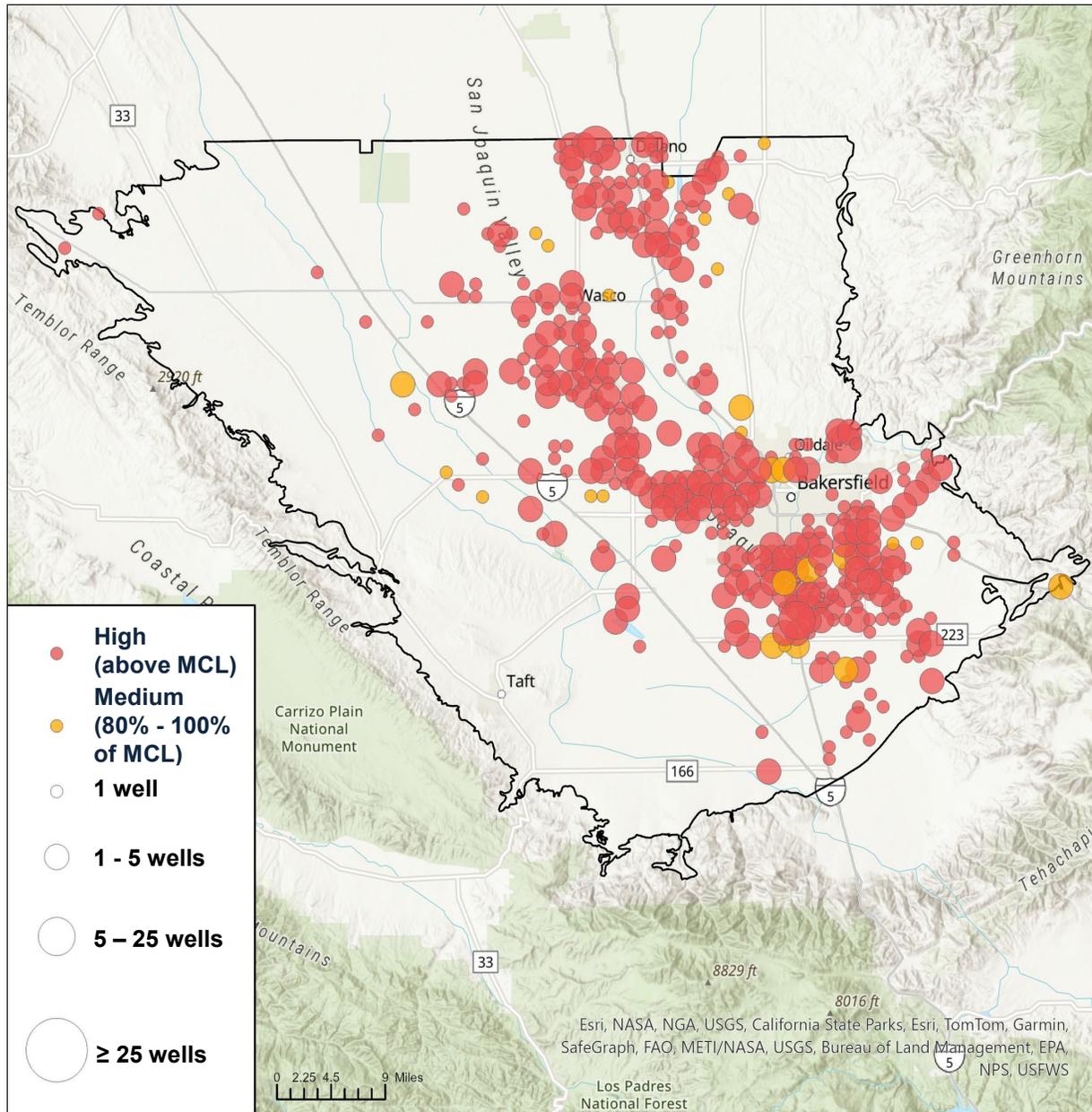
Plan Deficiencies – Groundwater Quality

Degraded Groundwater Quality

Potential Consequences

- **Can cause chronic disease that could result in death**
- **Can cause foul odor or taste in water**
- **Can make irrigation water not suitable for crops**
- **Water treatment may be difficult and very expensive**
- **May require alternative water source**

Locations of at-risk domestic wells



Water Quality: Potential Impacts to Beneficial Uses

- 1044 domestic wells and 29 state small water systems at risk of water quality degradation due to constituents impacted by groundwater management

Notes:

Data source: State Water Board 2023 Aquifer Risk Map

Constituents: arsenic, Hexavalent chromium, nitrate, 1,2,3-TCP, uranium

Well Density: based on DWR OSWCR well locations

Risk: determined from (1) a single measured exceedance of 80% (medium) or 100% (high) MCL or (2) a trend analysis of long-term data

MCL – Maximum Contaminant Level

Deficiencies – Groundwater Quality

Deficiency

Potential Action



1a. Undesirable result definitions are not protective of beneficial uses and users.

Develop adequately protective quantitative undesirable results (combination of minimum threshold exceedances).



1b. GSPs do not have critical information about how GSAs will determine whether an undesirable result has occurred.

Evaluate more than groundwater level correlations to determine whether water quality degradation is caused by groundwater management activities.

Deficiencies – Groundwater Quality, continued

Deficiency

Potential Action



2a. Monitoring network is not protective of all beneficial uses and users.

Evaluate the existing monitoring network and add additional wells to ensure all beneficial uses and users are represented.



2b. Water quality sampling frequencies are sometimes insufficient.

No further action is necessary.



2c. It is unclear how GSAs will assess the impacts of projects and management actions.

Better define how GSAs will ensure projects and management actions do not degrade groundwater quality.

Deficiencies – Groundwater Quality, continued

Deficiency

Potential Action



3a. Management actions are not protective of beneficial uses and users after a minimum threshold exceedance.

Develop a method to determine the impact of an exceedance and clarify how the public will be notified should a minimum threshold exceedance occur.



3b. Well mitigation plan does not address water quality degradation.

Re-assess the feasibility of well impact mitigation plan (Potential action GL-2b).

Plan Deficiencies – Interconnected Surface Water



Depletion of Interconnected Surface Water

Potential Consequences

- **Reduces surface water available for human use**
- **Substantially transforms/harms habitat and wildlife**
- **Threatens recreation: Fishing, hunting**

Deficiencies – Interconnected Surface Water

Deficiency

Potential Action



1. Undesirable results and sustainable management criteria are not coordinated.

No further action is necessary.



2. GSAs do not adequately demonstrate that undesirable results are not present and are not likely to occur.

No further action is necessary.

***Potential Consideration:
Continue using the best available information to evaluate potential interconnected surface water in the subbasin.***

Subbasin Status Update

Board Staff - GSAs meetings

- Conducted meetings to discuss deficiencies identified in the Final Staff Report.
- GSAs proposed potential actions to address deficiencies.

A scenic view of a lake with a circular aeration device in the foreground, surrounded by reeds, under a bright, cloudy sky. The device is a large, dark, cylindrical structure with a circular grate on top, and water is being pumped out from the bottom, creating a splash. The lake is surrounded by tall reeds and grasses. In the background, there are mountains and a city skyline under a bright, cloudy sky.

Staff Recommendations for Kern County Subbasin

Staff Recommendations

Two options for consideration:

Option 1: Designate the subbasin as probationary

Option 2: Allow modest additional time for GSAs to address deficiencies & continue hearing at a later date

Staff Recommendations

Option 1 - Designate the Basin Probationary

The 2024 plans will allow substantial impacts to people who rely on:

- Drinking water wells
- Critical infrastructure (examples: California Aqueduct, Friant-Kern Canal)
- The aquifer system itself

The 2024 plans address many deficiencies, but key deficiencies remain.

Designate the subbasin as probationary until deficiencies are resolved.

Staff Recommendations

Option 1 - Exclusions

Two types of exclusions possible: (1) Probation Exclusion, and (2) Reporting and Fee Exclusion

Probation Exclusion (Water Code 10735.2 (e))

- Excludes a portion of the basin from probation
- Requires demonstrating compliance with sustainability goal:
 - Existence and implementation of a GSP
 - GSP adequately defines and monitors undesirable results
 - Implementing actions that ensure portion of basin operates within sustainable yield

Reporting and Fee Exclusion (Water Code 10735.2 (c))

- Excludes extractions from reporting and fee requirements
- Requires demonstrating either:
 - Minimal impacts on basin withdrawals
 - Subject to a local plan or program that adequately manages groundwater (examples: balanced water budget, demand management, contingencies for dry conditions)

Staff Recommendations

Option 1 - Exclusions

- Probation Exclusions: None
- Reporting and Fee Exclusions:
- Kern-Tulare Water District GSA:
 - Appears to have a generally balanced water budget
 - Registers and meter all wells
 - Implements a flexible fee schedule to reduce extractions when necessary

Staff Recommendations

Option 1 - Extraction Reporting Requirements

If the subbasin is designated as probationary today:

- All people who extract groundwater (unless excluded*) must report:
 - ☑ well location & capacity
 - ☑ monthly extraction volumes
 - ☑ place & purpose of use
- Begin recording on May 21, 2025, unless the Board identifies a different date
- Reports due annually starting February 1, 2026

* EXCLUDE de minimis (2 acre-feet per year or less) domestic well users from reporting and fees

Staff Recommendations

Option 1 - Extraction Reporting Requirements

If the Board places the subbasin on probation:

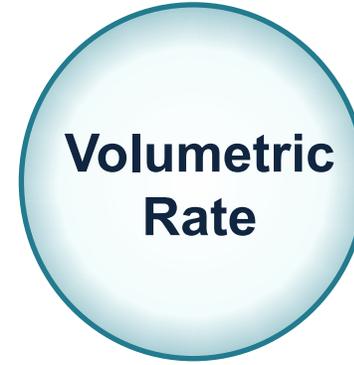
- People who extract more than 500 acre-feet per year measure extractions with a certified meter
- People who extract within the California Aqueduct and Friant-Kern Canal subsidence management areas measure extractions with a certified meter

Probationary Extraction Reporting Fees

If the Board places the subbasin on probation today,
for groundwater extractions beginning May 21, 2025:



+



**\$300 per well
per year**

**\$20 per acre-
foot extracted**

Late reporting fee: 25% per month late

Fee waivers are available for water systems and schools serving disadvantaged communities and for low income residents

Staff Recommendations

Option 2 - More time for GSAs to address deficiencies

State Water Board continues this hearing at a later date:

- New draft GSPs that resolve identified deficiencies provided to the Board for review by: **June 20, 2025**
- GSPs adopted before continued hearing date (below)
- Probationary Hearing continues on: **September 17, 2025**

Next Steps

What each option means:

Option 1	Option 2
<ul style="list-style-type: none">• Board adopts draft resolution with factual findings and probationary designation• Board adopts deficiencies and potential actions• Board adopts reporting requirements (de minimis exemption)• Board delegates limited amendment authority to Executive Director• Board directs staff to provide at least 30 days notice and opportunity for public comment before the Board considers any changes to the resolution	<ul style="list-style-type: none">• Board does not take final action today• Board continues this hearing to September 17, 2025• Board recommends GSAs correct deficiencies and submit revised draft GSPs by June 20, 2025• Board recommends GSAs subsequently adopt the submitted draft GSPs with any necessary alterations identified by Board staff that may be needed to remove remaining deficiencies

Next Steps

GSAs continue working to address plan deficiencies

- Board completes the 2024 Final GSP(s) review and staff provides feedback
- GSAs concurrently take appropriate potential actions or similarly effective actions while review is ongoing to ensure needed actions do not fall behind schedule
- Meet with Board staff to discuss progress
- Submit revised GSPs to Board for evaluation
- Board evaluates revised plans
- GSAs make alterations identified by Board staff that may be needed to remove remaining deficiencies, or similarly effective actions
- GSAs adopt revised GSPs

Board Considerations for Ending State Intervention

Board evaluates any resubmitted plan(s):

If (1) deficiencies are resolved and (2) GSAs are on track to achieve the subbasin's sustainability goal:

- Staff will recommend that the Board ends state intervention
- Basin oversight would then return to DWR

Office of Sustainable Groundwater Management

SGMA@waterboards.ca.gov

www.waterboards.ca.gov/sgma

