TECHNICAL ADVISORY COMMITTEE
MEETING
October 16, 2025
MEETING MINUTES

GREATER KAWEAH GROUNDWATER SUSTAINABILITY AGENCY
TECHNICAL ADVISORY COMMITTEE
MEETING MINUTES

October 16, 2025

At approximately 1:30 p.m. on October 16, 2025, at the office of the Greater Kaweah Groundwater Sustainability Agency, Dennis Mills, Chair of the Technical Advisory Committee (TAC), called the meeting to order.

Members Present
Dennis Mills – Chair
Scott Wagner
David DeGroot
Larry Dotson
Dennis Keller
David De Groot

Members Absent
Aaron Bock

Staff and agency consultants presented an agenda packet that followed the noticed agenda. The agenda packet is attached hereto and incorporated by reference.

PUBLIC COMMENTS & ANNOUNCEMENTS:
No public comments were received. General Manager Mark Larsen notified the committee that there was to be a State of the Subbasin event on October 21, 2025 to update growers and stakeholders of the status of the Subbasin effort.

MINUTES:
Minutes from July 17, 2025, meeting were reviewed and approved as drafted.
Motion: Scott Wagner
Second: Larry Dotson
Motion Passed

Minutes from September 18, 2025, meeting were reviewed and not considered for approval. The draft minutes were deferred to a future meeting to allow additional time for review and incorporation of expanded technical discussion, consistent with prior TAC direction to ensure meeting minutes fully capture both staff presentations and committee discussion.

GREATER KAWEAH RULES AND REGULATIONS – WATER TRANSFER POLICY UPDATES:

Staff, Mark Larsen and Stephanie Ruiz, led the discussion and responded to questions throughout this agenda item, of recent Board-approved revisions to the Greater Kaweah GSA Rules and Regulations related to groundwater transfers, with a focus on changes affecting native sustainable yield transfers.

Staff explained that the Board approved revisions allowing native sustainable yield transfers anywhere within the Greater Kaweah GSA boundary, eliminating previous restrictions that limited transfers to within three analysis zones of the originating parcel. Additionally, loss factors previously applied to distant transfers were removed, allowing transferred sustainable yield to retain its full volumetric value. Staff noted that these changes were intended to improve operational flexibility for landowners while maintaining overall basin sustainability, particularly as the Subbasin continues to transition toward two-aquifer management.

Monitoring and Sensitive Areas

Dennis Mills and Larry Dotson, discussed the importance of enhanced monitoring associated with expanded transfer flexibility, particularly in areas with known groundwater level declines, domestic well vulnerabilities, or historical overdraft concerns.

Members emphasized that while the policy increases flexibility, it also increases the importance of identifying potentially sensitive or problem areas where additional scrutiny or future restrictions may be warranted. Several members suggested that the GSA may ultimately need to formally identify and flag sensitive management zones, where transfers could be subject to additional requirements or limitations based on observed conditions.

Transfer Requirements and Data Collection

Dennis Mills and Larry Dotson, discussed whether additional information should be required for each transfer, including: well inventories on receiving properties, historical and current pumping records, real-time or near real-time groundwater level data.

Staff noted that while current rules do not require this level of detail, enhanced data collection could significantly improve the GSA's ability to track water movement and assess localized impacts of transfers.

Concerns Regarding Overuse and Drought Conditions

Larry Dotson, and Dennis Mills, expressed concern about the potential for overuse of sustainable yield, particularly during the first critically dry year following wet conditions.

Discussion focused on the risk that large volumes of previously unused sustainable yield could be mobilized during drought periods, potentially exceeding physical groundwater availability. Members emphasized the need to carefully monitor how much sustainable yield remains available for transfer from prior years and how that availability aligns with actual groundwater storage conditions.

Chair Mills suggested we track and monitor transfers for a year or two, ask for a report on transfers, and revisit to see if there are any issues and then the committee can report back to the board. Monitor for subsidence and track dry wells in the area.

Five-Year Carryover Provision
Chair Mills reviewed the current policy regarding the 5-year life of groundwater use resetting at transfer and whether that allowed for abuse of water availability. Mills discussed the risk of over-counting available groundwater, particularly if substantial amounts of sustainable yield are carried over into dry years without corresponding verification of physical storage.

Member De Groot suggested the more you limit timing of water use, it encourages use before expiration. Members noted the importance of reconciling accounting assumptions with real-world groundwater conditions.

Chair Mills expressed concern that the 5-year reset and the elimination of losses in a transfer also removed some of the safeguards and could lead to excessive use of native sustainable yield. Mills also stated that the issue with this revised transfer policy would not be in a close to average surface water year, but in the first critical drought year. Mills suggested we needed to keep an eye on that potential ability to reach sustainability goals.

Member De Groot suggested that the Dashboard would also be a place where one could assess the aggregated water credits, and therefore the potential dry year pumping.

Chair Mills suggested that the well inventory and registration process was extremely critical as data needed in the assessment.

Member De Groot added that establishing critical head was necessary as well.

Potential future policy concepts discussed included: - Capping annual usage of sustainable yield - Requiring sustainable yield to be used prior to transitional water - Aligning accounting rules more closely with measured groundwater levels and storage trends. How much water do we really have, physically, versus what we have accounted for in terms of water in the Dashboard. It would be important to true those numbers up against each other. Staff noted these concepts would require further evaluation and Board direction.

Chair Mills suggested one could simulate a dry year like 2022 and use current irrigation demand and split the surface water and groundwater use between upper and lower zones against the water stored as a way to estimate the draw and measure the change. Mills suggested the change would be significant, and might give the GSA strong indications, like the Annual Monitoring Reports, of the potential.

Consultant Thomas Harder suggested they could perform such an evaluation to get an initial read and phase two could involve modeling. The first phase would involve spreadsheets to make the assessment and the second phase a groundwater flow model.

SUBBASIN GROUNDWATER SUSTAINABILITY PLAN (GSP) – STATE BOARD AND DWR PROCESS:

State Board Assessment
Staff, led by Mark Larsen, provided an update on the State Water Resources Control Board staff assessment of the Kaweah Subbasin GSP. The staff report recommends returning the GSP to the Department of Water

Resources (DWR) with six primary recommendations, including: refining definitions of undesirable results, enhancing monitoring networks, addressing subsidence and water quality more explicitly.

Transition to DWR Review
If approved by the State Board, DWR is expected to begin its review in early 2026, with an anticipated six-month evaluation period based on recent experience with other GSAs. The Committee agreed on the importance of proactive engagement with DWR staff early in the review process to clarify plan components and address concerns before formal comments are issued.

Chair Mills urged the Subbasin to engage immediately with DWR after being passed back to them.

Subbasin Activity
Mark Larsen reviewed with staff the current work on implementation of the GSP and the core team progress. He highlighted activity with the well inventory, well registration, water quality RMS monitoring and issues with sampling monitoring wells, and the addition of some transducers in current wells for monitoring for Interconnected Surface Water.

Subsidence
Staff and consultants also review work on land subsidence, with technical input from Tom Harder, provided an update on ongoing efforts to refine and recalibrate the subbasin groundwater flow model, which extends beyond the Kaweah Subbasin boundaries. Harder reviewed the focus of DWRs draft Subsidence BMP, especially Critical Head and Minimum Thresholds.

Member De Groot noted that it seemed that the starting place for the MT should be the critical head which would equate to no subsidence. He noted this could me raising some water levels to achieve, yet raising may not be achievable thus requiring mitigation for undesirable results, which might also require convincing the state you have the funds and ability to appropriately mitigate.

Committee members highlighted concerns regarding subsidence impacts to critical infrastructure, including Cross Creek flood conveyance facilities, and emphasized the need for updated surveys and planning to mitigate risks.

Chair Mills expressed specific concerns for Cross Creek in the Lakeside Irrigation Water District area in this regard, especially in its role as a flood channel.

Harder noted that area was included in the subsidence study. The committee discussed other flood threats caused by levee subsidence.

Well Mitigation
Mark Larsen provided an update on challenges associated with dry well mitigation, including: lengthy and complex case-specific processes, coordination difficulties with Self-Help Enterprises, a growing backlog of unresolved cases. Staff reported that the GSA is evaluating options to improve efficiency and accountability, including the potential for greater direct GSA involvement in mitigation activities.

Groundwater Accounting Framework
Staff and consultants, including Mark Larsen and Tom Harder, discussed ongoing updates to the groundwater accounting framework, including integration with the recalibrated groundwater model. Work is focused on: balancing inflows and outflows, evaluating underflow assumptions at basin boundaries, reducing reliance on uncertain underflow estimates from neighboring areas. Revised accounting numbers are anticipated by next spring following completion of model updates.

Work is focused on incorporating updated data and improving model performance for localized analyses.

Harder discussed ongoing coordination with Montgomery & Associates to reevaluate critical head values and align minimum thresholds with updated BMP guidance, particularly for the lower aquifer. Committee members discussed challenges associated with: representing land subsidence within the model, accurately estimating the proportion of pumping from upper versus lower aquifers, limited data availability for certain areas and aquifer intervals. These challenges complicate calibration efforts and highlight the importance of improving well construction data and monitoring coverage.

Well Inventory and Registration
Staff, led by Mark Larsen, reported ongoing efforts to inventory and register wells, including identifying which aquifers wells are perforated in. This information is critical for both model refinement and effective groundwater management.

Chair Mills suggested that the draw from the lower aquifer would always be multiple times greater than the upper aquifer (at least 80%), regardless of permeability of the soil, which suggests why the current model inputs might be contributing to calibration issues. Harder further explained the Subbasin work and coordination to assist the model towards handling subsidence.

MONITORING NETWORK EXPANSION:
Groundwater Level Monitoring
Thomas Harder discussed efforts to address data gaps through: - Installation of new monitoring wells - Equipping existing wells with transducers. Challenges include securing appropriate locations, obtaining landowner cooperation, and ensuring long-term data reliability. The committee provided suggestions as to selecting and securing sites for monitoring.

ADJOURNMENT:
There being no further business, the meeting was adjourned at approximately 3:00 p.m.
The next TAC meeting will be scheduled for November 20, 2025.

Respectfully Submitted,

Dennis Mills, Committee Chair
October 16, 2025

Overview of Recent California Department of Water Resources Documents on Land Subsidence

December 19, 2025

GREATER KAWEAH GROUNDWATER SUSTAINABILITY AGENCY

Thomas Harder & Co.
Groundwater Consulting

Agenda

- Overview of Selected Sections of the California Department of Water Resources Draft Land Subsidence Best Management Practices
- Overview of Selected Graphs in Appendix I of the Department of Water Resources Public Draft of the 2025 Bulletin 118
- Observations of Bulletin 118 1D Subsidence
- Critical Head and Minimum Thresholds

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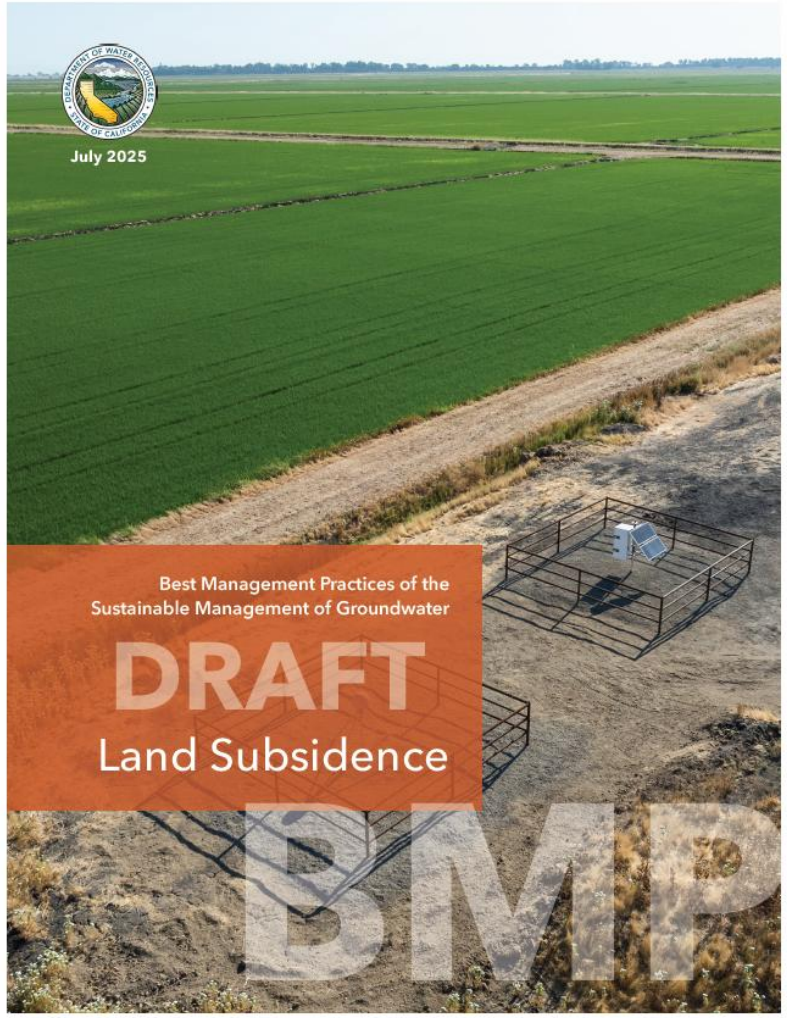
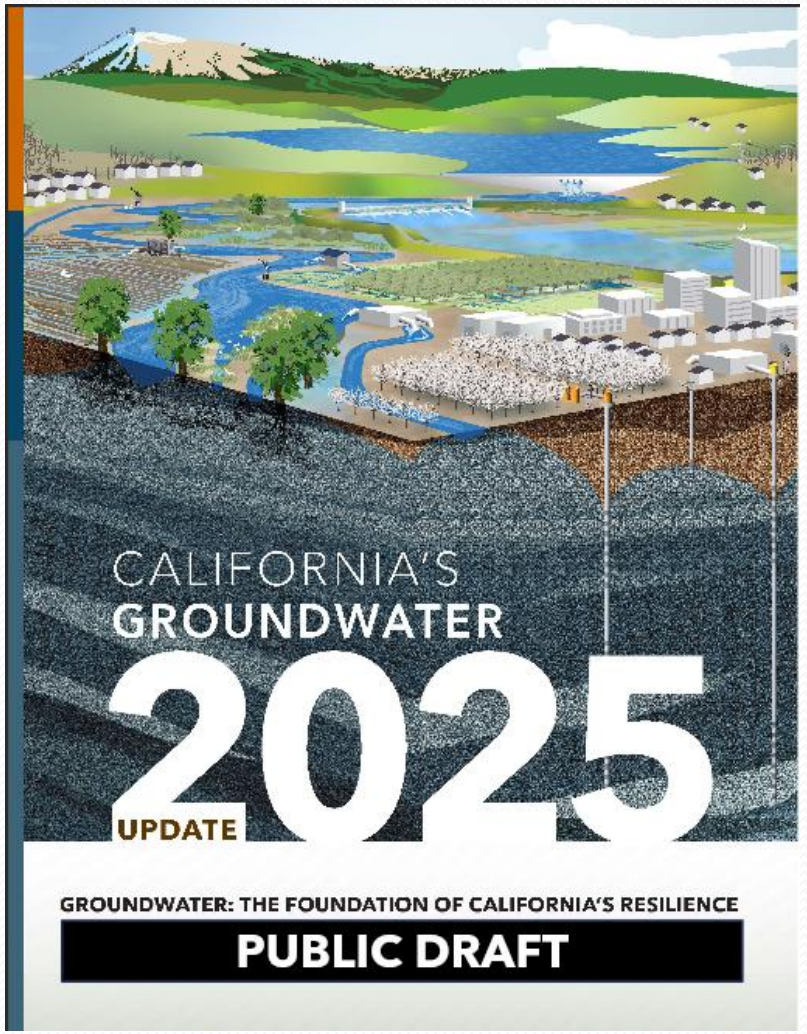
The California Department of Water Resources Has Recently Released Two Documents Relating to Land Subsidence





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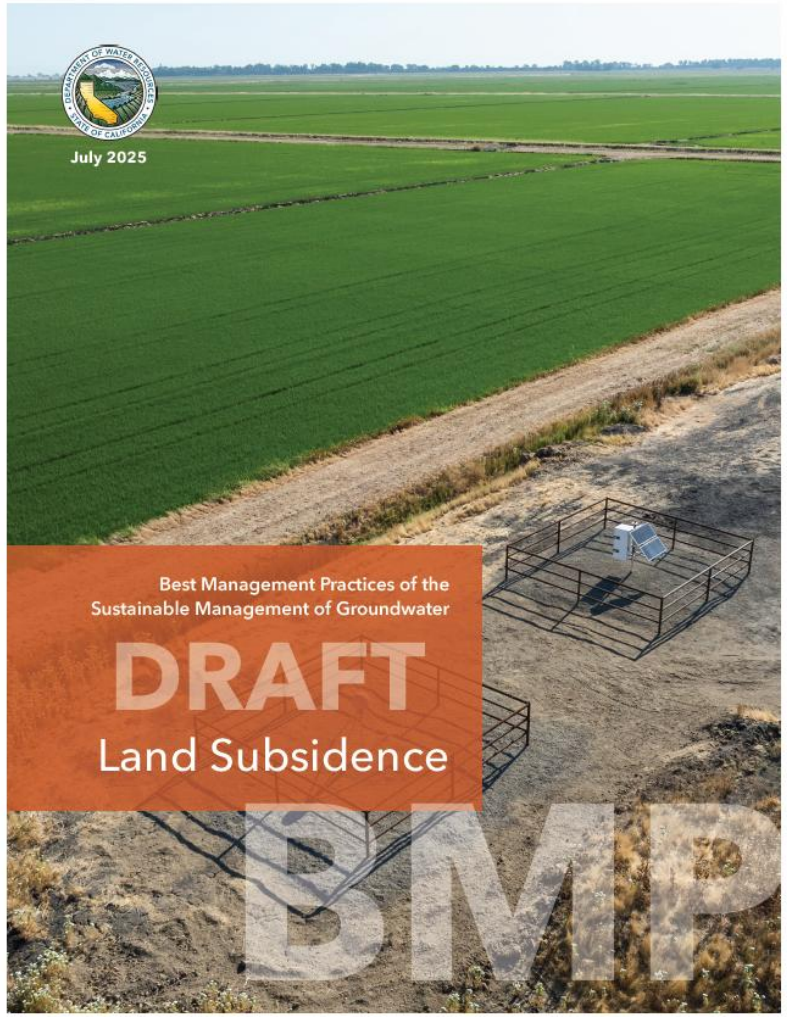
We Will Address Two Sections of the Draft BMP to Inform Discussion of the Data in Bulletin 118



4. Land Subsidence Fundamentals
5. Technical Assistance

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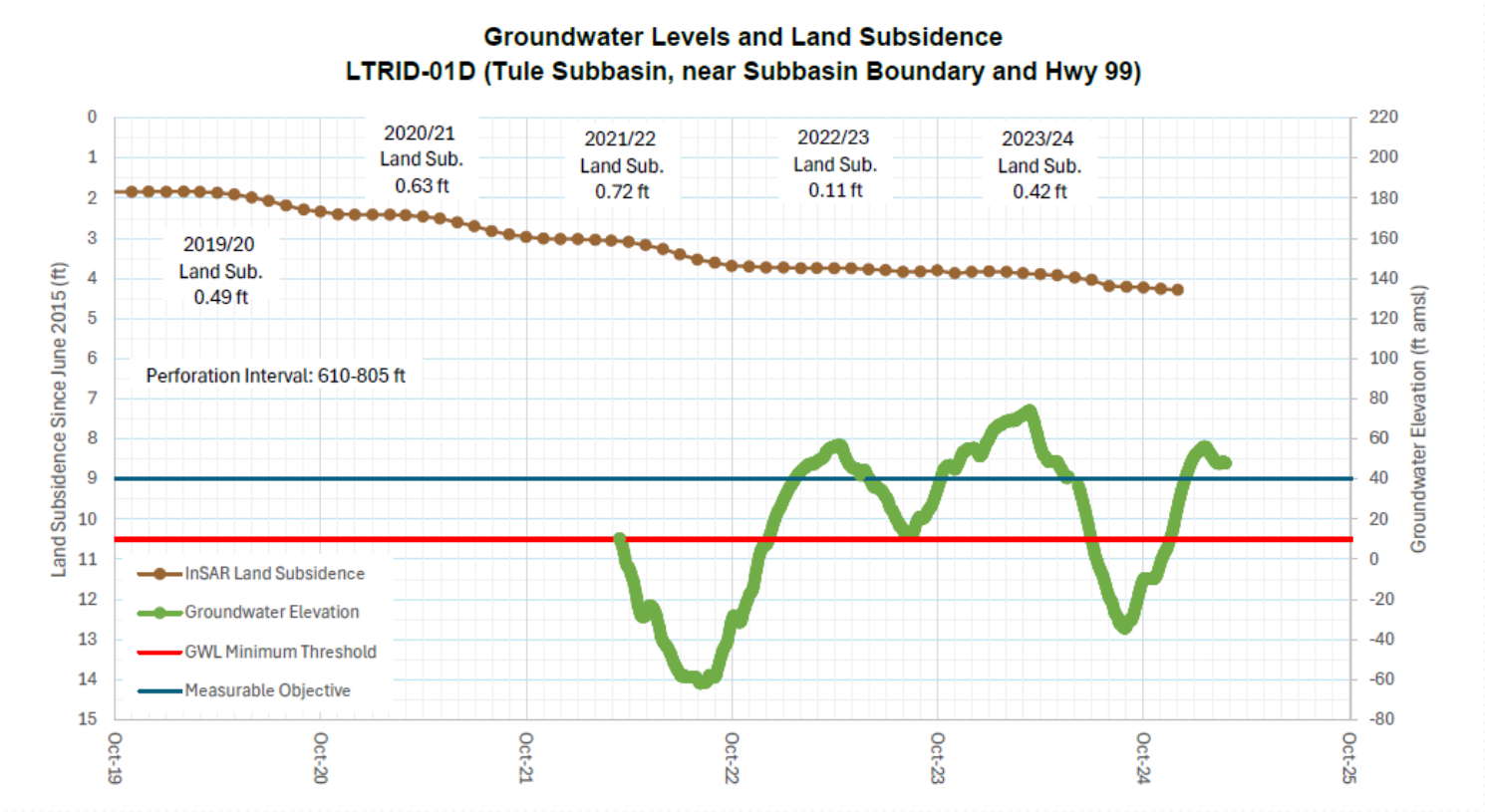
Section 4 Land Subsidence Fundamentals – Limiting Land Subsidence

4.3 Limiting Subsidence

"The key to minimizing ongoing subsidence and avoiding future subsidence is a recovery of groundwater levels to elevations above critical head in the fine-grained units as high and as quickly as possible."



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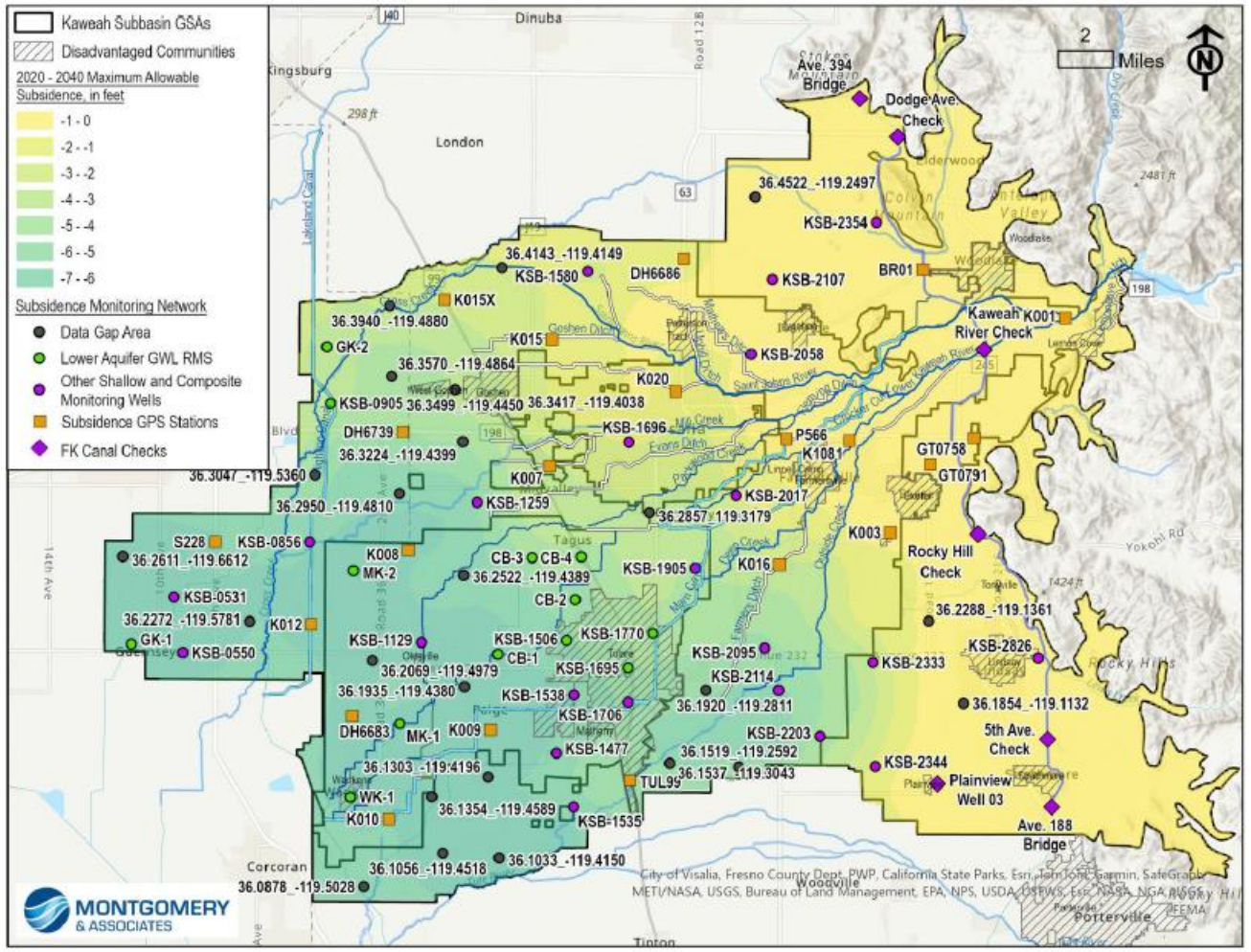
Section 5 Technical Assistance – Land Subsidence Monitoring

5.1.1 Land Surface Elevation Monitoring

1. *Benchmarks – "Spirit Level" Monitoring*
2. *GPS Stations*
3. *Extensometers*
4. *InSAR*

All these methods are employed in the Kaweah Subbasin

Data Gaps Remain



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Section 5 Technical Assistance – Land Subsidence Monitoring

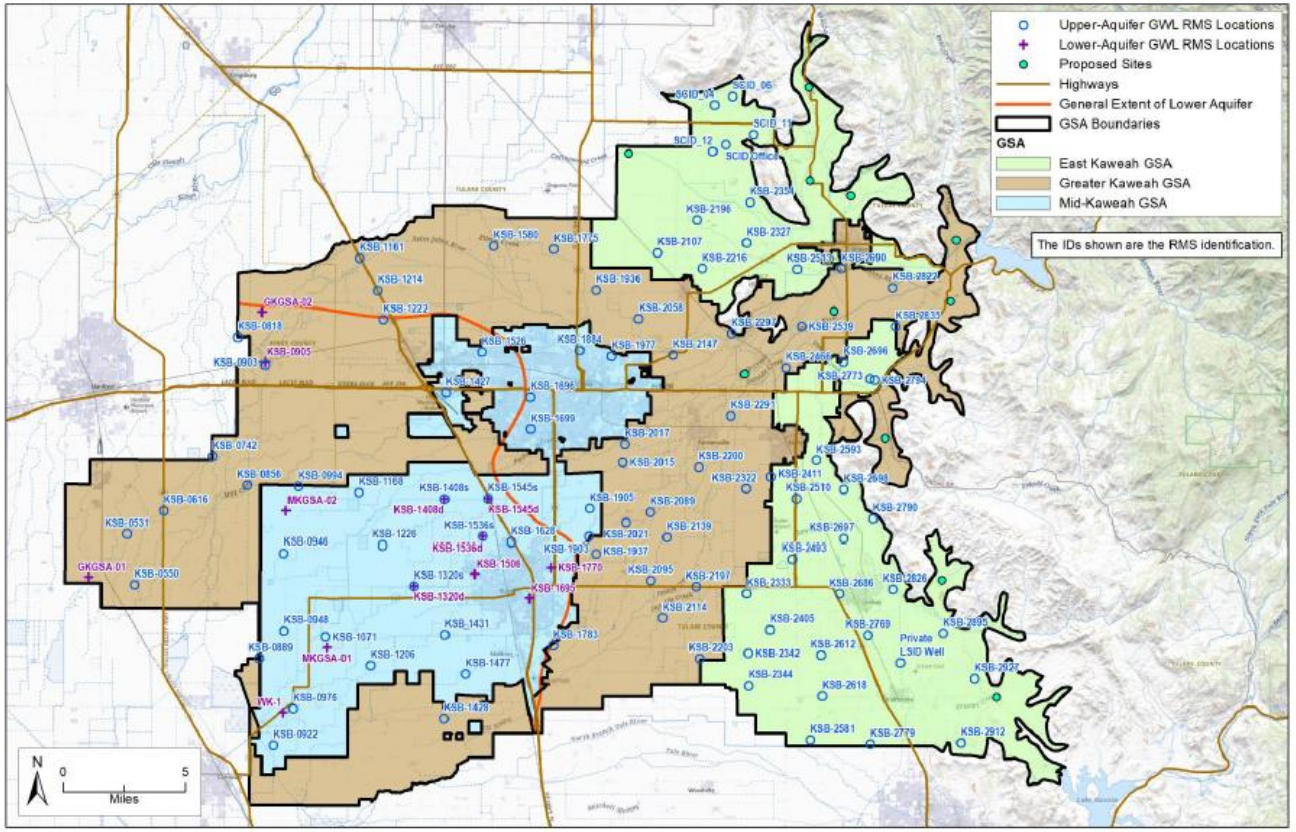
5.1.2 Groundwater Level Monitoring with Consideration of Subsidence

The BMP emphasizes frequency of monitoring – semi-annual or even quarterly is not enough.

The Kaweah Subbasin monitors multiple depth specific monitoring wells and existing wells with known completion

Dedicated monitoring wells are equipped with pressure transducers collecting data continuously

Data Gaps Remain



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Section 5 Technical Assistance – Land Subsidence Monitoring

5.1.3 Groundwater Pumping Monitoring

In areas experiencing land subsidence near infrastructure, the best management practice is to establish pumping reporting.

The most accurate way to gain local scale understanding of pumping is to use meters. The measured pumping data can be combined with groundwater level data to help identify intervals where the compaction is originating, which allows managers to adjust practices to avoid or mitigate subsidence.

Current Groundwater Production in the Basin is Estimated from Evapotranspiration Data – Land IQ

The GKGSA is implementing a well registry and optional meter requirements

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Section 5 Technical Assistance – Identifying Infrastructure

5.2 Identifying Infrastructure

An essential part of subsidence management under SGMA is review and identification of infrastructure within a basin as well as determining the amount of subsidence that may interfere with these surface land uses.

The Kaweah Subbasin Has Completed This Task

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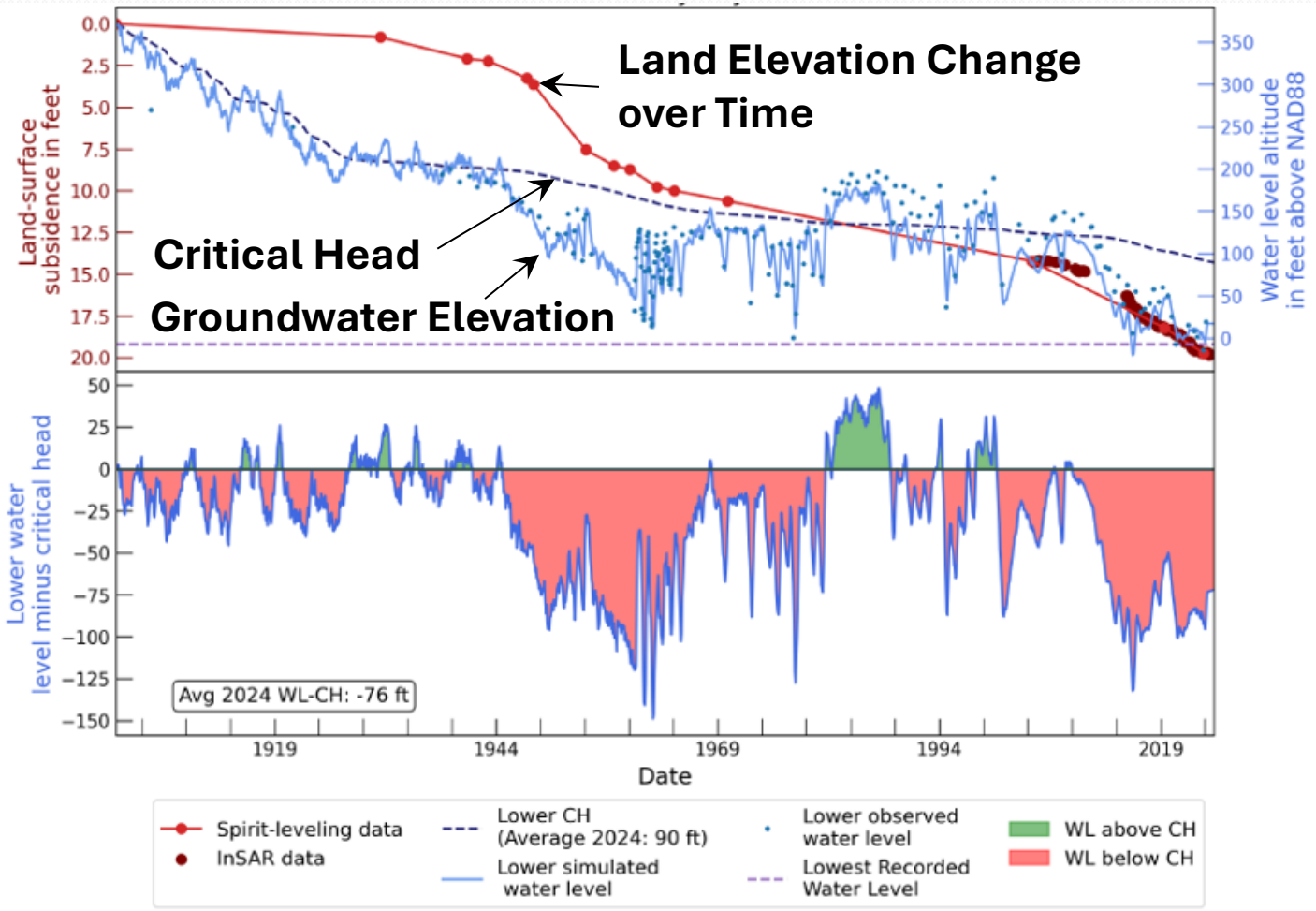
Section 5 Technical Assistance – Estimating Critical Head

5.3 Estimating Critical Head

Critical head is a quantitative value representing the specific groundwater level (pressure) in compressible sediment below which permanent compaction begins…

There Are Several Methods Identified in the BMP for Estimating Critical Head

Examples Provided in the BMP and Bulletin 118 Use a 1D Numerical Model



Source: Intera, 2025

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Section 5 Technical Assistance – Numerical Modeling

5.4 Land Subsidence Numerical Modeling

Numerical models are decision-support tools for understanding groundwater systems and evaluating management strategies to avoid or minimize subsidence in subsidence-prone basins.

A groundwater flow model has been developed for the Kaweah Subbasin

The model is currently being updated to include capability to estimate land subsidence including residual subsidence

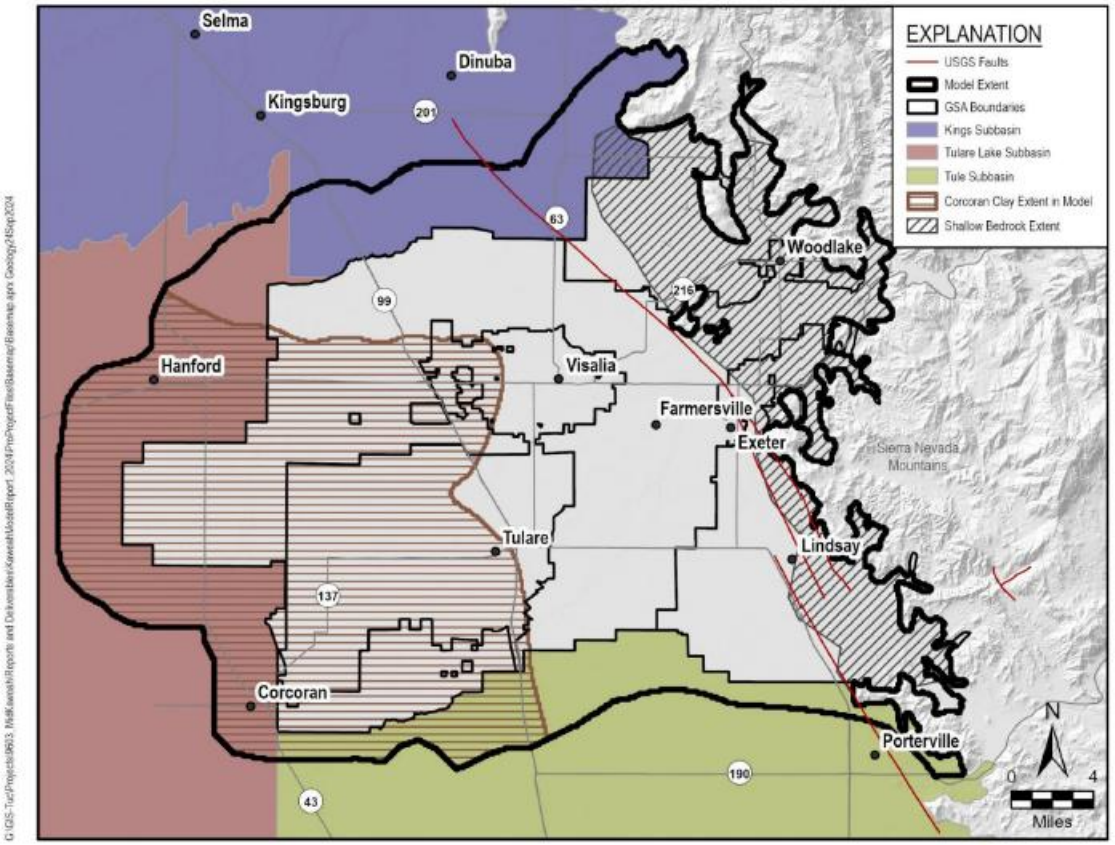

Figure 1. Model Domain, Corcoran Clay Extent from AEM, Bedrock Extent, Faults, GSAs and Surrounding Subbasins

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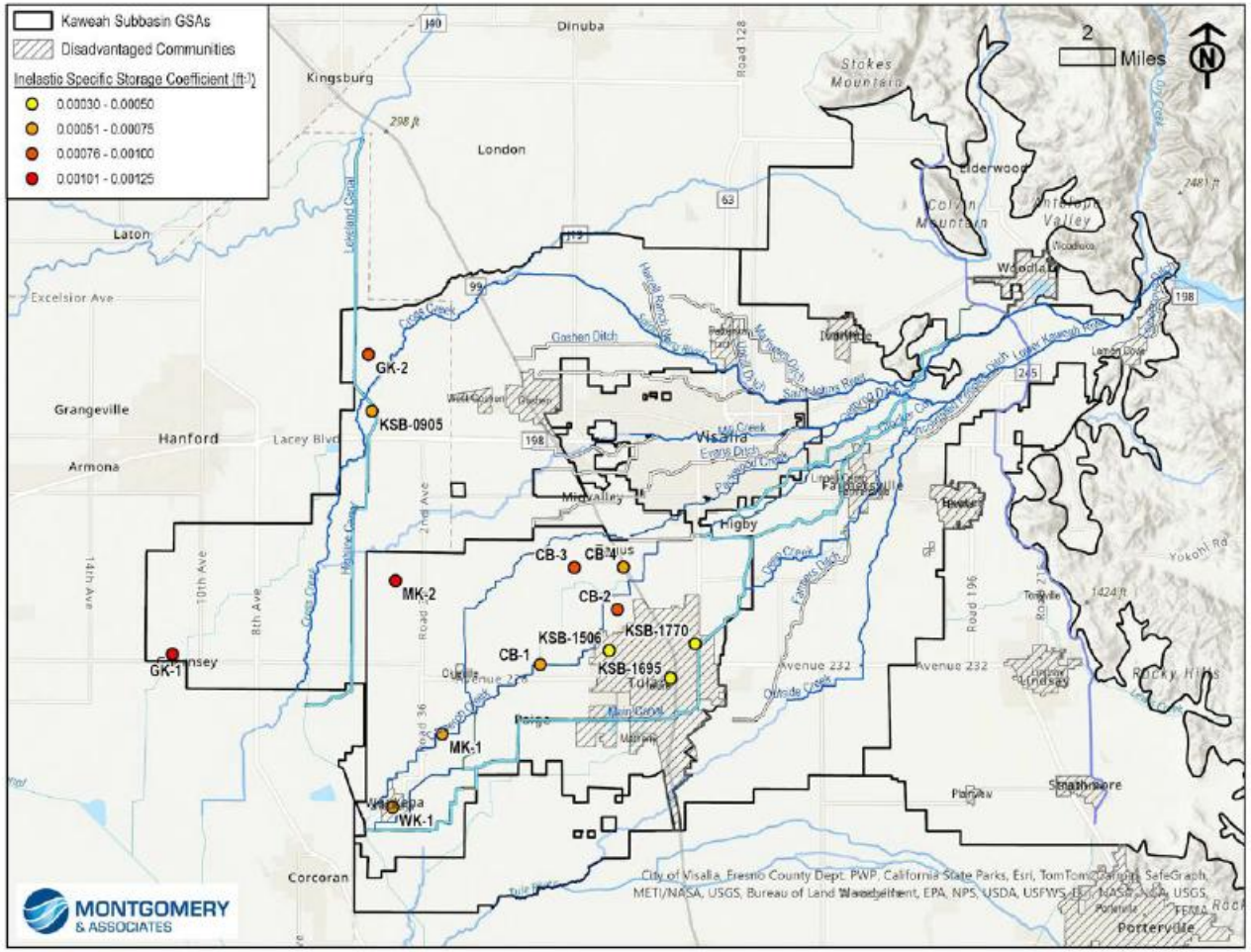
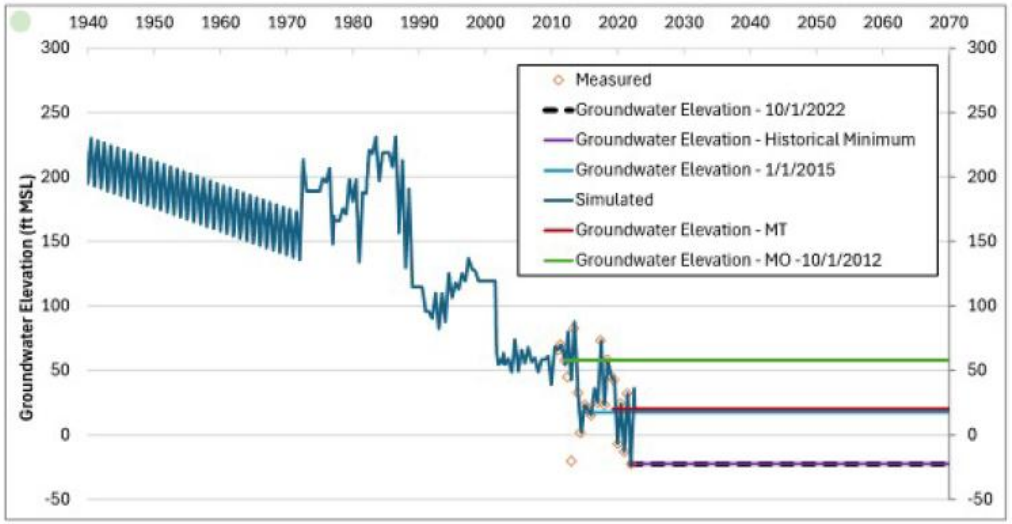
Montgomery and Associates Conducted 1D Modeling at 13 Sites for the Groundwater Sustainability Plan (GSP)



The 1D Model Work for the GSP was for the Purpose of Informing the Lower Aquifer Groundwater Level Minimum Threshold



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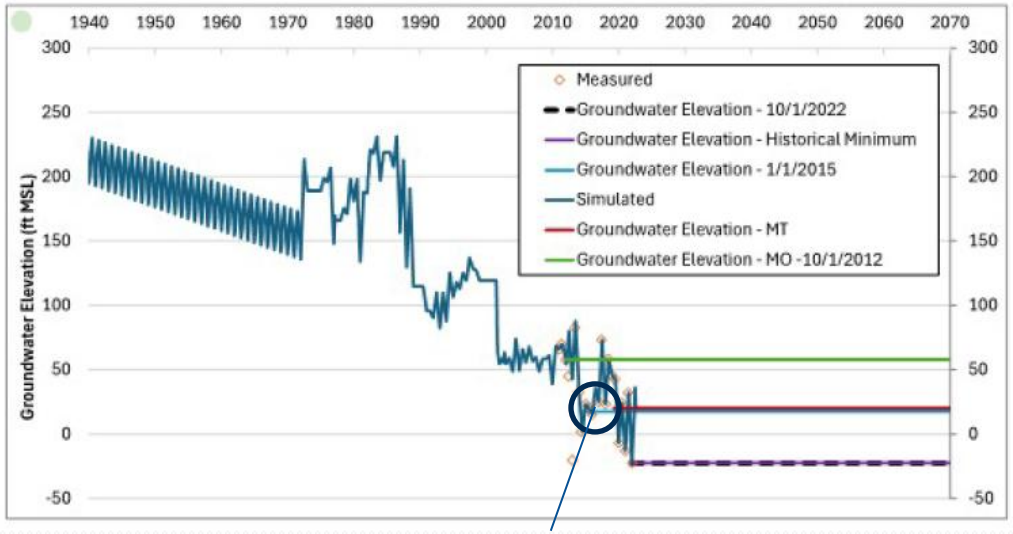
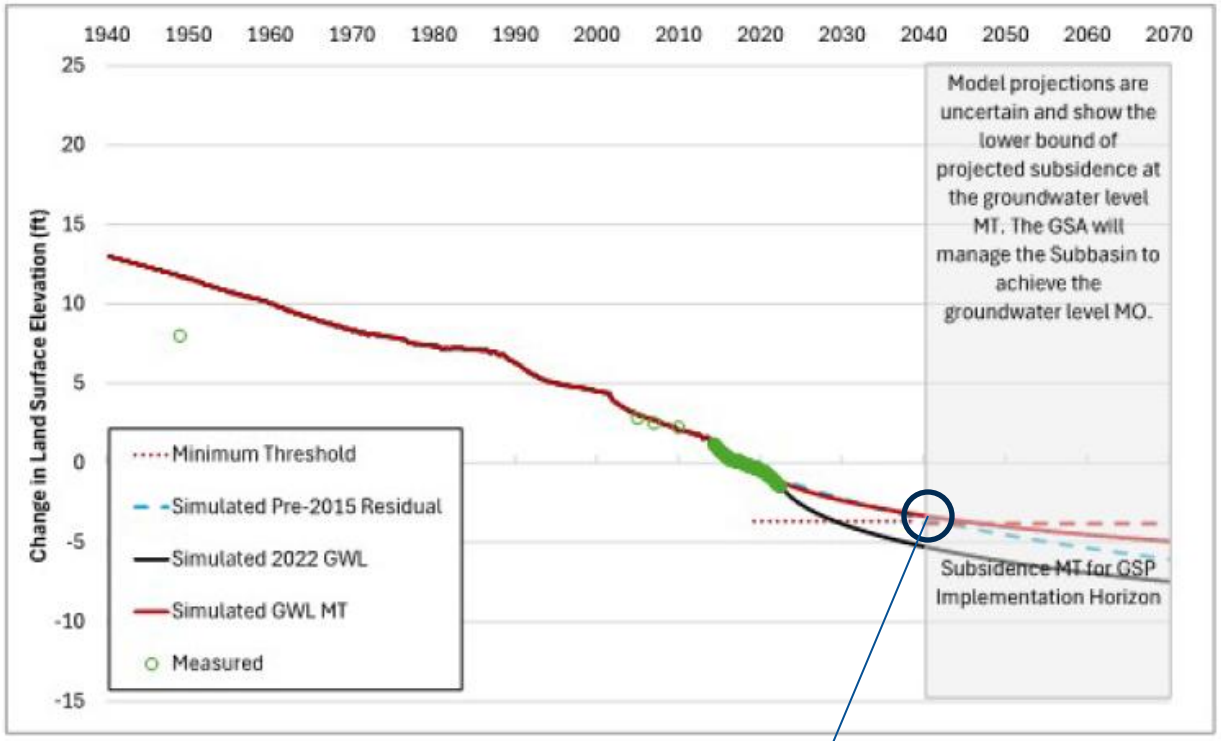
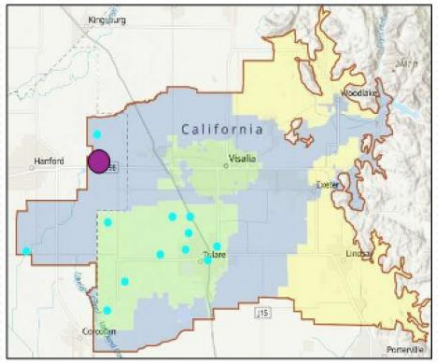
Lower Aquifer Groundwater Level Minimum Thresholds were Established to Avoid New Subsidence After 2040

The Original 1D Analysis Was Not Used to Estimate Critical Head



Land Subsidence Simulation Based on Fixed Groundwater Level at 2015 Conditions into the Future





Maintaining Lower Aquifer Groundwater Levels Above The Minimum Threshold Is Predicted to Enable us to Achieve our Land Subsidence Goals

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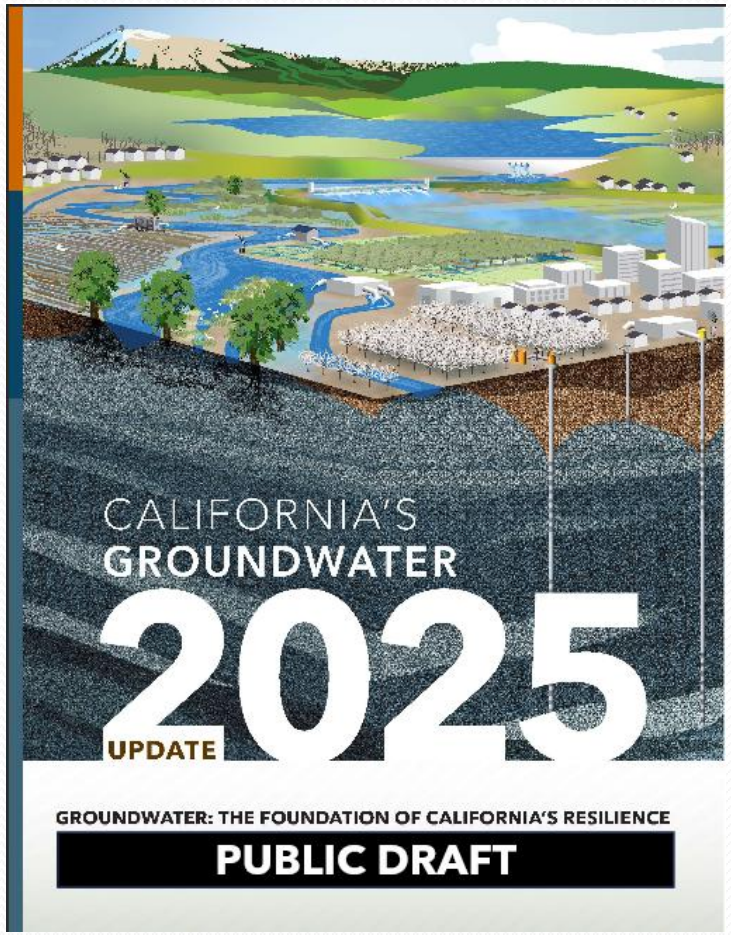
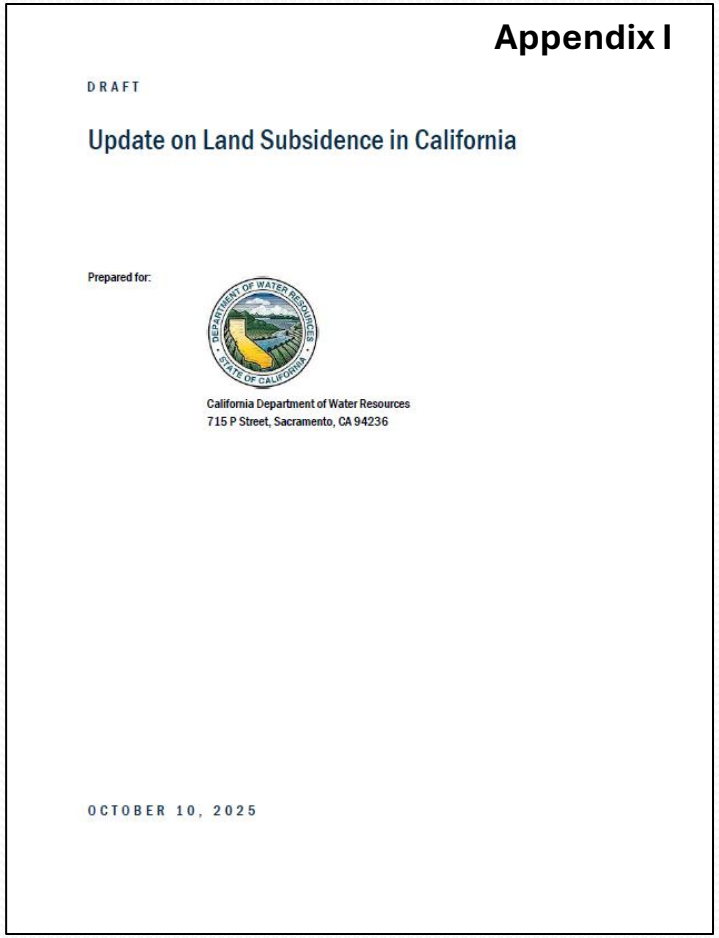
The Department of Water Resources Has Released a Public Review Draft of Bulletin 118





Appendix I

DRAFT

Update on Land Subsidence in California

Prepared for:

California Department of Water Resources
715 P Street, Sacramento, CA 94236

OCTOBER 10, 2025

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Bulletin 118 Appendix I Includes 1D Model Analyses at Six Locations in the Kaweah Subbasin

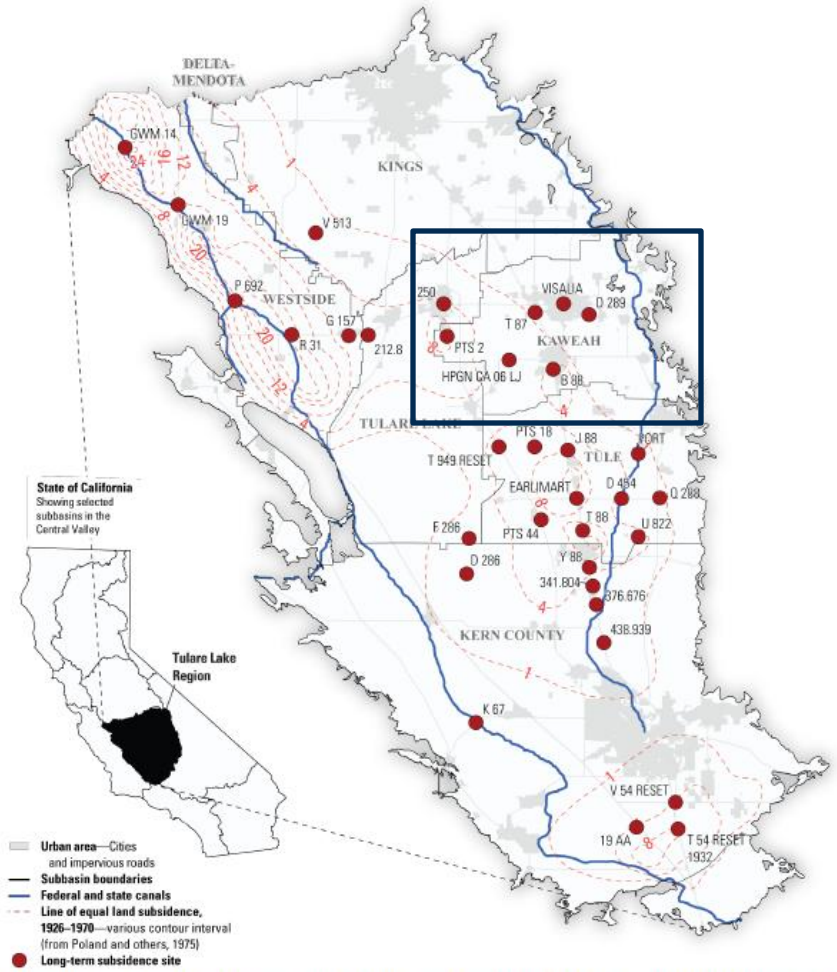
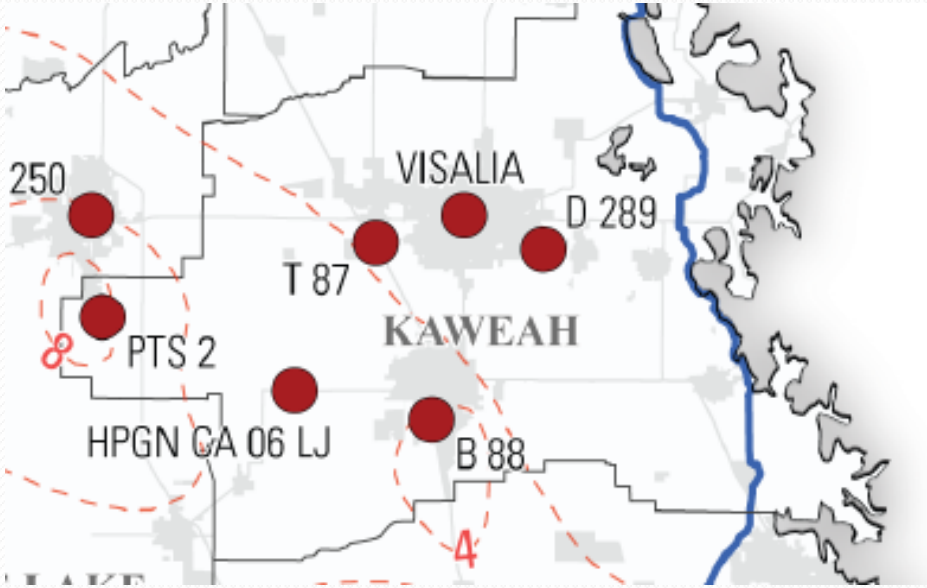


Figure 3-25. Long-term subsidence sites. Subsidence at benchmark PTS 18 in the Tule Subbasin is shown in Figure 3-5.

The 1D Analyses Were Conducted, in Part, to Estimate the Critical Head at these Locations



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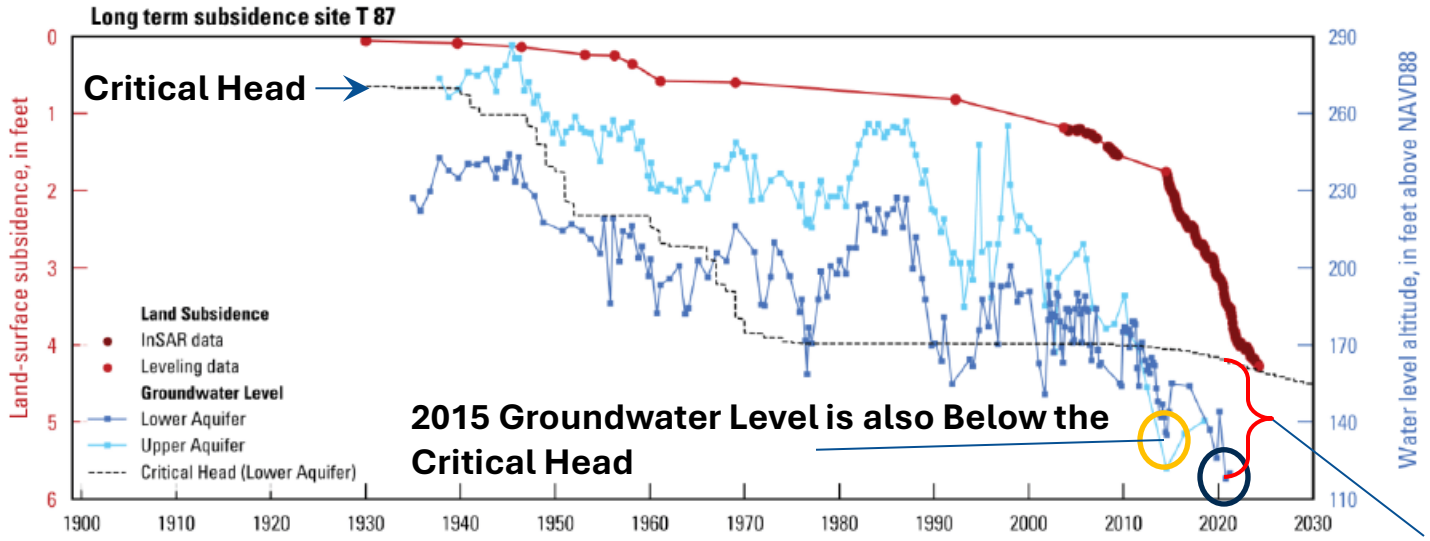
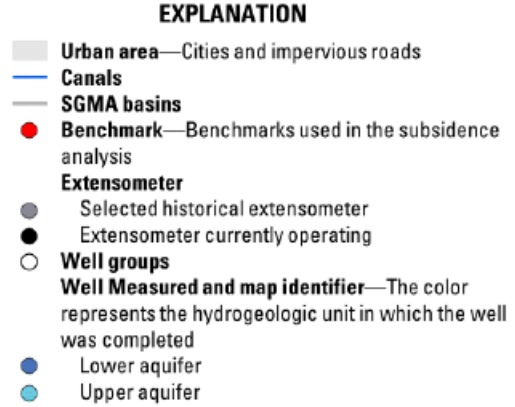
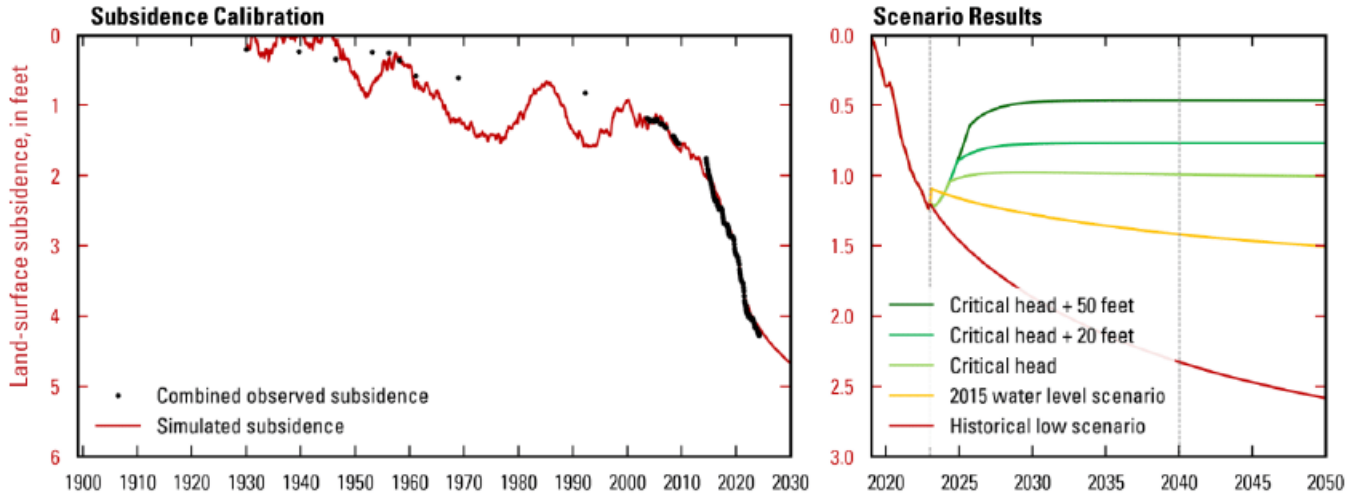
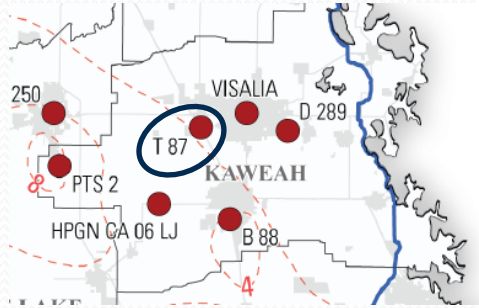
Critical Head Estimate for Western Visalia





Most Recent Groundwater Level is ~ 30 ft Below the Critical Head





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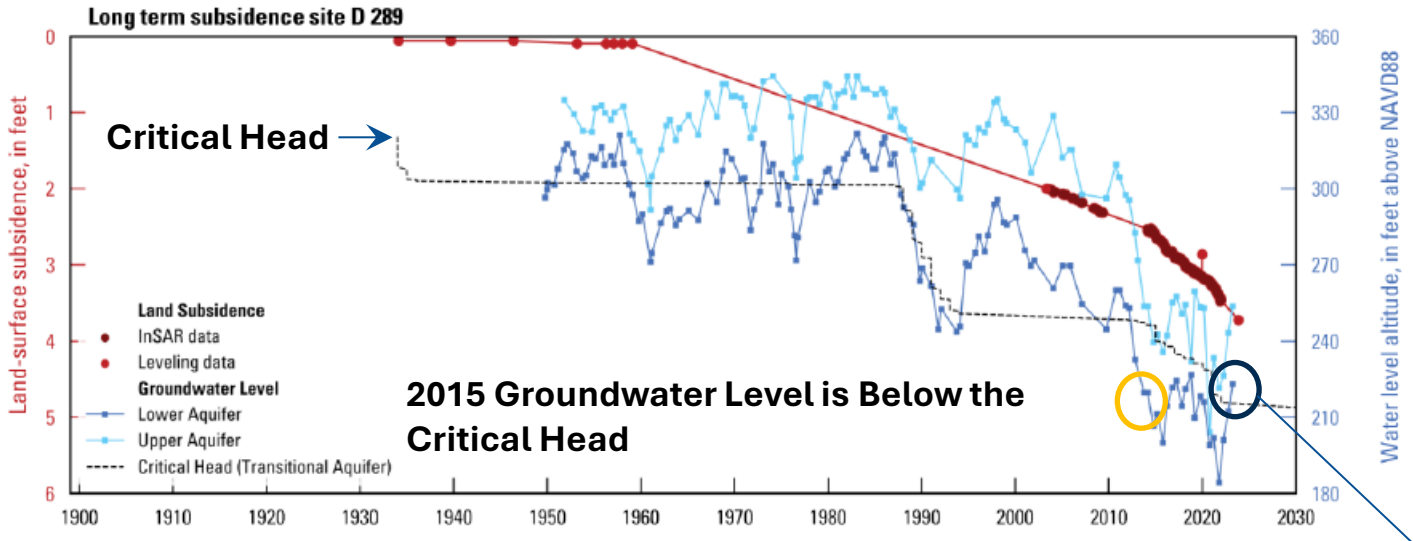
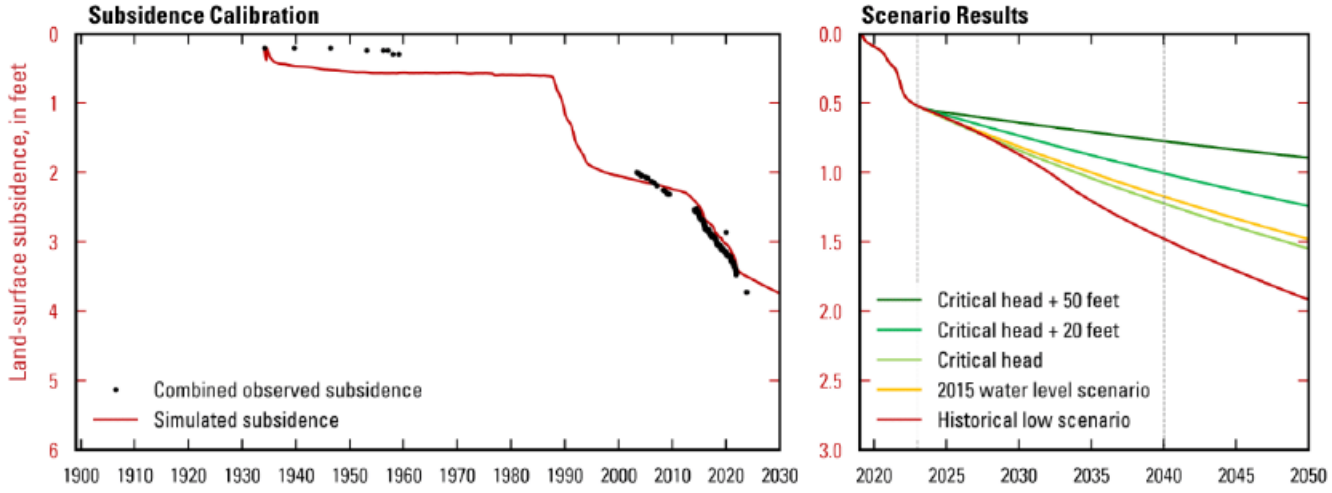
Critical Head Estimate for Eastern Visalia

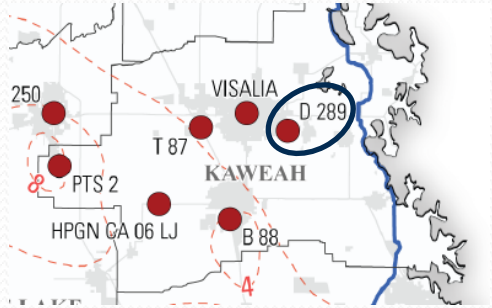


EXPLANATION

- **Urban area**—Cities and impervious roads
- **Canals**
- **SGMA basins**
- **Benchmark**—Benchmarks used in the subsidence analysis
- **Extensometer**
  - Selected historical extensometer
  - Extensometer currently operating
- **Well groups**
- **Well Measured and map identifier**—The color represents the hydrogeologic unit in which the well was completed
  - Lower aquifer
  - Upper aquifer

Most Recent Groundwater Level is Above the Critical Head





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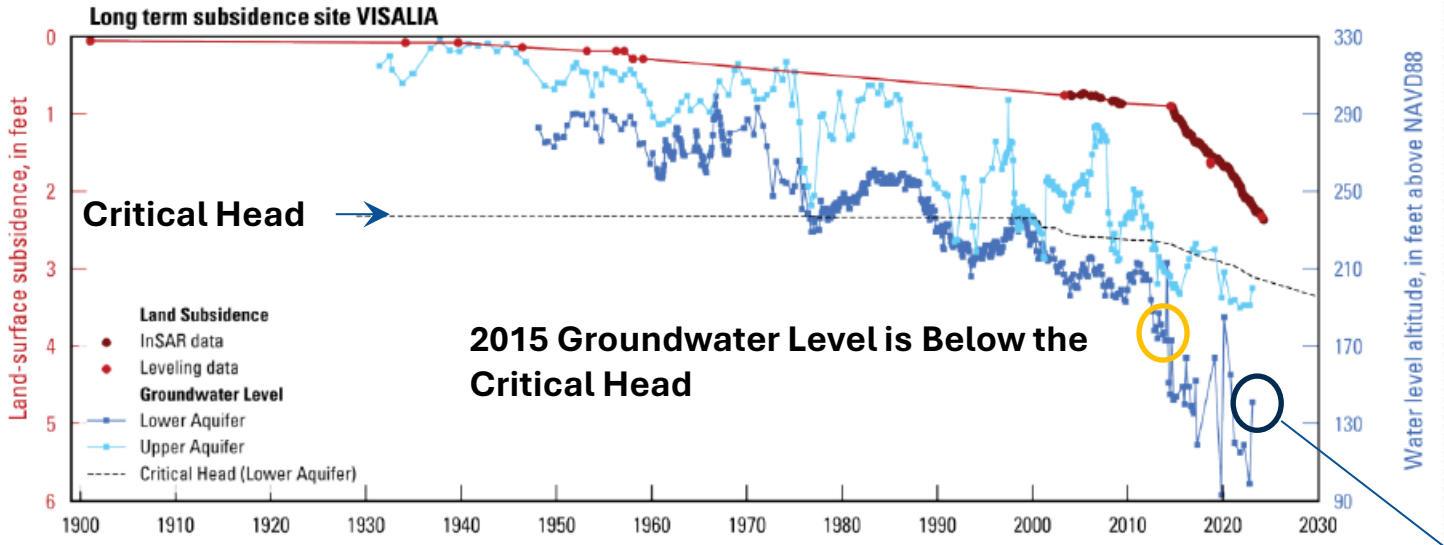
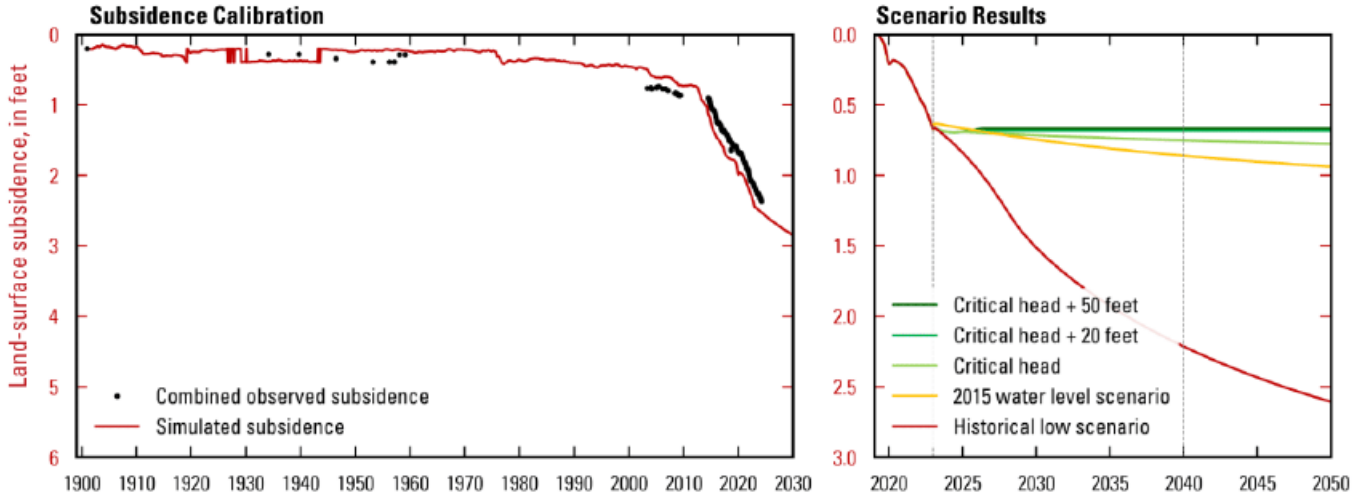
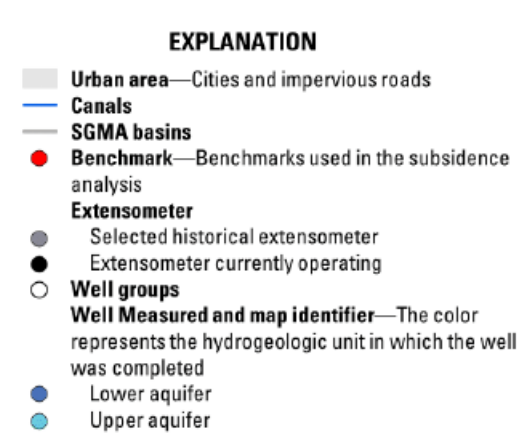
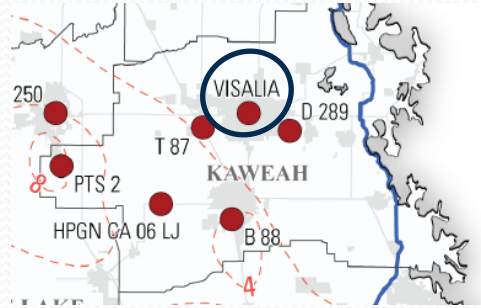
Critical Head Estimate for Central Visalia







Most Recent Groundwater Level is ~ 60 ft Below the Critical Head



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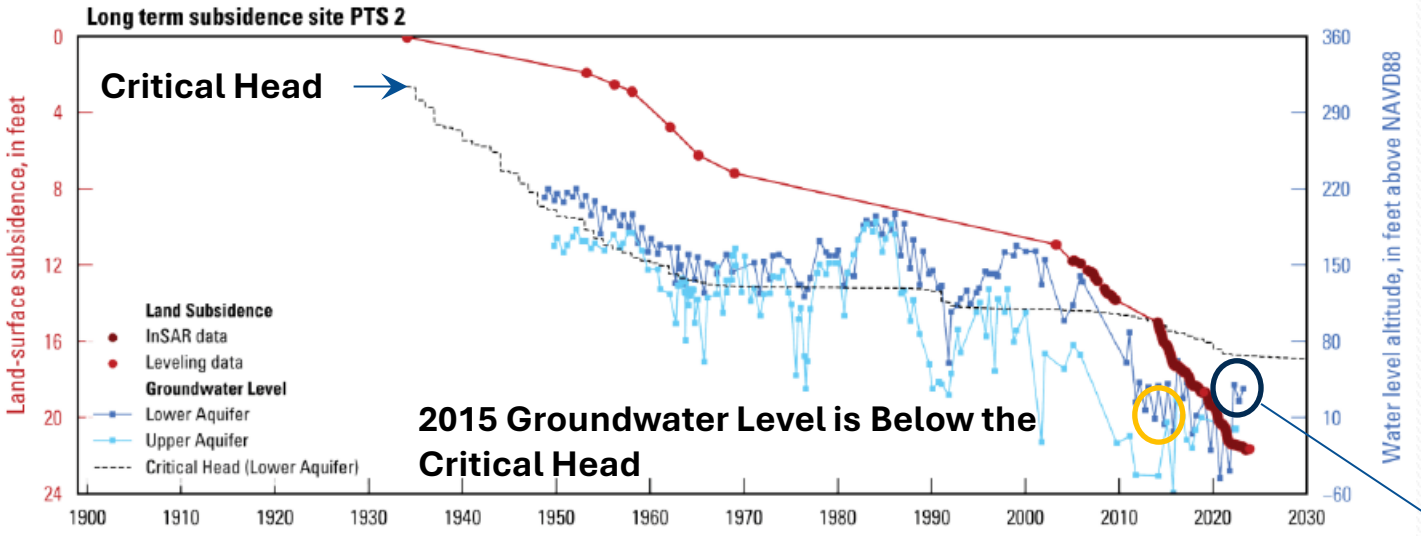
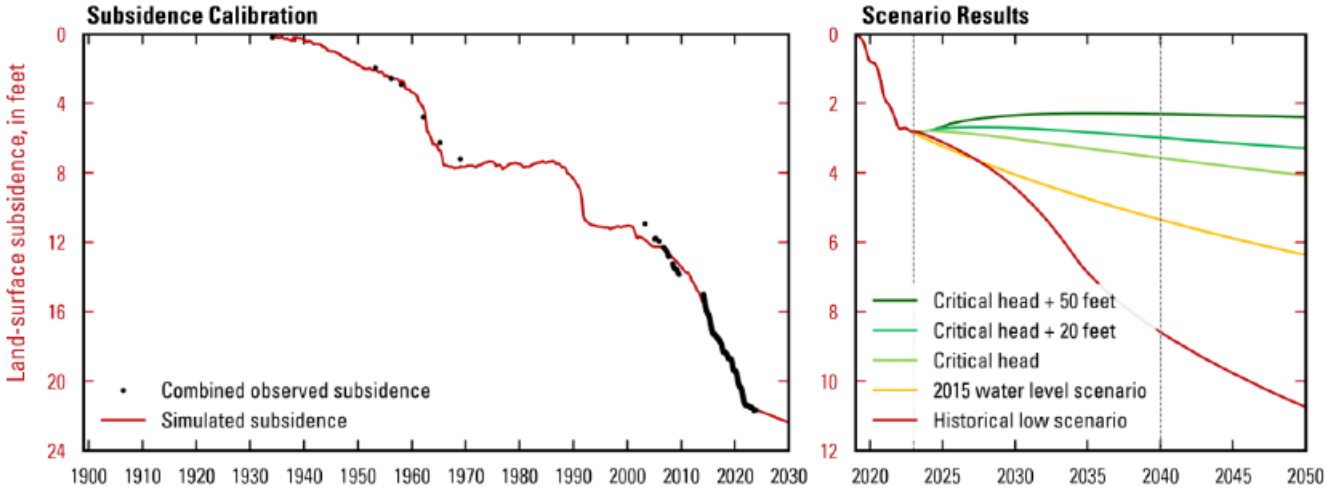
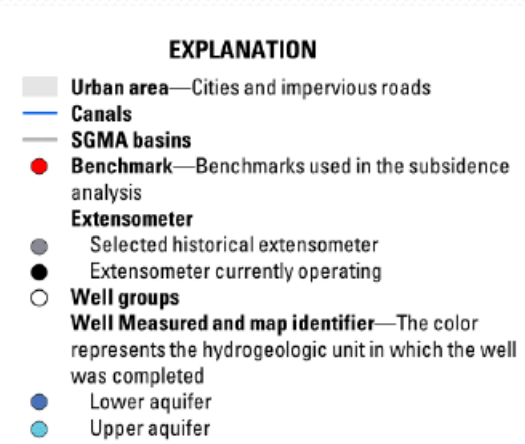
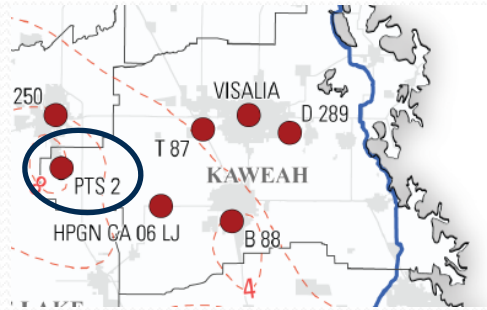
Critical Head Estimate for Western GKGSA







Most Recent Groundwater Level is ~ 10 to 20 ft Below the Critical Head



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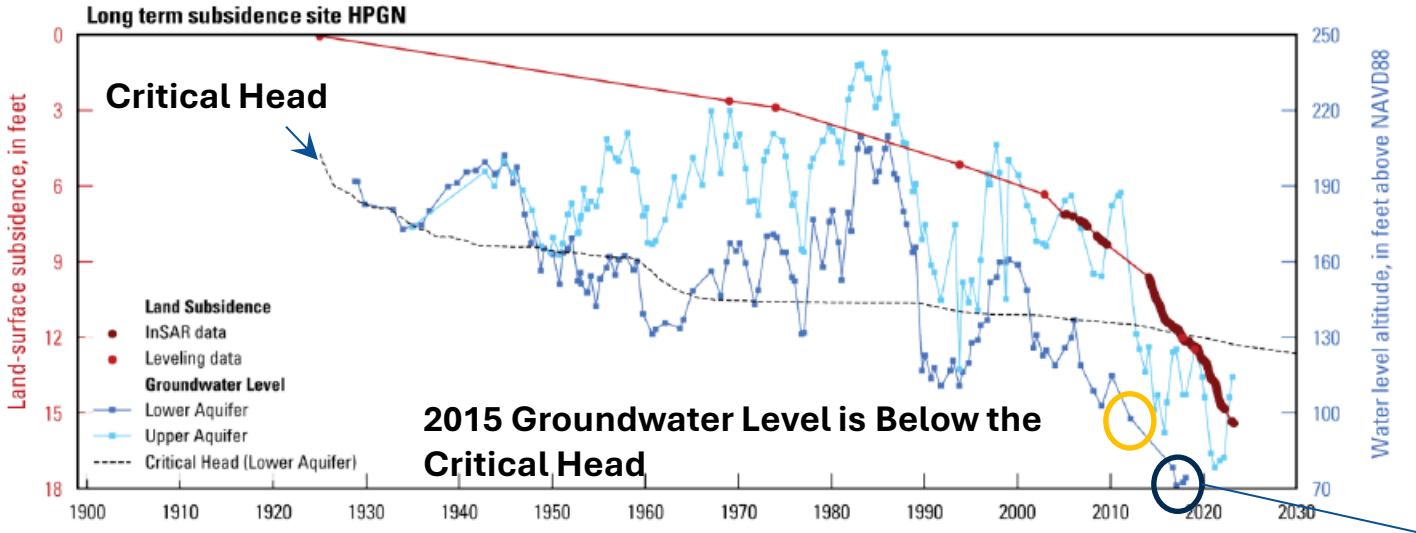
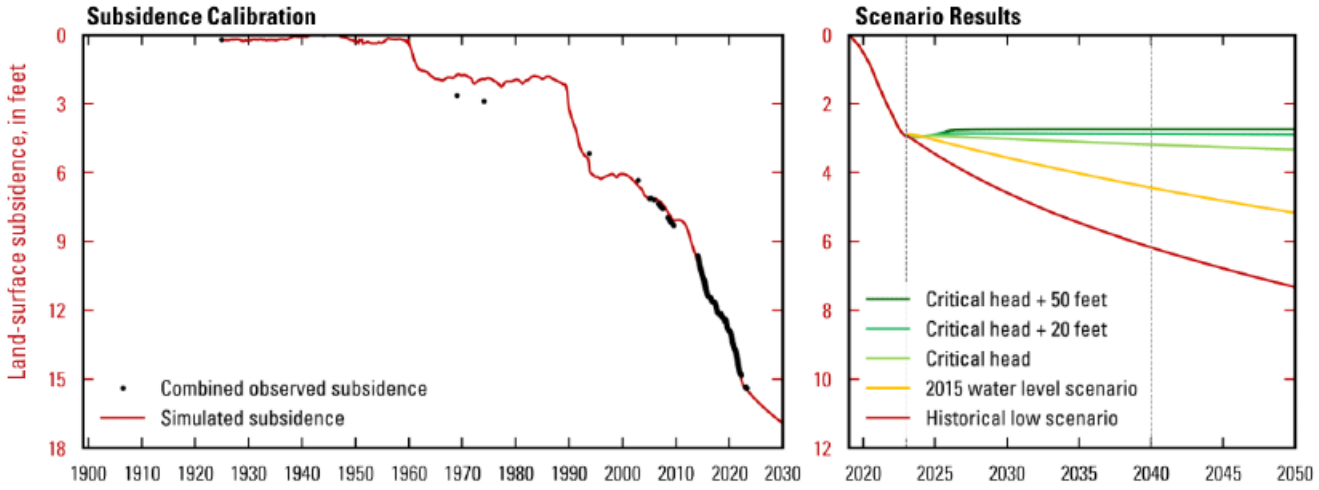
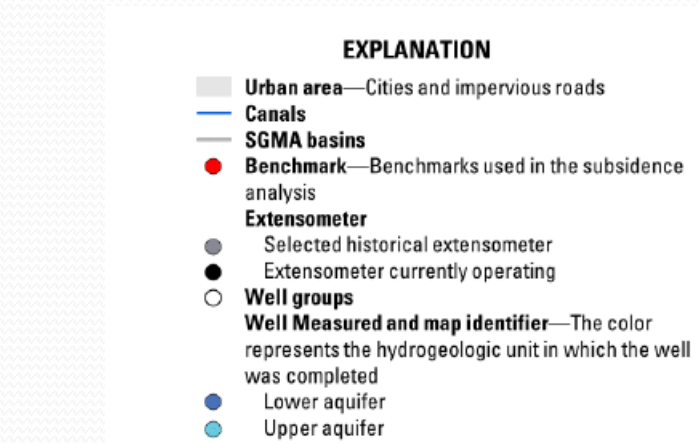
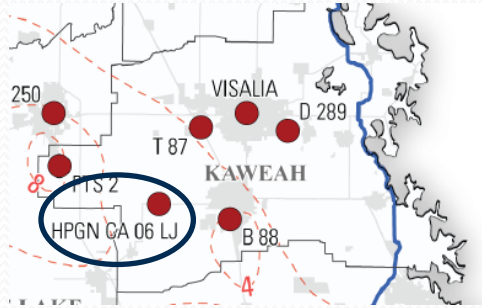
Critical Head Estimate for West Central Visalia







Most Recent Groundwater Level for Lower Aquifer Unavailable



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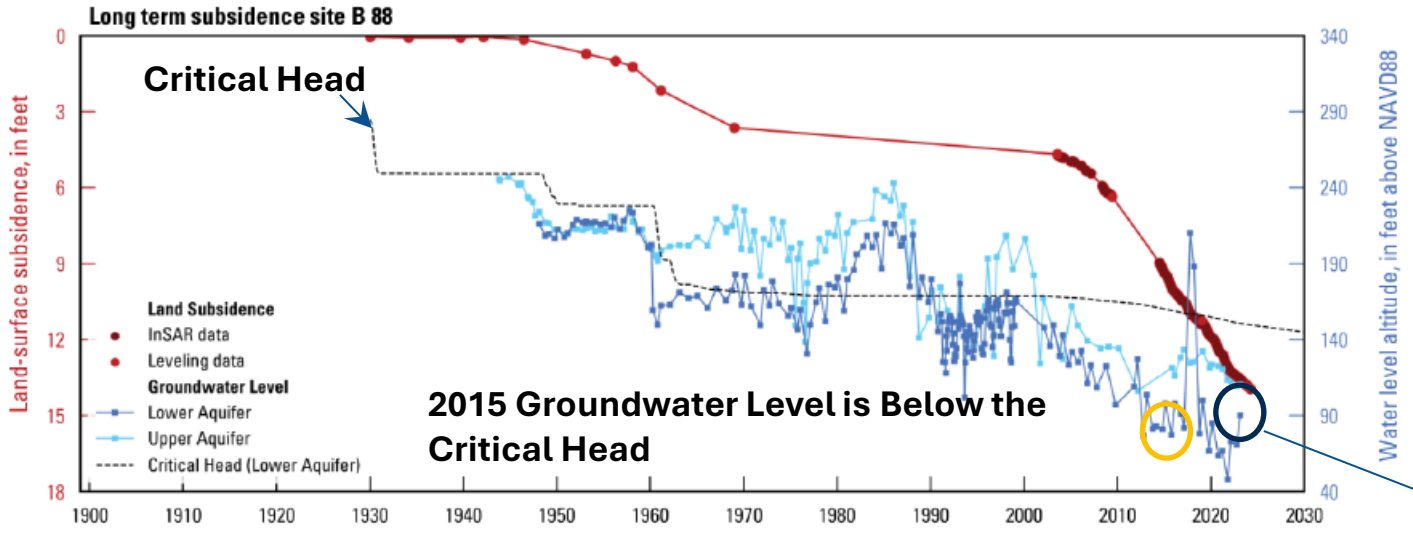
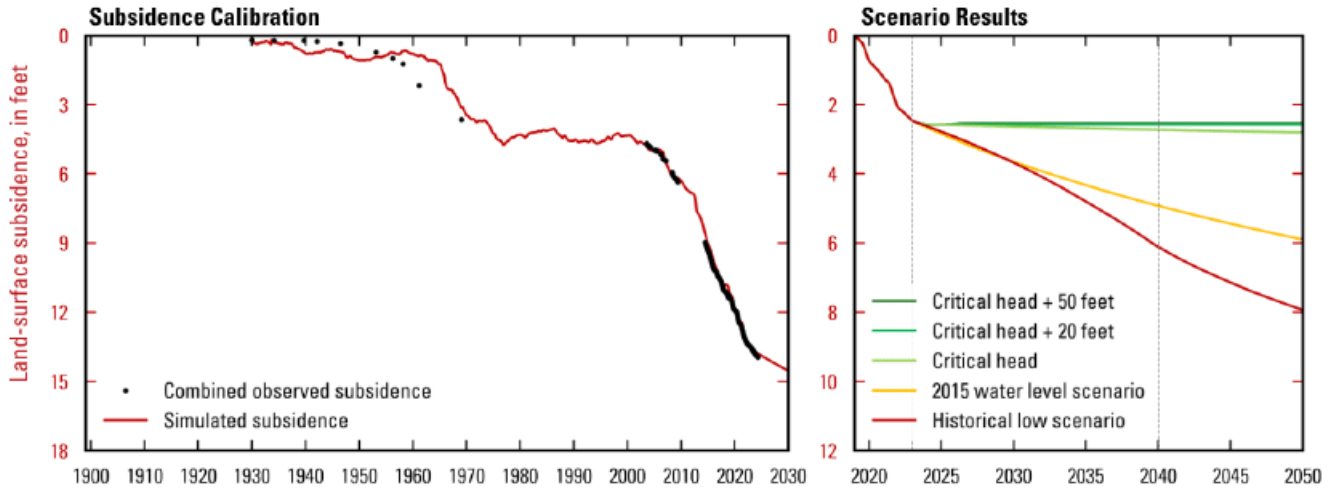
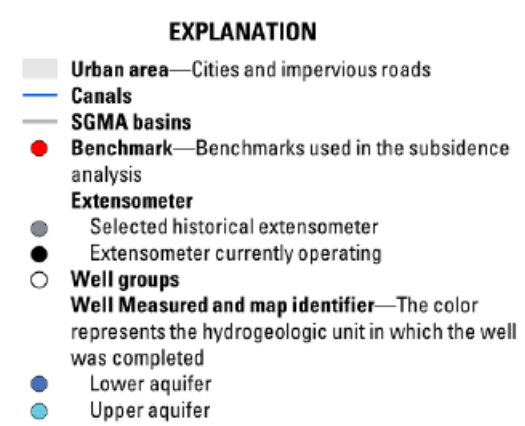
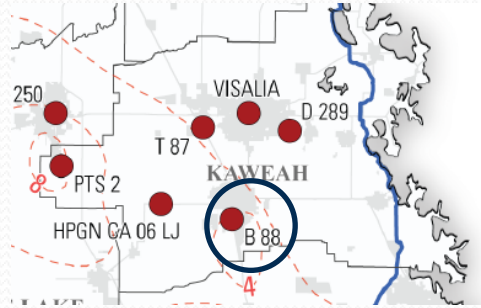
Critical Head Estimate for West Central Visalia







Most Recent Groundwater Level is ~ 50 ft Below the Critical Head



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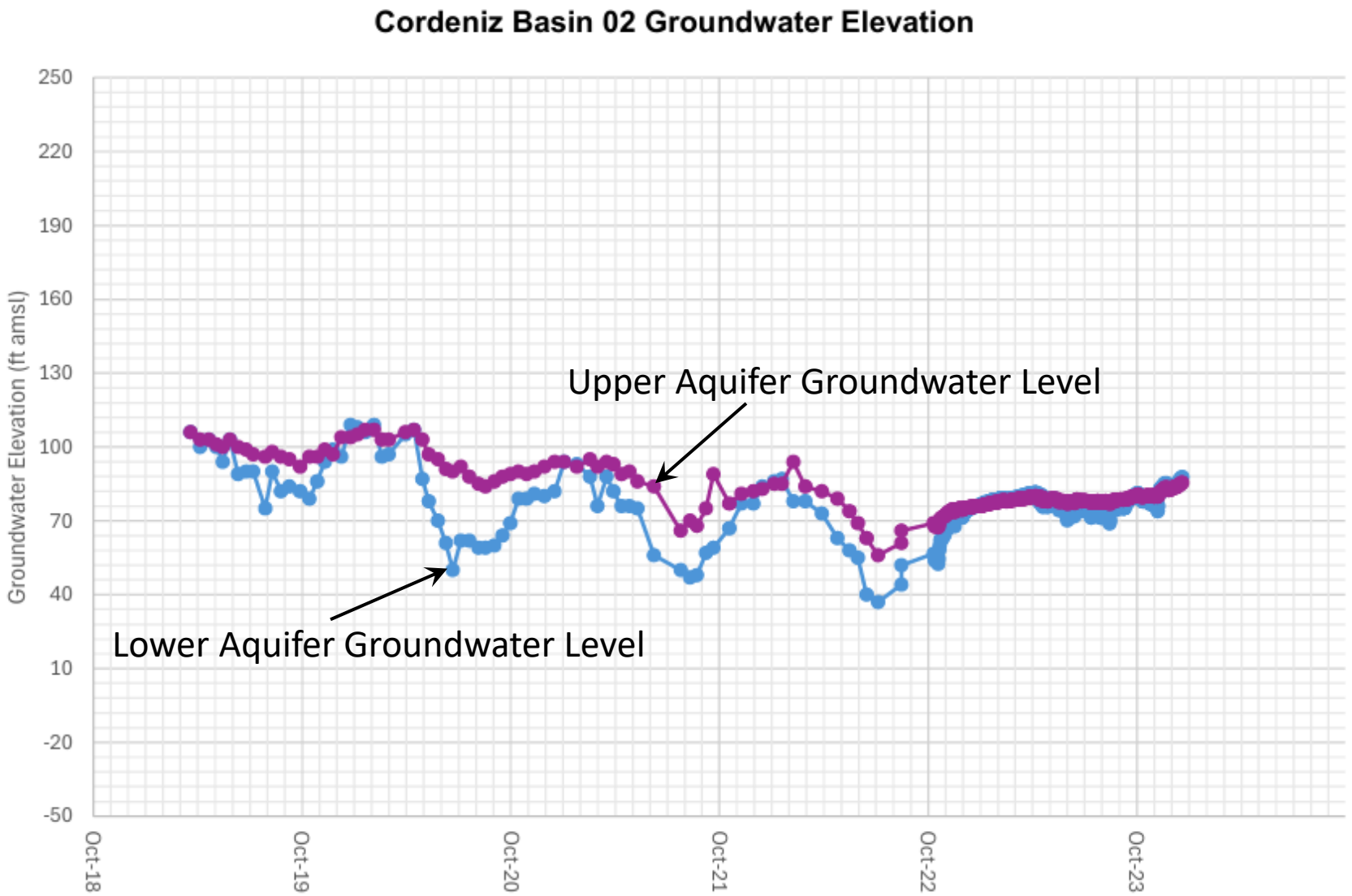
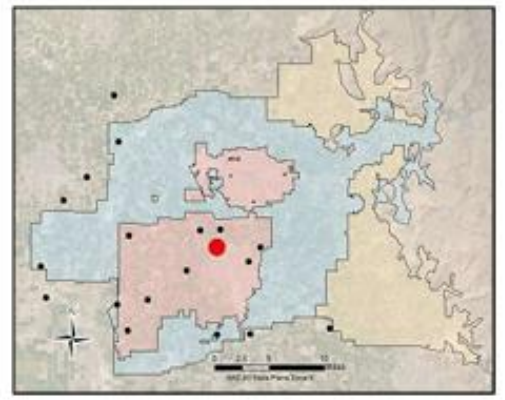
Observations of Bulletin 118 1D Critical Head Analyses

- The Sources of the Hydrographs Are Not Cited
  - There are No Lower Aquifer Wells in the Kaweah Subbasin Database in the Visalia Area
  - The Kaweah Database Does Not have Groundwater Level Records As Far Back As Shown in Bulletin 118
  - The Groundwater Levels in the Visalia Area for the "Lower Aquifer" are Similar to that Observed for Upper Aquifer Wells in the Database
  - Some of the "Lower Aquifer" Wells Have Elevations Higher than the "Upper Aquifer" Wells at Times – this is Contrary to the Known Vertical Head Distribution in the Area
- The 1D Analyses Fix the Groundwater Level after the Historical Period and Do Not Account for Seasonal Fluctuations

Groundwater Levels Are Typically Different Between the Upper and Lower Aquifers





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Critical Head and Minimum Thresholds

"In areas experiencing land subsidence, groundwater levels may currently be below critical head levels, and inelastic subsidence is likely to be increased if groundwater levels decline further. In this situation, GSAs should revise the groundwater level sustainable management criteria to be set at or above the critical head level."

DWR Draft Subsidence BMP, July 2025

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Critical Head and Minimum Thresholds

- What is the Relationship Between the Critical Head and the Lower Aquifer Groundwater Level Minimum Threshold (MT)?
  - Is the Critical Head the MT?
  - If Not, How Far Above the Critical Head Should it Be?
    - Note: Some Simulations Predict Ongoing Land Subsidence into the Future with Groundwater Levels 50 ft Above the Critical Head
  - Which Critical Head Should We Reference? The One in 2015? 2020? 2025?
  - Are We Responsible for pre-2015 Groundwater Levels Below the Critical Head that would Cause Ongoing Residual Land Subsidence?

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Questions/Discussion

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