South of Kern River Executive Committee
Regular Meeting

Thursday, July 11, 2024
9:00 a.m.to 11:00 a.m.
Meeting Information Posted:
www.sokrgsp.com
http://www.aewsd.org * http://www.wrmwsd.com
http://www.tejoncastacwd.com * https://www.arvincsd.com

In Person: Arvin-Edison Water Storage District Headquarters
20401 E. Bear Mountain Blvd. Arvin, CA 93203

Remote participation by a Director will also occur at:
350 Calle Principal
Monterey, CA 93940

Via Remote (**Microsoft Teams**): **https://www.microsoft.com/microsoft-teams/join-a-meeting**
Click here to join the meeting
Meeting Number: **289 619 843 830**
Meeting Password: **ko5K35**
Phone: **1.213.437.9052**
Phone Meeting Number (access code): **276 512 496#**

NOTICE: Members of the public interested in participating by teleconference may do so using the call-in information above or by following this link. Please note that this teleconference option is provided as a courtesy and at the participant's own risk. The Committee cannot guarantee that there will be no loss of connectivity or other technological obstacle to full participation through teleconferencing. By participating in this way, participants confirm that they understand this risk and that the Committee is not obliged to delay any portion of the meeting due to such technological obstacles and thus that teleconference participants may be unable to participate.

1. CALL TO ORDER
2. ROLL CALL
3. PLEDGE OF ALLEGIANCE
4. APPROVAL OF THE AGENDA
5. APPROVAL OF MAY 9, 2024 MEETING MINUTES
6. PUBLIC COMMENT
7. REPORT ITEMS
    a. GSP Manager Report *(Muhar)*
        i. Basin Coordination
    b. Technical Consultant Report (*EKI*)
        i. Update on Draft Amended Subbasin Plan

ii. SGMA Monitoring Network performance and sustainable management criteria (SMC) compliance

c. Finance Report *(Nicholas)*

d. California Aqueduct Subsidence Program (CASP) update (*Nicholas*)

e. Management Area updates *(Muhar, Nicholas, Martin, Barraza)*

8. ACTION ITEM(S)

a. Consider endorsement of and recommendation to GSA home boards for funding the EKI Task Order for Groundwater Sustainability Plan (GSP) Implementation Support July through December 2024

b. Consider recommendation to GSA home boards for subbasin outreach and engagement proposal

9. CORRESPONDENCE

a. Letter from Kern County Subbasin Plan Manager/Point of Contact to State Water Resources Control Board re: Kern County Subbasin Final Draft Amended GSP

b. Updated Notice of Intent to cities and counties re: Intent to Amend the GSP for the South of Kern River Pursuant to Water Code Section 10728.4

10. CLOSED SESSION

a. Potential Litigation (Government Code §54956.9(d)(2), (e)(1); 1 item).

11. ADJOURNMENT

MINUTES OF THE MEETING OF THE
SOUTH OF KERN RIVER EXECUTIVE COMMITTEE
May 9, 2024

CALL TO ORDER

Director Yurosek called the meeting to order at 9:02 a.m., and determined a quorum was present with attendance by:

Executive Committee Directors
Derek Yurosek – Arvin-Edison Water Storage District (AEWSD; Arvin GSA) (present)
Mark Valpredo – Tejon-Castac Water District (TCWD; Tejon-Castac Water District GSA) (present)
Michael Blaine – Wheeler Ridge-Maricopa Water Storage District (WRMWSD; Wheeler Ridge-Maricopa GSA) (present)
Rafael Gallardo – Arvin Community Services District (ACSD) (present; left meeting at 10:30am)

District Staff
Jeevan Muhar – AEWSD (remote)
Sheridan Nicholas – WRMWSD (remote)
Angelica Martin – TCWD (remote)
Raul Barazza – ACWD (present)

PLEDGE OF ALLEGIANCE

APPROVAL OF THE AGENDA

Director Yurosek moved to approve the agenda as amended. Director Valpredo seconded. The motion passed 4-0-0.

APPROVAL OF APRIL 11, 2024 MEETING MINUTES

Director Yurosek moved to approve the April 11, 2024 SOKR Executive Committee meeting minutes. Director Gallardo seconded. The motion passed 4-0-0.

PUBLIC COMMENT

There were no public comments.

REPORT ITEMS

GSP Manager Report

Basin Coordination

Mr. Muhar noted the Basin's work to finalize the draft amended GSP, and deferred to EKI's presentation of the plan.

Technical Consultant Report

Final Draft Revised Groundwater Sustainability Plan

EKI presented an overview of the draft Amended Kern County Subbasin Groundwater Sustainability Plan(s) (GSPs).

SGMA Monitoring Network performance and SMCs compliance

EKI reported on April groundwater conditions within the SOKR Plan Area compared to the Minimum Thresholds (MTs) and Measurable Objectives (MOs) in the draft Amended Kern County Subbasin GSP(s).

Finance Report

Mr. Nicholas reported on finances to date. WRMWSD continues to submit invoices to Buena Vista Water Storage District for reimbursement of EKI's work on Subbasin GSP development efforts. Buena Vista Water Storage District has reported no issues on the subbasin-wide finance management.

California Aqueduct Subsidence Program (CASP) update

Mr. Nicholas reported that Mr. Muhar reached out to CASP to request a letter approving the SOKR Land Subsidence SMCs for the southern portion of the California Aqueduct but has not yet received a response from CASP.

Management Area Updates

There were no separate management area updates to report.

CLOSED SESSION

Conference with Legal Counsel pursuant to Government Code §54956.9(d)(2), (e)(1) (potential litigation; 1 item). There was no action to report out of closed session.

ACTION ITEMS

Discussion and possible action to recommend each GSA home board (a) approve final draft amendments to the Kern Subbasin Groundwater Sustainability Plan and supporting appendix of projects and management actions for its GSA, (b) authorize their submission by the Kern County Subbasin Point of Contact to the State Water Resources Control

Board before May 29 for review by SWRCB staff, and (c) authorize their release for public review and comment.

Following presentation by Mr. Muhar and discussion of item, Director Valpredo made a motion, seconded by Director Blaine, to recommend that the SOKR GSA boards a) approve final draft amendments to the Kern Subbasin Groundwater Sustainability Plan and supporting appendix of projects and management actions for its GSA, (b) authorize their submission by the Kern County Subbasin Point of Contact to the State Water Resources Control Board before May 29 for review by SWRCB staff, and (c) authorize their release for public review and comment. The Motion passed 3-0-0 (Director Gallardo absent).

Discussion and possible action to recommend each GSA home board authorize execution of amended and restated Kern County Subbasin Coordination Agreement among Subbasin GSAs.

Following presentation by Mr. Muhar and discussion of item, Director Blaine made a motion, seconded by Director Valpredo, to recommend that the SOKR GSA boards authorize execution of amended and restated Kern County Subbasin Coordination Agreement among Subbasin GSAs. The Motion passed 3-0-0 (Director Gallardo absent).

Discussion and possible action to recommend each GSA home board authorize execution of Third Amended and Restated Joint Powers Agreement for Kern Non-Districted Land Authority (formerly Kern Groundwater Authority).

Following presentation by Mr. Muhar and discussion of item, Director Blaine made a motion, seconded by Director Valpredo, to recommend that the SOKR GSA boards authorize execution of Third Amended and Restated Joint Powers Agreement for Kern Non-Districted Land Authority (formerly Kern Groundwater Authority). The Motion passed 3-0-0 (Director Gallardo absent).

Discussion and possible action to recommend each GSA home board authorize updated notification to cities and counties of intention to adopt a new or amended GSP.

Following presentation by Mr. Muhar and discussion of item, Director Valpredo made a motion, seconded by Director Blaine, to recommend that the SOKR GSA boards authorize updated notification to cities and counties of intention to adopt a new or amended GSP. The Motion passed 3-0-0 (Director Gallardo absent).

Discussion and possible action to recommend each GSA home board authorize the finalization and execution of the Memorandum of Understanding (MOU) between Kern Water Collaborative and Groundwater Sustainability Agencies in the Kern Subbasin.

Following presentation by Mr. Nicholas and discussion of item, Director Blaine made a motion, seconded by Director Valpredo, to recommend that the SOKR GSA boards authorize the finalization and execution of the MOU between Kern Water Collaborative

and Groundwater Sustainability Agencies in the Kern Subbasin. The Motion passed 3-0-0 (Director Gallardo absent).

CORRESPONDENCE

1. Letter from Basin Point-of-Contact to Friant Water Authority
2. Response letter from Friant Water Authority to Basin Point-of-Contact

Next meeting will be held June 13th.

ADJOURNMENT

Director Yurosek adjourned the South of Kern River Executive Committee meeting at 10:52 a.m.

_____

Mark Valpredo, South of Kern River
Executive Committee Secretary

Corporate Office
2001 Junipero Serra Boulevard, Suite 300
Daly City, CA 94014
(650) 292-9100
ekiconsult.com

3 July 2024

Sheridan Nicholas
Wheeler Ridge-Maricopa Water Storage District
12109 Hwy 166
Bakersfield, CA 93313

Subject: South of Kern River Groundwater Sustainability Plan Implementation Support July through December 2024
Kern County Subbasin, Kern County
(EKI C20055.04)

Dear Mr. Nicholas:

Wheeler Ridge-Maricopa Water Storage District (WRMWSD, District, or Client) has requested that EKI Environment and Water, Inc. (EKI) prepare a scope to support Groundwater Sustainability Plan (GSP) implementation activities for the South of Kern River (SOKR) Groundwater Sustainability Agencies (GSAs) in 2024. The Client approved a previous Task Order, dated 4 December 2023, that covered SOKR GSP Implementation Support through June 2024. This Task Order extends the scope of the previous agreement and covers SOKR GSP implementation activities from July through December 2024.

BACKGROUND

In July 2022, the SOKR GSP was adopted by the Arvin GSA, Wheeler Ridge-Maricopa GSA, and Tejon-Castac Water District (TCWD) GSA (collectively, the SOKR GSAs), accompanied by a Memorandum of Agreement (MOA) detailing coordinated GSP implementation. On 2 March 2023, DWR released its determination that the Revised 2022 GSPs for the Kern County Subbasin (Subbasin) were Inadequate, transitioning the Subbasin oversight under the Sustainable Groundwater Management Act (SGMA) to the State Water Resources Control Board (SWRCB). An Inadequate determination requires ongoing Plan revisions and coordination with the SWRCB. In the 19 December 2023 SWRCB Board meeting, SWRCB Staff indicated that the Subbasin will be the fourth of the six inadequate basins to have a probationary hearing, with an anticipated hearing date in January 2025.

In response to the Inadequate determination and anticipated probationary hearing, the Subbasin's Coordination Committee established a Technical Working Group (TWG) to develop an amended GSP that addresses the three DWR-identified deficiencies in consultation with SWRCB Staff. At the direction of the SOKR GSAs, EKI took a leadership role in the TWG and produced several Subbasin-wide work products, participated on the groundwater levels, subsidence and water quality subcommittees, and drafted the common language for selected amended Kern County Subbasin GSP chapters. EKI's work supporting the Subbasin-wide GSP development was covered separately under the Subbasin Cost Share Agreement.

The draft Amended Subbasin Plan, composed of seven GSPs and one coordination agreement, is currently out for both public review and SWRCB "red flag" review. The SOKR GSAs will be covered by the amended Kern County Subbasin GSP. It is anticipated that the amended Kern County Subbasin GSP will require

revisions to address public and SWRCB comments before the anticipated adoption in late Fall 2024. EKI's work supporting any amended Kern County Subbasin GSP revisions is not covered under the existing Subbasin Cost Share Agreement.

SGMA requires that GSAs continue to implement an adopted GSP even prior to approval by DWR and/or during State Board intervention. Therefore, SOKR GSAs must continue to implement the adopted SOKR GSP in the interim until the Kern County Subbasin GSP is adopted. Key aspects of Plan implementation to occur in 2024 include: (1) Monitoring, Data Collection and Data Gap Filling; (2) Projects & Management Action (P/MA) Implementation; (3) Intrabasin Coordination; (4) Stakeholder Engagement; (5) Reporting; and (6) Enforcement and Response Actions. As described in the MOA, each of the three GSAs is responsible for implementing the SOKR GSP within its respective management area, bearing its own costs with respect to activities and responsibilities under the MOA, and no GSA will implement the GSP within any other GSA's management area without consent. Therefore, the Scope of Work below does not address these GSA-specific efforts but is rather focused exclusively on coordinated SOKR work efforts related to GSA administration, intra-basin coordination, SOKR GSP implementation, and transition to the amended Kern County Subbasin GSP implementation. The Scope of Work was developed under the assumption that the SOKR GSAs will maintain the terms of the MOA for the foreseeable future, as indicated by the SOKR Executive Committee in its 9 May 2024 meeting.

SCOPE OF WORK

The tasks listed below are to (1) facilitate coordination and administration of the SOKR GSAs, (2) provide GSP implementation support, (3) provide as-needed amended Kern County Subbasin GSP implementation support, and (4) provide project management. These tasks cover the above services through 31 December 2024.

Task 1 – GSA Coordination and Administration

EKI will support the SOKR GSAs to coordinate, participate in, and manage the following SOKR meetings scheduled through 31 December 2024, including development of meeting agendas, as-needed PowerPoint presentations, meeting minutes, as-needed meeting packet memoranda, and supporting documents:

- Up to twenty-four (24) weekly SOKR Managers meetings. EKI has assumed virtual attendance of up to three staff at all SOKR Managers meetings. It is assumed that these meetings will be one hour in length and will include discussion of key technical matters, as well as development of agendas for the SOKR Executive Committee meetings.
- Up to six (6) monthly SOKR Executive Committee meetings. EKI has assumed virtual attendance of up to three staff at the Executive Committee meetings, and that these meetings will be two hours in length.

EKI assumes that SOKR GSAs will maintain and post Executive Committee materials to both the SOKR GSP website and their own individual GSA websites. EKI will work with the SOKR GSAs to ensure Executive Committee meeting materials are posted to websites under Brown Act noticing requirements.

Task 2 – GSP Implementation Support

Task 2 involves intrabasin coordination and ongoing SOKR-specific technical support with developing a Subbasin-wide strategic response to the DWR Inadequate determination and SWRCB intervention process, and coordinated revised GSP. Under Task 2, EKI will support the SOKR GSAs' involvement with Subbasin-wide activities that are not eligible for Subbasin cost share, including:

- Attendance at Subbasin coordination meetings with other Kern Subbasin GSAs, including attendance at Basin Study Update meetings and as-needed support and attendance at Kern Subbasin coordination committee meetings and managers meetings. EKI has assumed virtual attendance of up to two staff and/or support at up to twenty-seven (27) meetings, and that these meetings will be two hours in length.
- Participation by two staff in one (1) follow-up meeting with SWRCB staff to discuss the "red flag review" of the draft Amended Subbasin Plan, assumed to be two hours in length.
- Participation in the water budget subcommittee. For budgeting purposes, EKI has assumed virtual attendance by one staff member at up to twenty-four (24) meetings and that these meetings will be one and a half hours in length.

Task 3 – As-needed Amended Kern County Subbasin GSP Implementation Support

Under Task 3, EKI will provide as-needed and as-directed support on Subbasin-wide work efforts related to draft Amended Kern County Subbasin GSP revisions and technical work that is not specific to the SOKR GSAs, and may be eligible for future Subbasin cost share. Example anticipated efforts may include:

- Additional technical analysis in response to the SWRCB staff "red flag review" for inclusion in the Amended Subbasin Plan prior to adoption;
- Review of well mitigation program development materials;
- Review of and draft responses to public comment letters received on the draft Amended Subbasin Plan, for instance from State Water Project California Aqueduct Subsidence Program (CASP); and
- Reinitiation and participation in TWG subcommittees for water levels, water quality, and/or subsidence.

Services under this task will be performed on an as-needed and as-requested basis, and will be charged on a time and materials basis.

Task 4 – Project Management

EKI will provide project management and as-needed consultation services during the GSP implementation process. This task includes coordination and communications with the SOKR GSAs, and project management services by EKI including the preparation of invoices, coordination of staff, and monthly progress reports.

PERSONNEL

EKI's staff members who will lead this project include Anona Dutton, P.G., C.Hg. (Officer) and Christina Lucero, P.G. (Associate 1), with technical and strategic support provided by Chris Heppner, P.G., Ph.D. (Supervising 1), Aaron Lewis, P.E., P.G., (Associate 2), and Sarah Hodson, P.E. (Grade 3); grades in parentheses are for purposes of billing in accordance with the attached Schedule of Charges (see Attachment A). Other EKI staff members will be assigned to assist with the performance of the tasks as required to meet project commitments.

TERMS AND CONDITIONS

All work performed by EKI under this Task Order will be performed pursuant to the Terms and Conditions of our existing Agreement with Wheeler Ridge-Maricopa Water Storage District.

COMPENSATION

Inasmuch as the exact level of effort required to complete the above Scope of Work cannot be known precisely, EKI proposes to perform the work on a time and materials expense reimbursement basis in accordance with our current Schedule of Charges (Attachment A). Based on EKI's level of effort over the last six months, the estimated budget for this scope of work is $131,000 (see also Table 1). We will inform you if the level of effort exceeds this anticipated amount.

Table 1. Estimated Budget

TASK	Cost Estimate
Task 1 – GSA Coordination and Administration	$43,100
Task 2 – GSP Implementation Support	$51,000
Task 3 – As-needed Amended Kern County Subbasin GSP Implementation Support	$30,000
Task 4 – Project Management	$6,900
TOTAL:	**$131,000**

SCHEDULE

Upon authorization to proceed, EKI is prepared to start work on the above Scope of Work immediately. This Scope of Work will cover work efforts conducted from 1 July 2024 through 31 December 2024. EKI will inform the SOKR GSAs of any issues that arise that may affect the schedule for completion or impact the anticipated level of effort. This Task Order covers a six-month period.

We are happy to discuss the proposed approach and anticipated level of effort for these tasks in more detail with you and look forward to working with you on this important project. If this Task Order meets with your approval, please sign where noted below and return a fully executed copy to our office to

confirm authorization to proceed. Please call if you have any questions or wish to discuss this proposal in greater detail.

Very truly yours,

EKI ENVIRONMENT & WATER, INC.

John Fio
Principal Hydrogeologist

AUTHORIZATION
WHEELER RIDGE-MARICOPA WATER STORAGE DISTRICT (CLIENT)

By_____

Title_____

Date_____

Attachments

Attachment A. 2024 Schedule of Charges

Client/Address: **Wheeler Ridge-Maricopa Water Storage District**
12109 Hwy 166
Bakersfield, CA 93313

Proposal/Agreement Date: 3 July 2024

EKI Proposal/Project # C20055.04

SCHEDULE OF CHARGES FOR EKI ENVIRONMENT & WATER, INC. **1 January 2024**

Personnel Classification	Hourly Rate
Officer and Chief Engineer-Scientist	345
Principal Engineer-Scientist	333
Supervising I, Engineer-Scientist	323
Supervising II, Engineer-Scientist	310
Senior I, Engineer-Scientist	297
Senior II, Engineer-Scientist	286
Associate I, Engineer-Scientist	275
Associate II, Engineer-Scientist	259
Engineer-Scientist, Grade 1	241
Engineer-Scientist, Grade 2	227
Engineer-Scientist, Grade 3	209
Engineer-Scientist, Grade 4	187
Engineer-Scientist, Grade 5	165
Engineer-Scientist, Grade 6	144
Project Assistant	135
Technician	129
Senior GIS / Database Analyst	170
CADD Operator / GIS Analyst	148
Senior Administrative Assistant	162
Administrative Assistant	128
Secretary	108

Direct Expenses

Reimbursement for direct expenses, as listed below, incurred in connection with the work will be at cost plus fifteen percent (15%) for items such as:

a. Maps, photographs, reproductions, printing, equipment rental, and special supplies related to the work.
b. Consultants, soils engineers, surveyors, drillers, laboratories, and contractors.
c. Rented vehicles, local public transportation and taxis, travel, and subsistence.
d. Special fees, insurance, permits, and licenses applicable to the work.
e. Outside computer processing, computation, and proprietary programs purchased for the work.

A Communication charge for e-mail access, web conferencing, cellphone calls, messaging and data access, file sharing, local and long distance telephone calls and conferences, facsimile transmittals, standard delivery U.S. postage, and incidental in-house copying will be charged at a rate of 4% of labor charges. Large volume copying of project documents, e.g., bound reports for distribution or project-specific reference files, will be charged as a project expense as described above.

Reimbursement for company-owned automobiles, except trucks and four-wheel drive vehicles, used in connection with the work will be at the rate of sixty cents ($0.60) per mile. The rate for company-owned trucks and four-wheel drive vehicles will be seventy-five cents ($0.75) per mile. There will be an additional charge of thirty dollars ($30.00) per day for vehicles used for field work. Reimbursement for use of personal vehicles will be at the federally allowed rate plus fifteen percent (15%).

CADD and other specialized software computer time will be charged at twenty dollars ($20.00) per hour. In-house material and equipment charges will be in accordance with the current rate schedule or special quotation. Excise taxes, if any, will be added as a direct expense.

Rate for professional staff for legal proceedings or as expert witnesses will be at a rate of one and one-half times the Hourly Rates specified above.

The foregoing Schedule of Charges is incorporated into the Agreement for the Services of EKI Environment & Water, Inc. and may be updated annually.

June 7, 2024

Via electronic mail

California State Water Resources Control Board
Attn.: Courtney Tyler, Clerk to the Board
P.O. Box 100
Sacramento, CA 95812-0100
Board.Clerk@waterboards.ca.gov

Re: Kern County Subbasin Final Draft Amended Groundwater Sustainability Plan

Dear Chair Esquivel and Members of the Board,

As follow-up to the letter sent March 29, 2024, the Kern County Subbasin (Subbasin) Groundwater Sustainability Agencies and Management Area (collectively, Kern GSAs) are pleased to inform the State Water Resources Control Board (SWRCB or Board) Members that they have completed and submitted to SWRCB Staff a final draft of an amended Kern County Subbasin Groundwater Sustainability Plan (Amended Subbasin Plan or Plan). The Amended Subbasin Plan is the product of many months of collective and collaborative work, undertaken in coordination with SWRCB Staff, to revamp the Revised 2020/2022 Groundwater Sustainability Plans (GSP) to remedy deficiencies previously identified by the Department of Water Resources (DWR).[i]

The Kern GSAs believe the Amended Subbasin Plan accomplishes the Subbasin's stated aim to develop "a well-explained Plan that will be implemented in a coordinated manner" to achieve sustainable groundwater management locally as required by the Sustainable Groundwater Management Act (SGMA).[ii] The Executive Summary for the Plan is appended hereto as Attachment 1.

The Kern GSAs reiterate the March 29th request that the Board consider, and direct SWRCB Staff to evaluate, the Amended Subbasin Plan as the basis for any staff report or decision whether to hold a probationary hearing for the Subbasin in January 2025.[iii] We have also published the Plan for public review and comment and intend to conduct additional stakeholder outreach this summer, prior to convening public hearings to consider the Plan for adoption this fall.[iv]

The March 29 letter included a detailed overview of how the Kern GSAs addressed the DWR identified deficiencies in an amended Plan and a crosswalk to show where elements were addressed in previous plans and in this plan.[v] In the interest of brevity, the Kern GSAs briefly highlight some key elements of the Amended Subbasin Plan below.

As with prior plan submittals, the Amended Subbasin Plan was submitted as multiple GSPs alongside a coordination agreement. However, in contrast to prior submittals, all the GSPs that comprise the Amended Subbasin Plan rely on the same data and

methodologies for defining sustainable management criteria (SMCs) and undesirable results.[vi] This has led to uniform definitions for SMCs and undesirable results that will apply to the entire Subbasin.[vii] *See* Attachment 1, p. ES-10. Furthermore, where independent plans were submitted, the plans indicate where supplemental information was included by presenting that information on clearly marked blue pages.

In addition to providing uniformity, the Kern GSAs have revised the definitions for SMCs and undesirable results to address deficiencies that DWR identified as not satisfying the requirements of SGMA and implementing regulations. *See* Attachment 1, pp. ES-12 – ES-15. The Kern GSAs have also revised the SMCs and undesirable results definitions for water quality in response to SWRCB Staff's feedback.[viii] *See id.* at ES-13. In other words, the revised SMCs and undesirable results definitions are more consistent *and* more protective of beneficial uses and users of groundwater, with higher Minimum Thresholds (MTs) than the prior GSPs.

The Amended Subbasin Plan includes improvements to the Subbasin's Monitoring Network, such as expanded coverage through increased spatial distribution and density of representative monitoring wells and sites for water levels, water quality, and subsidence. These improvements will produce more robust monitoring data which, in turn, will facilitate more accurate assessments of Sustainability Indicators throughout the Subbasin and more effective adaptive management over the planning horizon. *See id.* at ES-15. The Amended Subbasin Plan also incorporates a new MT Exceedance Policy, which not only provides that all GSAs will be notified of any MT exceedance detected by the monitoring, but also increases the responsible GSA's accountability for promptly implementing measures to investigate and address the MT exceedance before it triggers an undesirable result or impairs the Subbasin's ability to achieve its Sustainability Goal.[ix] *See id.*

Lastly, the Amended Subbasin Plan also includes more detailed description of each GSA's portfolio of Projects and Management Actions (P/MAs), and more rigorous analysis to validate projections that the GSAs' implementation of the P/MAs should be more than sufficient to address the Subbasin's water budget deficit.[x] And although the GSAs' portfolios include a mix of demand reduction and water supply augmentation, overall, the Plan shows the Subbasin will rely on demand reduction to make up 80 percent of the water budget deficit. *See id.* at ES-16.

The Kern GSAs believe the Amended Subbasin Plan, with the changes highlighted above, is an adequate[xi] and successful[xii] plan. It shows how the Kern GSAs will implement their responsibilities "for achieving long-term sustainable management of their groundwater basins" by 2040.[xiii]

The Kern GSAs presented the Plan to SWRCB Staff on May 29, 2024, and also desire the opportunity to present it to individual Board Members.[xiv] The Kern GSAs also look forward to receiving comments from Board Members, SWRCB Staff, and other stakeholders that will further improve the Plan prior to it being considered for adoption

this fall. As it is intended to be adopted to supersede the Subbasin's Revised 2020/2022 GSPs before January 2025, the Kern GSAs request again that the Board consider, and direct SWRCB Staff to evaluate, the Amended Subbasin Plan as the basis for any staff report or decision whether to hold a probationary hearing for the Subbasin in January 2025.

The Kern GSAs appreciate the Board's consideration and seek your further assistance in avoiding state intervention. If you have any questions regarding this letter or the Amended Subbasin Plan, please contact the Plan Manager, Kristin Pittack, MS, at (760) 223-5062 or kpittack@rinconconsultants.com.

Respectfully submitted,

Kristin Pittack, MS
Kern County Subbasin Plan Manager/Point of Contact

cc:

Kern GSAs	**Director**
Arvin-Edison	Derek Yurosek dyurosek@bolthouseproperties.com
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Tejon Castac	Mark Valpredo mbvalpredo@gmail.com
Kern Delta	Rodney Palla rodney@rpfarms.com
City of Bakersfield	Bob Smith bobsmith727@icloud.com
KCWA ID4	Gene Lundquist glundquist@kcwa.com
Southern San Joaquin	Brandon Morris brandon@bdmorrisfarms.com
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Eastside Water	Chad Hathaway chathaway@hathawayllc.com
Rosedale	Gary Unruh garuh@msn.com
Henry Miller	Jeof Wyrick jwyrick@jgboswell.com
Olcese	Jim Nickel jlnickel@nfllc.net
Buena Vista	Terry Chicca tchicca@aol.com

[i] *See* DWR, "Inadequate Determination of the Revised 2020 Groundwater Sustainability Plans Submitted for the San Joaquin Valley – Kern County Subbasin" (Mar. 2, 2023) (Inadequate Determination).

[ii] Letter from Kristin Pittack to Vice Chair Dorene D'Adamo (Mar. 29, 2024), p. 2. As the Board has explained, "SGMA prioritizes local management and empowers GSAs with the tools necessary to sustainably manage their groundwater basins …. SGMA assigns DWR and the State Water Board distinct roles and authorities to ensure local groundwater management achieves SGMA's goals." SWRCB, "Sustainable Groundwater Management Act Frequently Asked Questions," (Oct. 12, 2023) (SGMA FAQs), p. 4; *see also* Water Code § 10720.1(d) (describing the Legislature's intent, "[t]o provide local groundwater agencies with the authority and the technical and financial assistance necessary to sustainably manage groundwater.").

[iii] Under Water Code section 10735.2(a) the Board has discretion to designate the Subbasin as probationary: "The board, after notice and a public hearing, may designate a high-or medium priority basin as a probationary basin …." On December 19, 2023, SWRCB Staff presented to the Board a revised, tentative probationary hearing schedule that recommended a January 2025 hearing date for the Kern Subbasin.

[iv] Water Code section 10728.4 provides, "[a] groundwater sustainability agency may adopt or amend a groundwater sustainability plan after a public hearing, held at least 90 days after providing notice to a city or county within the area of the proposed plan or amendment." *See also* 23 Cal. Code Regs. § 355.10 ("An Agency may amend a Plan at any time ….").

[v] Letter from Kristin Pittack to Vice Chair Dorene D'Adamo (Mar. 29, 2024). The Kern GSAs have also provided regular briefings to SWRCB Staff over the course of nine meetings. *See id.*

[vi] The Amended Subbasin Plan also continues to rely on the same data and methodologies for certain assumptions related to Basin Setting, as required by Water Code section 10727.6.

[vii] The multiple plans are organized the same and include substantially the same information. The supplemental information that differentiates the GSP versions is provided on blue pages so the differences can be readily identified by reviewers.

[viii] Revisions include consideration of additional constituents of concern and implementation of additional monitoring measures. Attachment 1, p. ES-13.

[ix] The responsible GSA will also be responsible for mitigating any immediate impacts to drinking water caused by the MT exceedance in accordance with the Subbasin's Well Registry and Well Mitigation Program, which will be funded and operational by 2025. *See* Attachment 1, p. ES-12.

[x] The Kern GSAs have built in a safety buffer that accounts for the possibility that P/MAs may not be 100 percent effective: "In the event full estimated P/MA benefits are not ultimately realized, there is a built-in "safety factor" of nearly 2.0 and a plan to ensure the Subbasin project deficit is reduced by 2040." Attachment 1, p. ES-16.

[xi] DWR described the importance of beginning with an adequate plan that could then be adaptively managed over the 20-year planning horizon:

> SGMA requires basins to achieve sustainability within 20 years of Plan implementation and requires local GSAs and [DWR] to continually evaluate a basin's progress towards achieving its sustainability goals…. It is therefore essential that each basin begin with a Plan that adequately analyzes, discloses, and informs and that each Plan conform with certain requirements of SGMA and substantially comply with the GSP Regulations.

Inadequate Determination, p. 4.

[xii] The SWRCB has described a "successful" plan as one that "outline[s] how groundwater will be sustainably used and managed to avoid" undesirable results. SGMA FAQs, p. 4

[xiii] SGMA FAQs, p. 4.

[xiv] *See* Attachment 2, May 28, 2024, *Final Draft Amended Kern County Subbasin Groundwater Sustainability Plan*, PowerPoint Presentation

Attachment 1

EXECUTIVE SUMMARY

ES.1. Introduction

On 16 September 2014, the California legislature enacted the Sustainable Groundwater Management Act (SGMA) for the primary purpose of achieving and maintaining sustainability within the State's high and medium priority groundwater basins. Key tenets of SGMA are preservation of local control, use of best available data and science, and active engagement and consideration of all beneficial uses and users of groundwater. SGMA requires local agencies to form Groundwater Sustainability Agencies (GSAs) tasked with managing basins sustainably through the development and implementation of Groundwater Sustainability Plans (GSPs). Under SGMA, GSPs must contain certain elements, the most significant of which include: a Sustainability Goal; a description of the area covered by the GSP (i.e., the "Plan Area"); a description of the Basin Setting, including the hydrogeologic conceptual model (HCM), historical and current groundwater conditions, and a water budget; locally-defined Sustainable Management Criteria (SMCs); monitoring networks and protocols for each applicable sustainability indicator; and a description of projects and/or management actions (P/MAs) that will be implemented to achieve or maintain sustainability. SGMA also requires active stakeholder outreach to ensure that all beneficial uses and users of groundwater have the opportunity to provide input into the GSP development and implementation process.

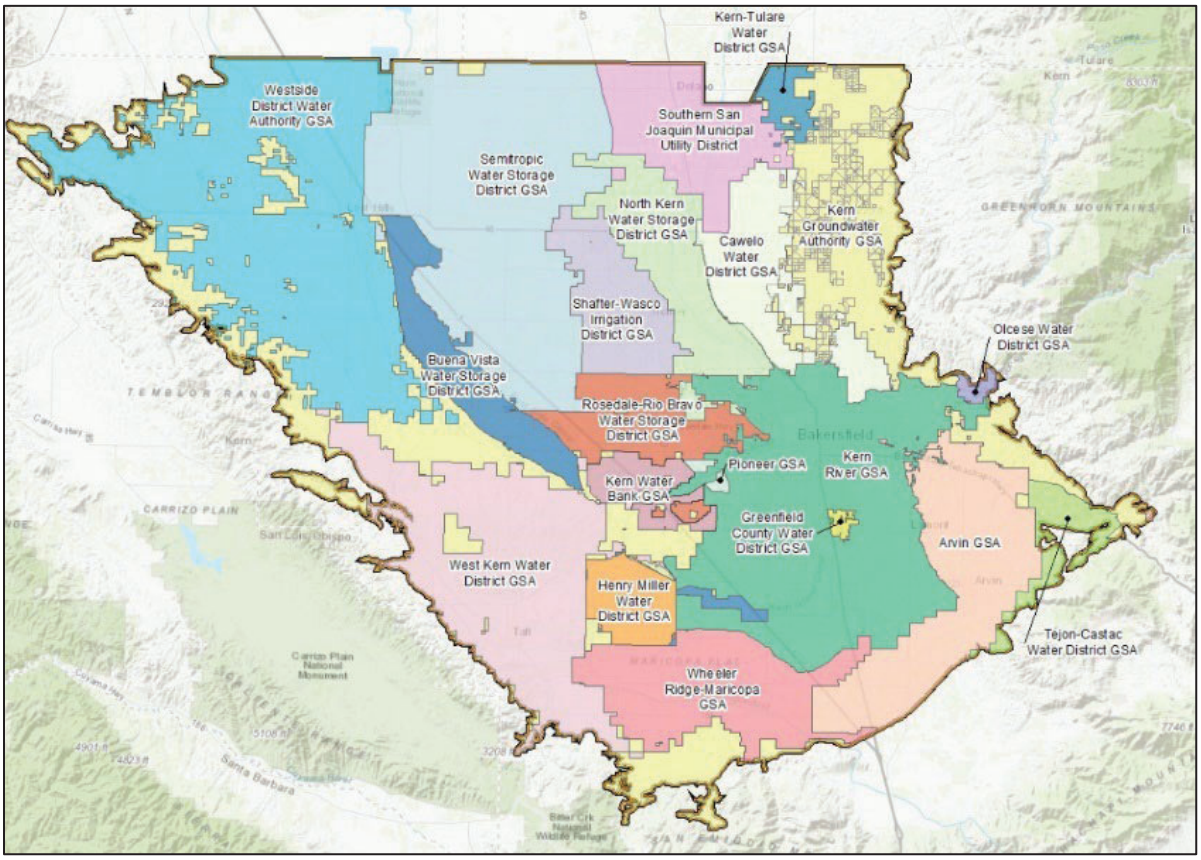


Figure ES-1. Kern County Subbasin GSAs

The Kern County Subbasin of the San Joaquin Valley Groundwater Basin[1] (referred to herein as the "Kern Subbasin" or "Subbasin"; Figure ES-1) is one of 21 basins and subbasins identified by the California Department of Water Resources (DWR) as being critically overdrafted. This designation triggered an accelerated timeline for GSP development by 2020 and long-term sustainability by 2040.

Intra-Basin Coordination
Subbasin GSAs have implemented intra-basin coordination activities, including greater engagement regarding the development, planning, financing, environmental review, permitting, implementation, and long-term monitoring of GSP activities.

Technical Working Group (TWG)
In May 2023, the Subbasin GSAs assembled the TWG to produce Subbasin-wide technical solutions to address DWR deficiencies. The TWG meets weekly to discuss work products and to develop technical recommendations.

In compliance with this timeline, the Subbasin GSAs submitted five GSPs (collectively the "Plan") to DWR in January 2020 (2020 GSPs). DWR designated the Plan as "incomplete" in January 2022 and identified three main deficiencies with the Subbasin Plan. In July 2022, the GSAs amended and resubmitted six GSPs to DWR to address the identified deficiencies (2022 GSPs). In March 2023, DWR designated the Plan as "inadequate" after reviewing the 2022 GSPs. As a result, the Subbasin is subject to the state intervention process defined in SGMA regulations and under California Water Code (CWC) § 10735 *et seq*. The first formal step of the state intervention process would be a public hearing convened by the State Water Resources Control Board (SWRCB) to consider designating the Subbasin as probationary based on any specific deficiencies in its Plan that remain unresolved at the time of hearing.

In response to the DWR determination, the 20 Subbasin GSAs worked together to develop amendments to the 2022 GSPs and accompanying Coordination Agreement, resulting in this "Amended Subbasin Plan", which has been designed to meet the SGMA regulatory requirements, respond to the three deficiencies identified by DWR, address comments provided by SWRCB staff during technical meetings, and increase coordination among the Subbasin GSAs, other local agencies, and stakeholders.[2] The Amended Subbasin Plan provides a clear and coordinated path to achieve sustainable groundwater management.

Revisions made in response to DWR's Corrective Actions are highlighted throughout the Executive Summary using icons specific to each deficiency and are further detailed in the "crosswalk" Table 1-3 in Section 1 and the relevant sections of the Amended Subbasin Plan.

Deficiency #1: The GSPs do not establish Undesirable Results (URs) that are consistent for the entire Subbasin.

[1] Kern County Subbasin (DWR No. 5-022.14) located within San Joaquin Valley Groundwater Basin (DWR No. 5-022).
[2] The Amended Subbasin Plan is being submitted as multiple plans with a Coordination Agreement. The Kern Subbasin GSP is being adopted by fourteen (14) GSAs, which collectively manage the majority of the Subbasin (67.6 percent). Six (6) GSAs are each separately adopting a version of the Kern Subbasin GSP that includes supplemental information specific to the portion of the Subbasin it manages. This supplemental information is provided on blue pages so differences between the versions can be readily identified by reviewers.

Deficiency #2: The Subbasin's Chronic Lowering of Groundwater Levels Sustainable Management Criteria (SMCs) do not satisfy the requirements of SGMA and the GSP Regulations.

Deficiency #3: The Subbasin's Land Subsidence SMCs do not satisfy the requirements of SGMA and the GSP Regulations.

In addition to revisions that were made to address the DWR Corrective Actions, the GSAs updated this Amended Subbasin Plan to incorporate current data and information and made revisions that address feedback received during the nine technical meetings with SWRCB staff or other comments in DWR's determination letter. These revisions are noted in this Executive Summary using the icon shown below and are further detailed in the "crosswalk" Table 1-2 in Section 1 and the relevant sections of the Amended Subbasin Plan.

Additional Revision: Revision to incorporate new data or information or respond to DWR and SWRCB comments that were not identified as Corrective Actions.

ES.2. Sustainability Goal

The Subbasin GSAs share a common groundwater management Sustainability Goal for the Subbasin, which is foundational to the development and implementation of the Amended Subbasin Plan. The sustainability goal for the Kern County Subbasin is to implement the Amended Subbasin Plan to achieve sustainable groundwater management within the 20-year implementation schedule. Achieving the sustainability goal will be demonstrated by eliminating chronic lowering of groundwater levels caused by overdraft conditions and avoiding Undesirable Results for groundwater levels, groundwater storage, land subsidence, and groundwater quality. This goal will be accomplished through the following objectives:

- Implement the Subbasin Community Engagement Plan.
- Eliminate long-term groundwater overdraft and attain sustainability through conjunctive use, water banking, and demand management programs.
- Continuously monitor and evaluate groundwater conditions to avoid undesirable results.
- Maintain long-term sustainability of water resources available to the Subbasin.
- Maintain a comprehensive database of beneficial uses and users to inform on the efficacy of groundwater management policies and programs.

ES.3. Agency Information

The Amended Subbasin Plan has been prepared by 20 GSAs and one coordinated groundwater management area. Each GSA applied for and was granted exclusive GSA status for a portion of the Subbasin under CWC §10723(c) and §10723.8. The Coordination Agreement establishes the governance structure for the GSAs' cooperative and coordinated exercise of authorities and responsibilities under SGMA. Each GSA has designated representative(s) to help lead or participate in coordination activities among Subbasin GSAs, State agencies, local governments, local water suppliers, neighboring entities, non-governmental organizations, and other stakeholders. Pursuant to 23 CCR §357.4(b)(1), a single Subbasin "Plan Manager" (Point of Contact) has been established as shown in Table ES-1, for the purposes of organizing the

various coordination and Technical Working Group (TWG) activities and ensuring cohesion between GSA activities.

Table ES-1. Plan Manager Contact Information

Plan Manager	E-mail	Phone
Kristin Pittack	kpittack@rinconconsultants.com	559-228-9925 (O) 760-223-5062 (C)

ES.4. GSP Organization

The Amended Subbasin Plan details and consolidates the GSAs' plans for achieving long-term sustainability in the Subbasin. The Amended Subbasin Plan also addresses DWR's inadequate determination and feedback provided by the SWRCB staff. It follows the organizational structure required under the GSP regulations, including Introduction (Section 1), Sustainability Goal (Sections 2 and 12), Agency Information (Section 3), GSP Organization (Section 4), Description of Plan Area (Section 5), Basin Setting (Sections 6 through 9), Management Areas (Section 10), Sustainable Management Criteria (Sections 11 through 13), Projects and Management Actions (Section 14), Monitoring Networks (Section 15), and Plan Implementation (Section 16). Several figures, tables, and sources are provided which outline the GSAs' analyses and review that was used to formulate the implementation actions and the planned P/MAs to achieve the Sustainability Goal.

ES.5. Plan Area

The 1.78-million-acre Subbasin covers a large portion of the southern end of the Tulare Lake Hydrologic Region, including most of the San Joaquin Valley area within Kern County. As shown on Figure ES-2, the Subbasin neighbors four separate and distinct groundwater subbasins: (1) the Tulare Lake Subbasin (DWR 5-022.12), (2) the Tule Subbasin (DWR 5-022-13), (3) the Kettleman Plain Subbasin (DWR 5-022.17), and (4) the White Wolf Subbasin (DWR 5-022.18), all also located within the San Joaquin Valley Groundwater Basin. The Tulare Lake and Tule subbasins are similarly categorized as "high priority" and "critically overdrafted" by DWR. The adjacent Tulare Lake, Tule, and White Wolf subbasins are each managed according to separate GSPs and SGMA-related activities but the Subbasin GSAs have consulted with

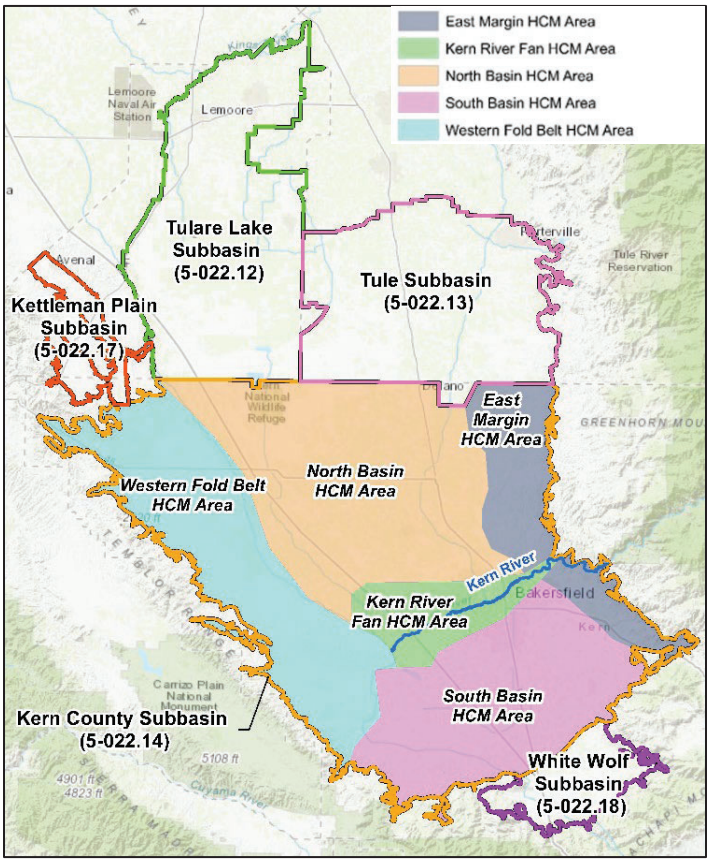


Figure ES-2. HCM Areas and Adjacent Subbasins

these subbasins to coordinate cross-boundary interactions (e.g., accounting for groundwater subsurface inflows and outflows and evaluating consistency of SMCs).

For purposes of this Amended Subbasin Plan, the Subbasin has been separated into five HCM areas that are characterized by specific geologic and hydrogeologic attributes that dictate land and water uses in the area. The HCM areas include the Western Fold Belt, East Margin, Kern River Fan, North Basin (North of Kern River Fan), and South Basin (South of Kern River Fan), as shown on Figure ES-2.

As shown on Figure ES-3, the 1.78 million acres of land within the Subbasin (the "Plan Area") are predominately irrigated agriculture, including a diverse array of crop types dictated largely by the economics of private farming and water supply availability. Actively cropped agricultural lands encompass around 644,000 acres of the Subbasin, or approximately 36 percent of the total area. Roughly 15 percent of the Plan Area includes idle agricultural lands not actively irrigated (256,000 acres), another eight percent includes urban, suburban, and rural communities (81,000 acres), five percent of lands are industrial oil fields (159,000 acres), and the remaining 36 percent of land uses include native and riparian vegetation, refuge, recharge basins, and other land uses. Water demands are met with diversions from the Kern River and other local creeks, imported surface water from the State Water Project (SWP) and Central Valley Project (CVP), groundwater, and in more recent years, recycled water.

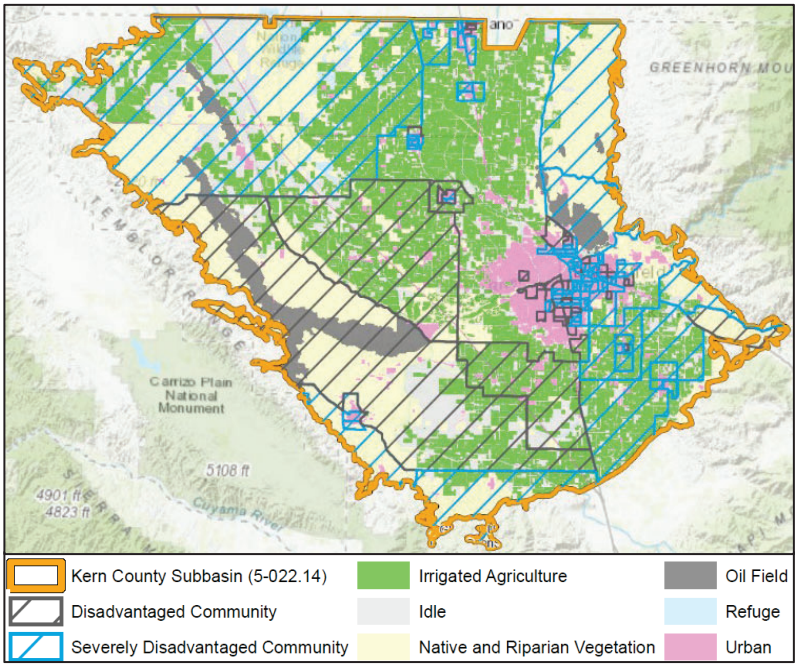


Figure ES- 3. Land Use and Disadvantaged Communities

The Subbasin is completely contained within Kern County and includes eight incorporated cities (Arvin, Bakersfield, Delano, Maricopa, McFarland, Shafter, Taft, and Wasco) as well as numerous unincorporated communities (census designated places), including: Buttonwillow, Cherokee Strip, Derby Acres, Dustin Acres, Edison, Edmundson Acres, Famoso, Fellows, Ford City, Fuller Acres, Greenacres, Greenfield, Lamont, Lost Hills, McKittrick, Mettler, Mexican Colony, Oildale, Rosedale, Smith Corner, South Taft, Taft Heights, Tupman, Valley Acres, and Weedpatch, as shown on Figure 5-8 in Section 5.

Disadvantaged communities (DACs) or severely disadvantaged communities (SDACs) identified based on the median household income (MHI) of the area compared to the statewide MHI, cover approximately 1.445 million acres, or 81 percent of the Subbasin.

ES.6. Basin Setting - Hydrogeologic Conceptual Model

Situated within the topographic horseshoe that is bordered on the east and southeast by the Sierra Nevada, on the west by the Southern Coast Ranges, and on the south by the San Emigdio and Tehachapi Mountains, the Subbasin is large and geologically complex with regional faulting, folding, and three principal aquifers.

The three principal aquifers within the Subbasin include the Primary Alluvial Principal Aquifer, the Santa Margarita Principal Aquifer, and the Olcese Principal Aquifer. The Primary Alluvial Principal Aquifer extends over most of the Subbasin and consists of the Tulare and Kern River Formations plus the overlying recent alluvium. It exhibits varying groundwater conditions and is classified as confined in areas with laterally extensive clay aquitards, semiconfined where vertical flow is impeded, and unconfined in various portions of the Subbasin. The Primary Alluvial Principal Aquifer is the most productive freshwater aquifer and the source of nearly all groundwater used within the Subbasin. The Santa Margarita Principal Aquifer is a confined unit located in the northeastern portion of the Subbasin and is comprised of both the Santa Margarita Formation and Olcese Sand. The Olcese Principal Aquifer is a confined unit located in the vicinity of where the Kern River enters the eastern portion of the Subbasin and consists of the Olcese Sand.

The Subbasin contains several surface water features. The Kern River is the largest river in the Subbasin and flows east to west through the center of the Subbasin, as shown on Figure ES-2. The Subbasin also contains significant infrastructure that conveys imported water supplies, including the Friant-Kern Canal, California Aqueduct, and local canals.

Significant direct recharge in the Subbasin occurs through managed conjunctive use projects and water banking (storage) projects along the Kern River and in other areas of the Subbasin. The conjunctive use projects are dedicated to the replenishment of the Subbasin, while the water banking projects store surplus surface water supplies from the SWP, CVP, Kern River, and other flood waters for subsequent recovery for beneficial uses. [3]

A series of hydrogeologic cross-sections have been developed to illustrate the Subbasin physical characteristics and the formations present in the Plan Area. An example cross section is provided on Figure ES-4 to illustrate the conditions parallel to the southern Subbasin boundary. Cross sections for other portions of the Subbasin are shown in Section 7. This example shows the prevalence of Tulare and Kern River Formations, with the Santa Margarita Formation and Olcese Sand shallowing in the East Margin, and the extent of clay layers which tend to dictate groundwater percolation and lateral flows. The cross sections developed improve understanding of Subbasin conditions across the HCM Areas and provide the information necessary to develop water budgets from the Subbasin's local numerical model, establish representative monitoring networks, develop applicable SMCs, and effectively convey hydrogeologic conditions to stakeholder groups.

[3] "The storing of water underground … constitutes a beneficial use of water if the water so stored is thereafter applied to the beneficial purposes for which the appropriation for storage was made." CWC § 1242.

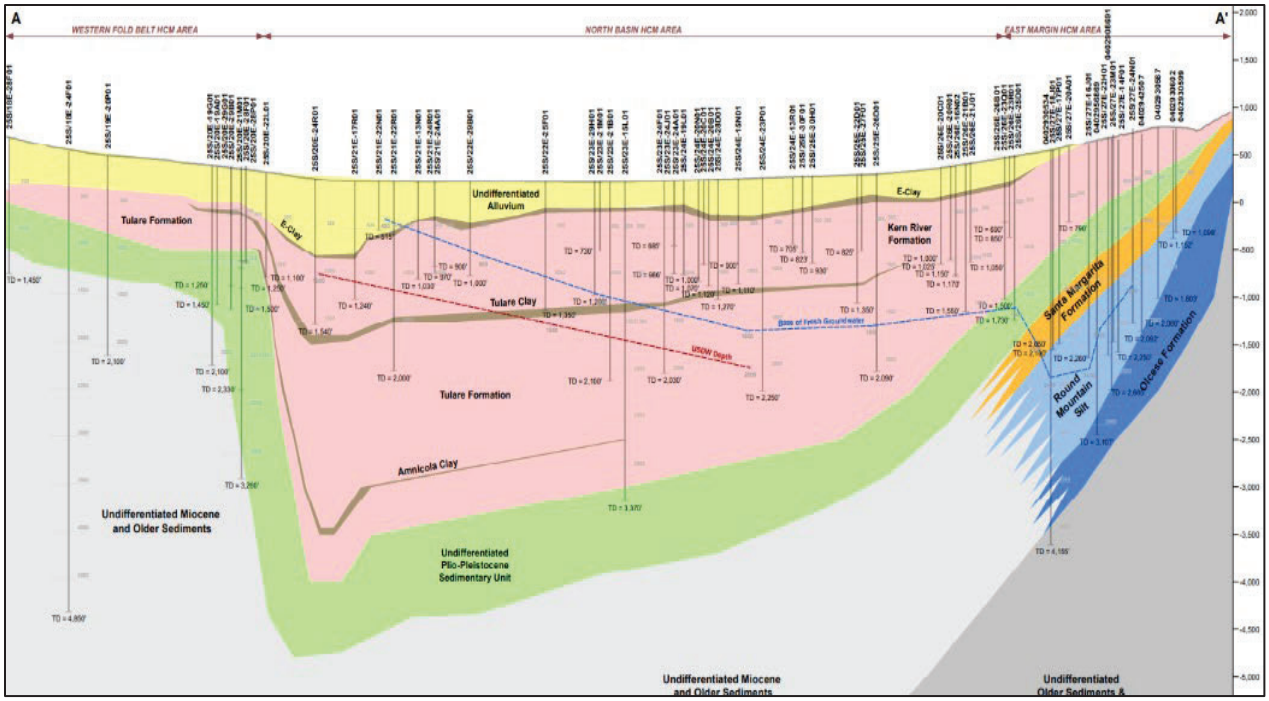


Figure ES-4. Subbasin Cross Section

ES.7. Basin Setting - Current and Historical Groundwater Conditions

Information on the Subbasin's current groundwater conditions with respect to the SGMA-defined "Sustainability Indicators" are presented in the Amended Subbasin Plan and summarized below.

Groundwater Levels: Groundwater levels within the Subbasin are presented using contour maps depicting the current (2023) seasonal high and seasonal low for each principal aquifer (Primary Alluvial Principal Aquifer, Santa Margarita Principal Aquifer, and Olcese Principal Aquifer) and hydrographs for various wells across the Subbasin depicting long-term groundwater elevations, historical highs and lows, and hydraulic gradients between principal aquifers. The available data indicate that the Kern River effectively bisects the Plan Area (as shown in Figure ES-2**)** and acts as a groundwater divide whereby groundwater tends to diverge from the river, with groundwater north or south of the river flowing toward extraction areas. Relative highs and lows appear to be controlled, at least in part, by the distribution of groundwater pumping and surface water deliveries. Hydrographs show the long-term positive effects of surface water importation and managed aquifer recharge and water banking activities in raising groundwater levels, tempered by the effects of the recent severe droughts**.**

Groundwater Storage: Changes in groundwater storage over selected time periods were calculated from the Subbasin's local numerical model (C2VSimFG-Kern) and validated through a groundwater storage calculation that considers changes in measured groundwater elevations across the Subbasin. The estimated total usable storage in the Primary Alluvial Principal Aquifer ranges from 90 to 260 million acre-feet (AF). The change in groundwater storage over the historical and current water budget periods of Water Years (WYs) 1995-2023 generally corresponds with the variation in climatic conditions and surface water supply availability. The most significant annual changes in overall storage have historically occurred in the Subbasin's

water banking areas where significant surface water storage occurs in wet years, and significant recovery pumping occurs in dry years.

Groundwater Quality: Certain constituents of concern (COCs) have been identified in the Subbasin above drinking water standards and/or agricultural water quality goals. The Subbasin employed the SWRCB's methodology for identifying COCs from State and Regional Water Board datasets, and assessed the following constituents: 1,2,3-trichloropropane (1,2,3-TCP), arsenic, benzene, dibromochloropropane (DBCP), ethylene dibromide (EDB), gross alpha radiation, nitrate (as N), nitrate + nitrite (as N), nitrite (as N), perfluorooctane sulfonate (PFOS), perfluorooctanoic acid (PFOA), selenium, total dissolved solids (TDS), and uranium. A potential correlation with groundwater elevations and/or groundwater pumping has been identified in some localized areas of the Subbasin for 1,2,3-TCP, arsenic, and nitrate. The GSAs have identified several Representative Monitoring Wells for Degraded Water Quality (RMWs-WQ) to collect coincident groundwater elevation and groundwater quality data in these areas to better understand the relationship between COC concentrations and groundwater management in the future. SMCs have been established for a subset of the COCs assessed (arsenic, nitrate, nitrite, nitrate + nitrite, TDS, 1,2,3-TCP, and uranium).

Land Subsidence: Land subsidence has been documented within the San Joaquin Valley over both historical and recent timeframes, with the greatest documented subsidence occurring north of the Subbasin (see Figure ES-5). Land subsidence rates within the Subbasin range from 0 to 0.3 feet per year resulting in a cumulative land subsidence of 0 to 2.41 feet since 2015. Land subsidence caused by factors within the GSAs' authority to manage is due to aquitard depressurization following groundwater withdrawal, which tends to be greater in the areas that rely solely on groundwater for water supply (agricultural and urban pumping) and are underlain by a greater proportion of fine-grained deposits. Additional causes of subsidence that are outside of the GSAs' control, include oil and gas extraction, natural processes (i.e. faulting), expansive soil types susceptible to hydrocompaction, and others (e.g., deficient Aqueduct pre-construction hydro-compaction, age of infrastructure, etc.). Recent technical studies commissioned by the GSAs have been able to differentiate the subsidence signals associated with these other causal factors.

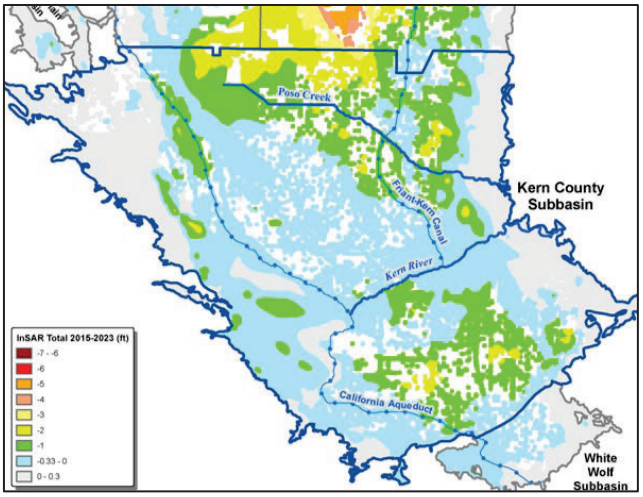


Figure ES-5. Cumulative Subsidence between 2015 – 2023 (ft) based on InSAR data

Land subsidence has the potential to affect Regional Critical Infrastructure (i.e., the California Aqueduct and Friant-Kern Canal) and local GSA Area Critical Infrastructure, including gravity-driven water conveyance systems (canals). To assess subsidence, the Subbasin has conducted a series of studies and continues on-going collaboration and communication with the California Aqueduct Subsidence Program (CASP) and the Friant Water Authority.

Seawater Intrusion: The Subbasin is located far from coastal areas, and therefore seawater intrusion is not considered to be a relevant Sustainability Indicator.

Interconnected Surface Water: Data on depth to groundwater and other local conditions indicate that the vast majority of surface water features in the Subbasin are not connected to groundwater, and in the few limited areas where a connection may occur, the connection is likely transient, short-lived, and involves shallow or perched groundwater that is not part of the principal aquifer systems. As such, the areas of vegetation mapped as Natural Communities Commonly Associated with Groundwater (NCCAG) are not likely groundwater dependent ecosystems (GDEs) but rather supported by irrigation water infiltration and agricultural return flows. In these areas, infiltration of irrigation water and agricultural return flows is impeded by clay soils and subsurface clay sediments creating shallow perched groundwater that is disconnected from groundwater in the principal aquifers that are the focus of SGMA.

ES.8. Basin Setting – Water Budget Information

The GSAs coordinated on the development of a single, coordinated Subbasin-wide water budget presented in this Amended Subbasin Plan using a local numerical model (C2VSimFG-Kern) based on the California Central Valley Groundwater/Surface Water Simulation Model (C2VSim).

The model was extended to incorporate recent conditions and estimate the current water budget over WYs 2015-2023. Modeling results show that the Subbasin, as a whole, had a total storage deficit of approximately 274,200 acre-feet per year (AFY) over the historical period (i.e., WYs 1995-2014) and approximately 344,000 AFY over the current period (i.e., WYs 2015-2023). The Sustainable Yield has been conservatively estimated to be approximately 1.31 million AFY based on results for the historical period using model-calculated groundwater pumping and recharge to quantify the volume of water that, if pumped over the water budget period of interest, would have resulted in zero change in storage.

Water budget information under projected (future) conditions has also been developed for the Subbasin using C2VSimFG-Kern with DWR-provided inputs for climate variables (i.e., adjusted precipitation and evapotranspiration) and water supply assumptions (i.e., changes to imported water supplies). This approach allows for inclusion of more complex variables, including factors influenced by climate change, resulting in more accurate projections. The projected water budget assesses the magnitude of the net water supply deficit under future conditions that would need to be addressed through P/MAs to prevent URs and achieve the Sustainability Goal. Three projected water budget scenarios have been developed for this analysis: (1) a Baseline Scenario, (2) a 2030 Climate Change Scenario, and (3) a 2070 Climate Change Scenario. The P/MAs developed by the Subbasin GSAs have also been incorporated into the C2VSimFG-Kern 2030 Climate Change Scenario input files to evaluate their effectiveness in addressing the projected deficit of 372,000 AFY by 2040 (identified as “With Projects” scenarios in Table ES-2 below). The results in Table ES-2 demonstrate that the planned P/MAs, once fully implemented, provide a reasonable approach to achieve sustainable groundwater management.

There are inherent limitations in using models to predict future conditions given the uncertainties surrounding input variables (e.g., uncertain future hydrologic conditions, recharge, and pumping

volumes). A revised Subbasin-wide model is being developed and calibrated as part of Plan implementation and as additional information becomes available through the Basin Study (P/MA KSB-4, see Appendix P).

Table ES-2. Summary of Simulated Change in Groundwater Storage Results

Period / Scenario	General Hydrologic Conditions of Period	Change in Groundwater Storage (acre-feet per year)
Historical Period (WYs 1995-2015)	Average	-274,200
Current Period (WYs 2015-2023)	Dry	-344,019
Projected Period (WYs 2041-2070) Baseline	Average	-324,326
Projected Period (WYs 2041-2070) Baseline with Projects	Average	85,578
Projected Period (WYs 2041-2070) 2030 Climate Change	Average with DWR climate change adjustments	-372,120
Projected Period (WYs 2041-2070) 2030 Climate Change with Projects	Average with DWR climate change adjustments	46,829
Projected Period (WYs 2041-2070) 2070 Climate Change	Average with DWR climate change adjustments	-472,336
Projected Period (WYs 2041-2070) 2070 Climate Change with Projects	Average with DWR climate change adjustments	-45,969

Note: a negative change in groundwater storage indicates a deficit and a positive change in groundwater storage indicates a surplus.

ES.9. Sustainable Management Criteria

SMCs are the metrics by which groundwater sustainability is evaluated under SGMA. Uniform definitions for the following SMC components have been developed in the Amended Subbasin Plan through a coordinated effort of the GSAs.

- **Undesirable Results (URs):** URs are the significant and unreasonable occurrence of conditions, for any of the six Sustainability Indicators (shown in Table ES-3), that adversely affect beneficial uses and users and substantially interfere with surface land uses in the Subbasin.
- **Minimum Thresholds (MTs):** MTs are the numeric criteria for each Sustainability Indicator that, if exceeded in a locally defined combination of monitoring sites, may constitute an UR for that indicator.
- **Measurable Objectives (MOs):** MOs are specific, quantifiable goals for the maintenance or improvement of groundwater conditions. MOs use the same units and metrics as the MTs allowing for direct comparison.
- **Interim Milestones (IMs):** IMs are a set of target values representing measurable groundwater conditions in increments of five (5) years over the 20-year statutory timeline for achieving sustainability.

Table ES-3 summarizes the revised SMCs for each applicable Sustainability Indicator in the Subbasin.

Table ES-3. Summary of Sustainable Management Criteria

Sustainability Indicator	Undesirable Result	Minimum Threshold	Measurable Objective
Chronic Lowering of Groundwater Levels	One of the following occurs: (1) More than 15 drinking water wells are reported dry in any given year. If 15 drinking water wells were impacted every year, no more than 255 drinking water wells cumulatively would be impacted by 2040, or (2) MTs are exceeded in at least 25% of RMW-WLs over a single year (i.e., two consecutive seasonal measurements)	The lower of: (1) Groundwater level in 2030 if the regional trend is extended from the 2015 low (the MO), or (2) Groundwater level that allows for operational flexibility below the 2015 low, based on an RMW-WL-specific record of groundwater level fluctuations	The 2015 low groundwater elevation.
Reduction of Groundwater Storage	A cumulative reduction in usable groundwater storage of 9.3 MAF in the Primary Principal Alluvial Aquifer relative to the baseline (WY 2015) total usable groundwater storage volume.	MTs for Chronic Lowering of Groundwater Levels used as a proxy	MOs for Chronic Lowering of Groundwater Levels used as a proxy
Seawater Intrusion	Groundwater conditions in the Subbasin show that Seawater Intrusion is not present and is not anticipated to be present in the future, and therefore, the Sustainability Indicator is not applicable.		
Degraded Water Quality	MTs for a groundwater quality COC are exceeded in three RMW-WQs in an HCM area based the average of confirmed seasonal samples and can be attributed based on a technical analysis to groundwater management actions (e.g., groundwater level changes).	The greater concentration of: (1) The applicable health-based screening standard, or (2) The maximum pre-2015 baseline concentration at each RMW-WQ. For wells with insufficient pre-2015 data, 2010-2023 data is used to determine maximum baseline concentrations at each RMW-WQ. For wells with insufficient 2010-2023 data, the MT is set as the 90th percentile 2010-2023 baseline concentration in the applicable HCM area.	The greater concentration of: (1) The applicable health-based screening standard, or (2) The median pre-2015 baseline concentration at each RMW-WQ. For wells with insufficient pre-2015 data, 2010-2023 data is used to determine median baseline concentration at each RMW-WQ. For wells with insufficient 2010-2023 data, the MO is set as the 90th percentile 2010-2023 baseline concentration in the applicable HCM area.

Sustainability Indicator	Undesirable Result	Minimum Threshold	Measurable Objective
Land Subsidence	MT extent of subsidence is exceeded at any RMS-LS or as measured using InSAR data published annually by DWR averaged across an HCM area. Note: The GSAs' management authority does not extend to all activities and processes that cause Subbasin subsidence..	MTs are established along critical infrastructure as a rate and extent based on specific impacts to critical infrastructure or as an observed or allowable rate of subsidence, as determined by the Subbasin's risk-based approach. Additionally, MTs are set for the Subbasin as the average historical rate of subsidence in each HCM area from 2015-2023.	50% of the MT rate and MT extent.
Interconnected Surface Water	Groundwater conditions in the Subbasin show that there are a few areas with potential Interconnected Surface Waters. However, data show the connection is likely transient, short-lived, and involves shallow or perched groundwater that is not part of the principal aquifer systems. Therefore, the Sustainability Indicator is not applicable to the Subbasin.		

Justification of Sustainable Management Criteria:

The primary beneficial uses and users of groundwater in the Subbasin include agricultural users, industrial users, domestic well owners, small community wells, and municipal well operators. Additionally, surface land uses susceptible to land subsidence (infrastructure) have been categorized based on their subsidence vulnerability and impacts to beneficial users (critical regional, GSA area, and other). The SMCs in Table ES-3 have been developed to prevent significant and unreasonable impacts to groundwater uses and users and surface land uses and are justified (i.e., will not result in significant and unreasonable impacts) as follows for all applicable Sustainability Indicators.

Chronic Lowering of Groundwater Levels

- Impacts to Beneficial Users: A robust Subbasin-wide well impacts analysis has been conducted using the revised MTs and the Subbasin well inventory to quantify potential impacts to beneficial users at the MTs as compared to the Chronic Lowering of Groundwater Levels URs definition. The most likely scenario shows 77 total drinking water wells being potentially impacted by 2040 at the projected MTs, a potential impact that can be addressed effectively by the Well Mitigation Program. The Subbasin calculated the "depletion of supply" for this scenario to quantify the percentage of urban supply that may be impacted at MTs and the UR definition. Under the most likely scenario, 1.2 percent of the total estimated urban water supply would be impacted by 2040. With implementation of the proposed P/MAs, the model shows that only 13 drinking water wells would potentially be dewatered, which corresponds to < 0.01 percent of the Subbasin's urban pumping. By January 2025, the Subbasin GSAs plan to implement a Well Mitigation Program to address potential impacts from Chronic Lowering of Groundwater Levels to domestic and small community wells.
- Consideration of Adjacent Basins: Groundwater level SMCs were compared to those in the neighboring Tule, Tulare Lake, and White Wolf Subbasins and are not projected to

cause a change in historical gradients or prevent neighboring subbasins from achieving their Sustainability Goals.

Reduction of Groundwater Storage: A cumulative reduction of 9.3 MAF (up to 10 percent) of the total usable storage in the Subbasin relative to the 2015 baseline equates to the difference in storage between the MT and MO groundwater levels. This decline in groundwater storage, which allows for a four-year drought, is not unreasonable given the large size of the basin and total usable storage estimates, and it is similar to the storage change observed during recent multi-year droughts without unreasonable dewatering of wells. Therefore, the Chronic Lowering of Groundwater Levels SMCs serve as a reasonable proxy for Reduction of Groundwater Storage. The four to ten percent reduction of total usable storage is calculated by assuming that all Primary Alluvial Principal Aquifer Representative Monitoring Wells for Chronic Lowering of Groundwater Levels (RMW-WLs) exceed the MTs. However, URs for Chronic Lowering of Groundwater Levels are defined to occur when 25 percent of RMW-WLs exceed their MTs, which would correspond to a lower decline in storage than the UR criteria for Reduction of Groundwater Storage, thus sufficiently protecting against impacts to beneficial uses and users.

Degraded Water Quality

- Impacts to Beneficial Users: The MTs for Degraded Water Quality are based on the greater of (a) the primary Maximum Contaminant Levels (MCLs) or (b) pre-2015 baseline concentrations for each RMW. Where pre-2015 historical data is insufficient, the HCM area baseline is used as proxy for pre-2015 baseline concentrations. MTs are identified for six COCs, including arsenic, nitrate, nitrite, TDS, 1,2,3-TCP, and uranium. Primary MCLs are health-based regulatory drinking water standards set to protect drinking water use, which is the most sensitive beneficial use. In some areas of the Subbasin, water quality has been historically degraded and not used for drinking water. For those areas of the Subbasin it is appropriate to set MTs as a baseline condition, as "the plan may, but is not required to, address undesirable results that occurred before, and have not been corrected by, January 1, 2015" (CWC § 10727.2(b)(4)).

- Consideration of Adjacent Basins: The Chronic Lowering of Groundwater Levels MTs are not predicted to cause significant changes to local groundwater gradients and are thus should be protective in terms of preventing migration of poor-quality water within the Subbasin. Groundwater flow exits the Subbasin across the northern Subbasin boundary (Figure 8-1). The adjacent subbasins similarly have SMCs established for key COCs that impact drinking water users.

Land Subsidence: The SMCs for Land Subsidence have been developed in recognition that subsidence in the Subbasin has been caused by several factors, some of which are within the GSAs' authorities to control ("GSA-related" subsidence - e.g., groundwater pumping for agricultural and urban uses), and others that are outside of the GSAs' authorities to control ("non-GSA" subsidence – e.g., oil and gas extraction, natural processes, and expansive soil types susceptible to hydro-compaction). The SMCs for Land Subsidence have been developed to avoid impacts of subsidence caused by GSA-managed activities through a risk-based approach that considers subsidence potential and vulnerability.

- Impacts to Beneficial Users: MTs for Regional Critical Infrastructure were developed in coordination with operators of the infrastructure (i.e., Friant Water Authority and CASP) and designed to avoid significant and unreasonable impacts to infrastructure functionality. The MTs for GSA Area Critical Infrastructure are based on subsidence rates that have historically occurred and have been managed by Subbasin GSAs through ongoing maintenance and improvements to facilities. A change in slope analysis shows that for 98 percent of the Critical Infrastructure, the change in slope between 2024 and 2040 MTs is not projected to exceed typical safety factors. In addition to infrastructure specific MTs, MTs for the entire Subbasin are set based on HCM Area historical average subsidence rates. As such, the Subbasin will continue to monitor and report subsidence throughout the entire Subbasin, and coordinate with other entities that have interests in and responsibilities for land subsidence \ caused or influenced by activities or processes outside of the GSAs' management authorities.

- Consideration of Adjacent Basins: MT extents in the Subbasin are half the MT extents in the adjacent northward Tule and Tulare Lake subbasins. Therefore, implementation of the Amended Subbasin Plan would not prevent neighboring subbasins from achieving their Land Subsidence sustainability goal(s). Although Land Subsidence MTs in the adjacent southern White Wolf Subbasin are currently set using groundwater levels as a proxy, Subbasin GSAs are actively collaborating with the White Wolf GSA to ensure consistency as the White Wolf GSA develops more specific Land Subsidence SMCs.

Relationships Between Sustainability Indicators:

- **Chronic Lowering of Groundwater Levels** and **Reduction in Groundwater Storage** are directly, if not linearly, related. As shown in Table ES-3, groundwater level MTs are used as a proxy for Reduction of Groundwater Storage. If water levels in all Primary Alluvial Principal Aquifer RMW-WLs were to exceed MTs, a four to ten percent decline in total usable groundwater storage would occur relative to the baseline, which is not considered to be unreasonable.

- A trending analysis between **Degraded Water Quality** and **Chronic Lowering of Groundwater Levels** (and **Reduction of Groundwater Storage**, by proxy) shows no correlation for the majority of the Subbasin, except in some localized areas. RMWs have been selected in these areas to facilitate ongoing monitoring of the potential relationship between groundwater levels and water quality.

- An analysis has been conducted using historical groundwater level declines and cumulative **Land Subsidence** to project the future subsidence that would occur at **Chronic Lowering of Groundwater Level** MTs. The analysis shows that subsidence projected to occur at groundwater level MTs is less than the MTs for Land Subsidence along all critical infrastructure, which are considered protective of the functionality of critical infrastructure. Therefore, groundwater level MTs are protective of URs caused by Land Subsidence. However, it is noted that other non-GSA related subsidence could still contribute toward potential URs. The GSAs are integrating subsidence into the Subbasin's groundwater flow model as part of implementation of the Amended Subbasin Plan; results of which will be used to ensure that MTs for Chronic Lowering of Groundwater Levels are protective of MTs set for Land Subsidence.

- A potential effect of URs due to **Land Subsidence** is a **Reduction of Groundwater Storage** due to compaction of fine-grained subsurface layers during groundwater pumping. Through the correlation with Chronic Lowering of Groundwater Level SMCs, it is reasonable to conclude that Land Subsidence MTs will not cause an unreasonable Reduction of Groundwater Storage.
- Studies suggest that consolidation of subsurface layers with high clay content may liberate arsenic and cause **Degradation of Groundwater Quality**. However, there has been no observed correlation between **Land Subsidence** and any water quality COCs in the Subbasin. RMW--WQs have been selected in areas with historical subsidence to continue to monitor the potential relationship between subsidence and arsenic.

ES.10. Monitoring Network

The objective of the SGMA Monitoring Networks is to continue to collect sufficient data to allow for assessment of the Sustainability Indicators relevant to the Subbasin and determination of potential impacts to the beneficial uses and users of groundwater. The proposed SGMA Monitoring Network has been improved to ensure sufficient spatial distribution and spatial density. In the Subbasin, the SGMA Monitoring Network consists of 185 RMWs for groundwater levels (RMW-WL) and (by proxy) groundwater storage, 51 RMWs for monitoring groundwater quality (RWM-WQ), and 144 representative monitoring sites (RMSs) for monitoring land subsidence (including extensometers, benchmarks, and GPS). Additionally, the Subbasin will continue to rely on InSAR data to assess land subsidence across the Subbasin.

The SGMA Monitoring Networks for the Subbasin supplement other active monitoring networks and programs such as DWR's California Statewide Groundwater Elevation Monitoring (CASGEM) program, Irrigated Lands Regulatory Program (ILRP), Central Valley-Salinity Alternatives for Long-term Sustainability (CV-SALTS), and local groundwater monitoring programs, etc.

Data collected from the SGMA Monitoring Networks for the Subbasin will be uploaded to the Kern Subbasin Data Management System (DMS) that is maintained for the Subbasin and reported to the DWR in accordance with the Monitoring Protocols developed for the Subbasin. Data collected will undergo quality assurance and quality control at the GSA level prior to being uploaded in the DMS. In the instance of a single MT exceedance, all Subbasin GSAs will be notified which will initiate the MT Exceedance Policy and associated investigations (see Appendix Q).

ES.11. Projects and Management Actions (P/MAs)

Achieving sustainability in the Subbasin will require the implementation of P/MAs to address projected water budget deficits that contribute to groundwater level and storage declines, land subsidence, and water quality impacts. As such, the GSAs have developed a portfolio of P/MAs, each with specific projected benefits, implementation triggers, and costs; the portfolio includes 48 demand reduction management actions and 82 water supply augmentation projects.

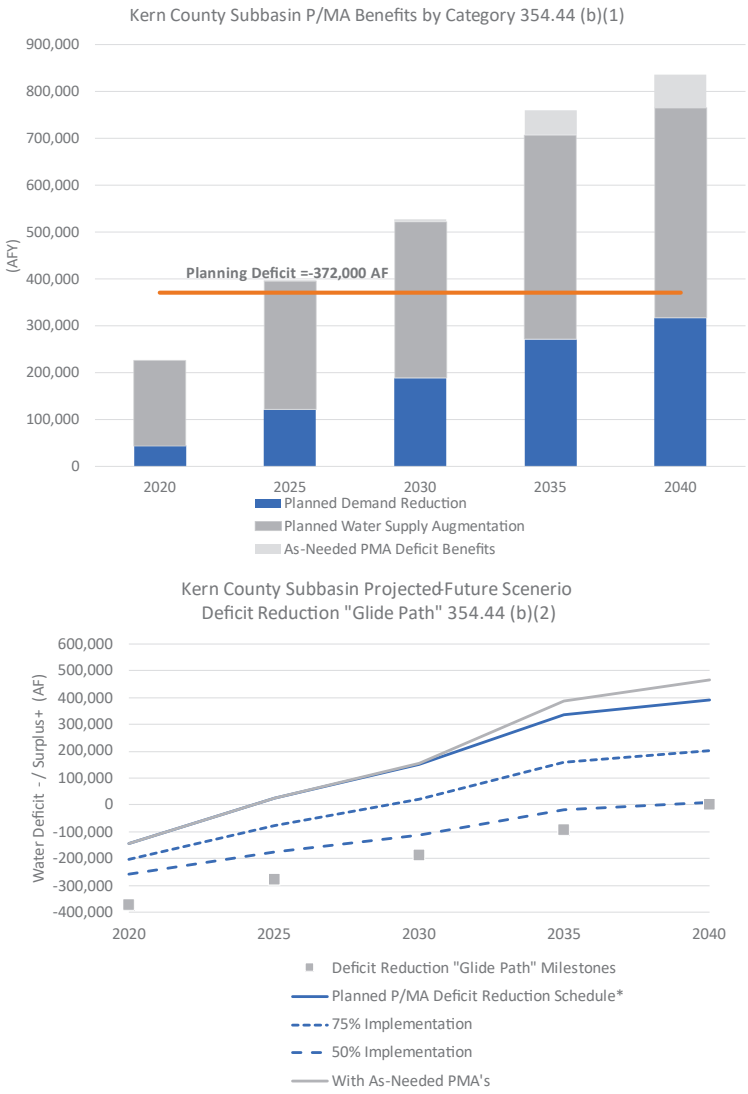


Figure ES-6. Projected-Future Scenario Overdraft Correction "Glide Path"

A linear "glide path" has been developed that will result in closing the projected Subbasin deficit[4] of approximately 372,000 AFY by 2040, of which over 80 percent is projected to be met with demand reduction P/MAs (see Figure ES-6). Subbasin GSAs have also included supply augmentation P/MAs. The Amended Subbasin Plan includes significantly more P/MAs than are required to address the projected deficit. In the event full estimated P/MA benefits are not ultimately realized, there is a built-in "safety factor" of nearly 2.0 and a plan to ensure the Subbasin projected deficit is reduced by 2040. Furthermore, under the MT Exceedance Policy, accelerated implementation of P/MAs could be triggered if MT exceedances occur.

The supply augmentation and demand reduction P/MAs identified by the Subbasin GSAs comprise a diverse portfolio of options that can be implemented as necessary to achieve sustainability from a total water quantity and water quality perspective. Additionally, eight Subbasin P/MAs establish Subbasin-wide programs, policies, collaborations, and ongoing data gap filling.

[4] The net deficit to be addressed by the 2040 GSP implementation deadline is the estimated deficit under the 2030 Climate Change scenario.

The modeled simulated results for the planned P/MAs indicate that P/MA implementation along the planned glide path will successfully achieve sustainability and avoid URs for Groundwater Levels (and by proxy for the other applicable Sustainability Indicators) throughout the Subbasin. Specifically, the local numerical model results have been used to compare simulated groundwater levels to the MTs and MOs for each RMW-WL. In general, across most of the Subbasin, groundwater levels fall near or below MTs without P/MAs implementation but are typically above the MT for the simulations that include P/MAs (see Figure ES-7).

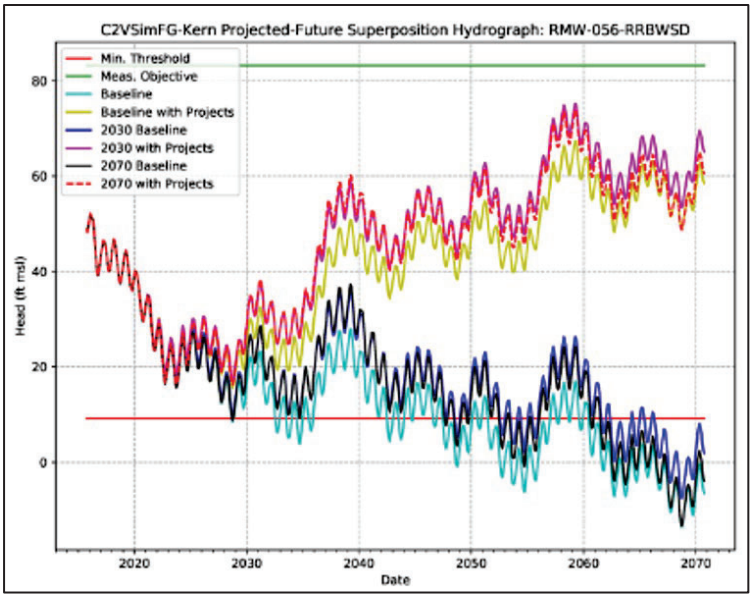


Figure ES-7. C2VSim-FG-Kern Projected Future Superposition Hydrograph (2030 Climate Change)

The implementation glide path identified by the Subbasin GSAs provides a general guide to how quickly these benefits are to be realized. To date the Subbasin GSAs have taken action on multiple P/MAs (e.g., development of new recharge basins). The exact schedule and order of implementation for other P/MAs, as seen in Figure ES-6, will be adaptively managed. Further analysis will be conducted to prioritize the P/MAs in consideration of factors such as permitting, engineering feasibility, cost effectiveness, need to prevent particular URs, funding opportunities, etc. In general, P/MAs being considered for implementation will be discussed during regular Board Meetings of each Subbasin GSA, which are noticed and open to the public. Additional stakeholder outreach efforts will be conducted prior to and during P/MA implementation, as required by law.

ES.12. Plan Implementation

Key SGMA and groundwater management implementation activities to be undertaken by the GSAs through 2040 include:

- Annual reporting.
- Monitoring and data collection.
- Data gap filling.
- P/MA implementation, including policy development to support Plan implementation.
- Technical and non-technical coordination with other water management entities within and outside the Subbasin.
- Continued outreach and engagement with stakeholders.
- Enforcement and response actions, including:

- MT Exceedance Policy
- Well Mitigation Program to be operational by 2025

- Evaluation and updates of this Plan as part of the required periodic evaluations (i.e., “five-year updates”).

Collectively, the SGMA implementation activities described herein demonstrate the Subbasin GSAs have been actively implementing specific P/MAs, policies, and programs to sustainably manage groundwater resources for all beneficial uses and users and continue to meet the Sustainability Goal defined for the Subbasin in Section ES.2 above, and in Section 2 and Section 12.

The costs associated with continued activities by the GSAs fall under two main categories: (1) costs for Subbasin-wide groundwater management activities, and (2) costs to individual GSAs to implement P/MAs within their jurisdictions, including capital/one-time costs and ongoing costs. Most costs for Subbasin-wide groundwater management activities are shared equally between the Subbasin GSAs and are estimated as an annual cost of approximately $1.4 million. For GSA-specific P/MA implementation, the GSAs intend to meet these cost obligations through a combination of landowner contributions (within their jurisdictions), partnering agencies, grant funding (DWR, United State Bureau of Reclamation, Federal Emergency Management Agency, etc.), locally available funds, and other available sources to be determined.

ES.13. Conclusion

The GSAs recognize that management of groundwater resources in California fundamentally changed with the passage of SGMA. SGMA has introduced well-defined concepts, actions, and deadlines necessary to achieve the stated goals and to avoid URs. For the “high priority” and “critically overdrafted” subbasins, there is a renewed sense of urgency to better monitor, prepare for, and respond to these issues. The GSAs are exercising their authorities to strategically plan and implement the coordinated groundwater management program established in this Amended Subbasin Plan within their jurisdictions. The Subbasin GSAs have committed to the coordinated SMCs established in this Amended Subbasin Plan to ensure that URs do not occur, and that any potential impacts to beneficial uses and users of groundwater that may occur as a result of groundwater management, especially to drinking water users, will be mitigated. Through the comprehensive monitoring network and P/MAs developed to meet modeled projected water budget under 2030 climate change conditions, the GSAs are confident they can achieve the Subbasin’s Sustainability Goal by the SGMA deadline. The GSAs are committed to long-term coordinated groundwater management, engaging with communities and stakeholders, and building consensus to ensure sufficient groundwater resources are reliably available for current and future generations.

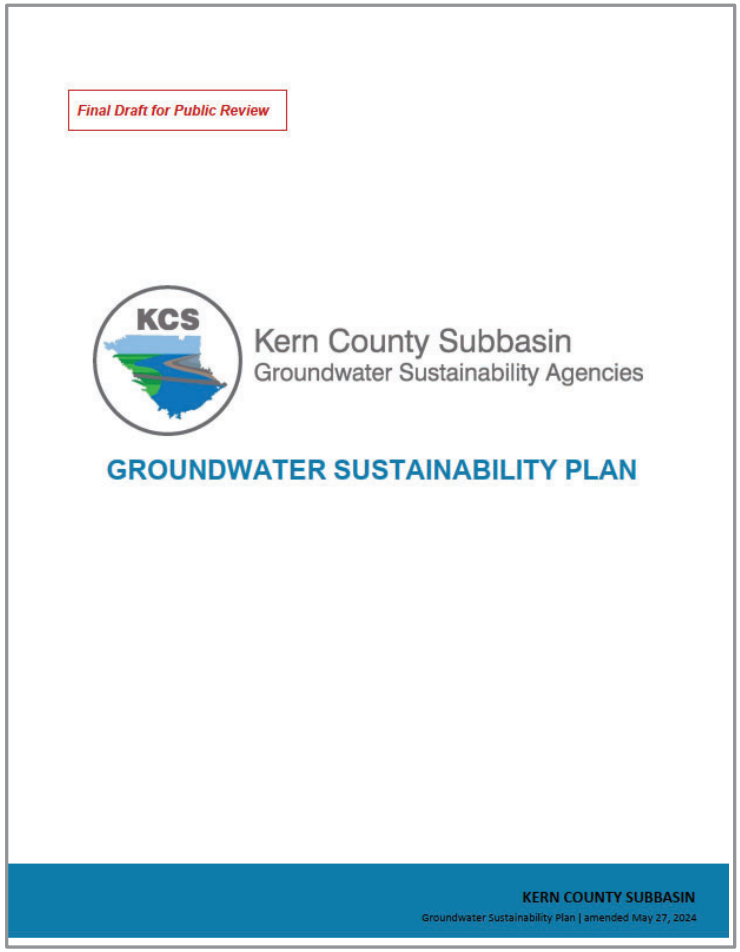
Attachment 2

FINAL DRAFT AMENDED KERN COUNTY SUBBASIN GROUNDWATER SUSTAINABILITY PLAN

29 MAY 2024

FINAL DRAFT AMENDED SUBBASIN PLAN ROADMAP

- ✓ Significantly improved coordination across the Subbasin, the largest in the State
- ✓ Standardized data and methodologies across the Subbasin
- ✓ Revised sustainable management criteria, including undesirable results, to be more protective
- ✓ Correlated Projects and Management Actions to achieving the sustainability goal
- ✓ Funded an operational well mitigation program by 2025



OVERVIEW

Final Draft Amended Subbasin Plan Development

Plan Overview

- Common Sections
- Separate Components
- Organization
- Addressing 2022 Deficiencies
- Key Section Takeaways

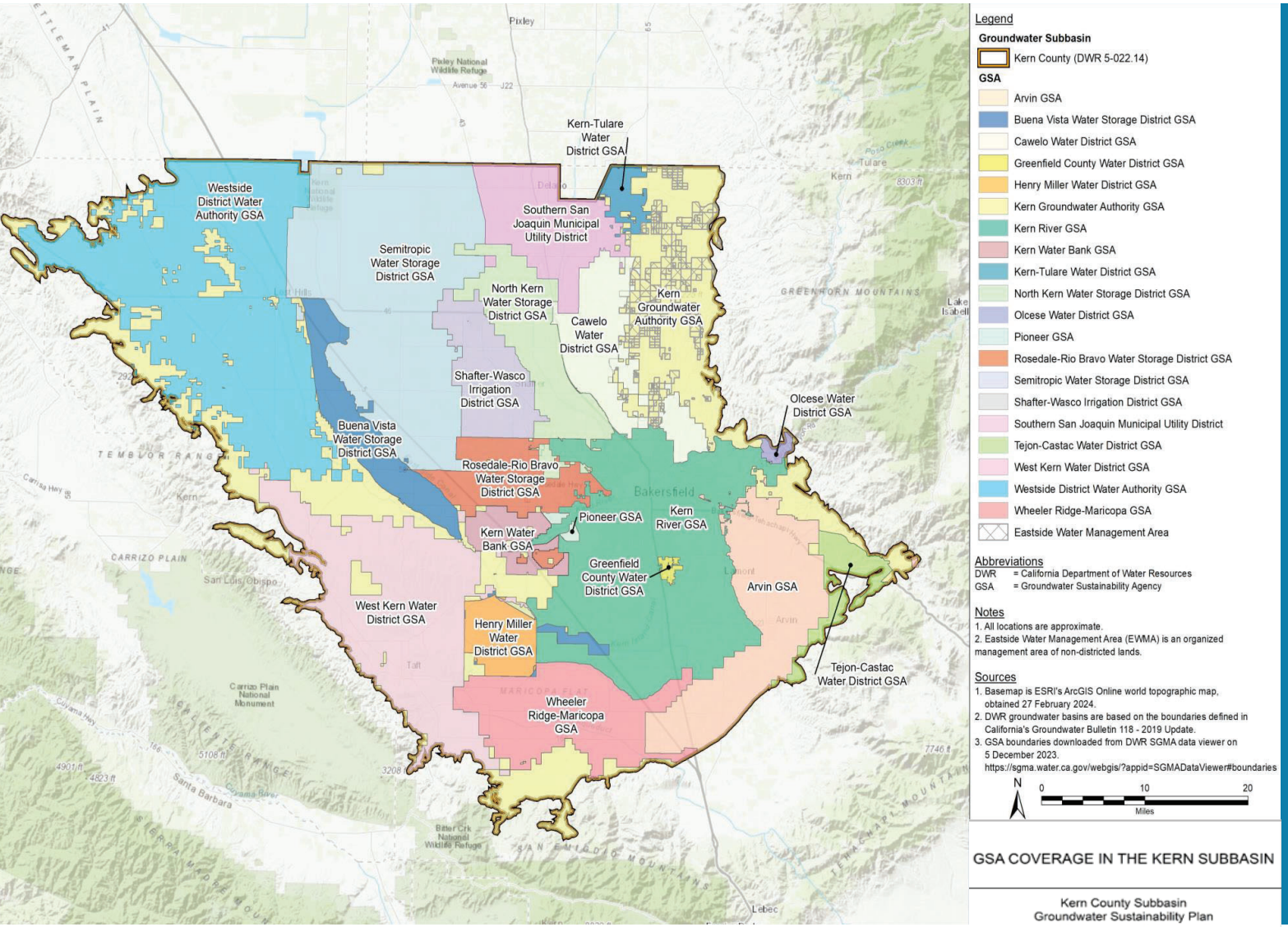
Next Steps

DWR DEFICIENCIES
MARCH 2023 INADEQUATE DETERMINATION LETTER

1. The GSPs do not establish undesirable results that are consistent for the entire Subbasin.

2. The Subbasin's chronic lowering of groundwater levels SMCs do not satisfy the requirements of SGMA and the GSP Regulations.

3. The Subbasin's land subsidence SMCs do not satisfy the requirements of SGMA and the GSP Regulations.



GSA COVERAGE IN THE KERN SUBBASIN

Kern County Subbasin
Groundwater Sustainability Plan

Kern County Subbasin Coordinated Amended Plan

2023 – 2025

Sustainable Management Criteria

Monitoring Network

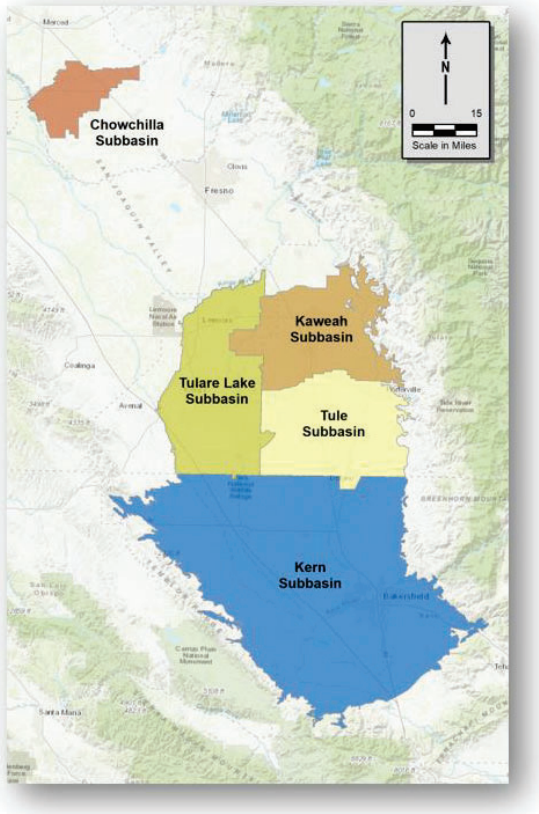
Water Budget

Projects and Management Actions

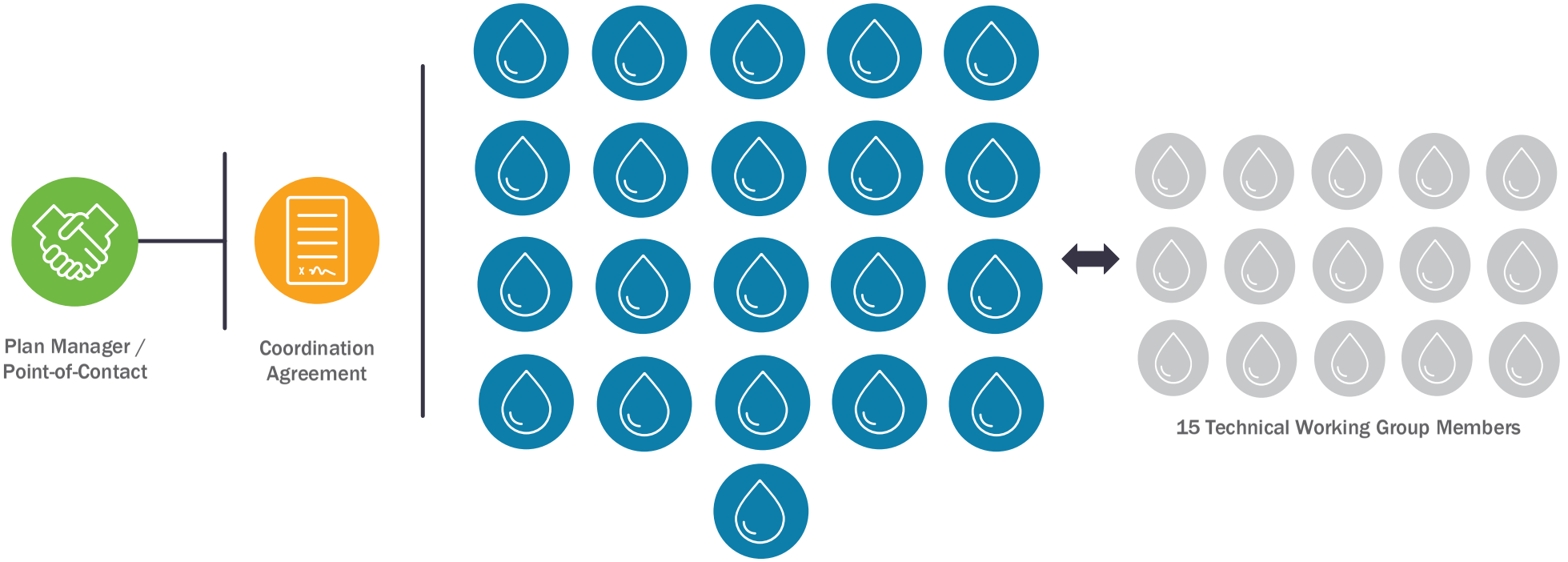
Plan Implementation

SUBBASIN PERSPECTIVE

- 1.782 million acres – **the largest Subbasin in the State**
- Based on acreage, the following could fit within the Kern County Subbasin:
  - 40 of the 71 approved basins across California, or
  - 6 of the 9 of the approved basins in the Central Valley, or
  - 4 of the other Inadequate subbasins (Tule, Tulare Lake, Kaweah, and Chowchilla) combined
- Over 25 water agencies represented



AMENDED SUBBASIN PLAN DEVELOPMENT



AMENDED SUBBASIN PLAN DEVELOPMENT

Participation from all GSAs

- 146+ Virtual/In-Person Meetings and Workshops
- Collective $1.3 million cost
  - Additional GSA-specific expenditures
- 11-month timeline

28	70	38	10
Managers	TWG	Subbasin	SWRCB

AMENDED SUBBASIN PLAN OVERVIEW

Amended Subbasin Plan:

Multiple almost identical GSPs +
Coordination Agreement

GSP Name	Area (acres)	Area (%)	GSA	GSP Content
Kern Subbasin GSP	1,205,482	67.6%	14 GSAs[1]	Kern Subbasin GSP
Buena Vista WSD GSA GSP	51,070	2.9%	Buena Vista WSD GSA	Kern Subbasin GSP Supplemental GSA information on **blue pages** identified in **Executive Summary**
Henry Miller GSA GSP	26,063	1.5%	Henry Miller GSA	
Kern-Tulare Water District GSA GSP	11,344	0.6%	Kern-Tulare Water District GSA	
Olcese Water District GSA GSP	3,199	0.2%	Olcese Water District GSA	
Semitropic Water Storage District GSA GSP	224,350	12.6%	Semitropic Water Storage District GSA	
Westside District Water Authority GSA GSP	260,812	14.6%	Westside District Water Authority GSA	

[1]*Arvin GSA, Cawelo Water District GSA, Kern Groundwater Authority GSA, Kern River GSA, Kern Water Bank GSA, Greenfield County Water Districts GSA, North Kern WSD GSA, Pioneer GSA, Rosedale-Rio Bravo WSD GSA, Shafter-Wasco ID GSA, Southern San Joaquin MUD GSA, Tejon-Castac Water District GSA, West Kern Water District GSA, Wheeler Ridge-Maricopa GSA*

OVERVIEW: SEPARATE COMPONENTS

GSP Coordination

Identical GSP Format

- Title Page
- Table of Contents
- Executive Summary Crosswalk: identifies Blue Pages Location

All Blue Pages *located at the end of identified Sections*

- Does not impact GSP numbering

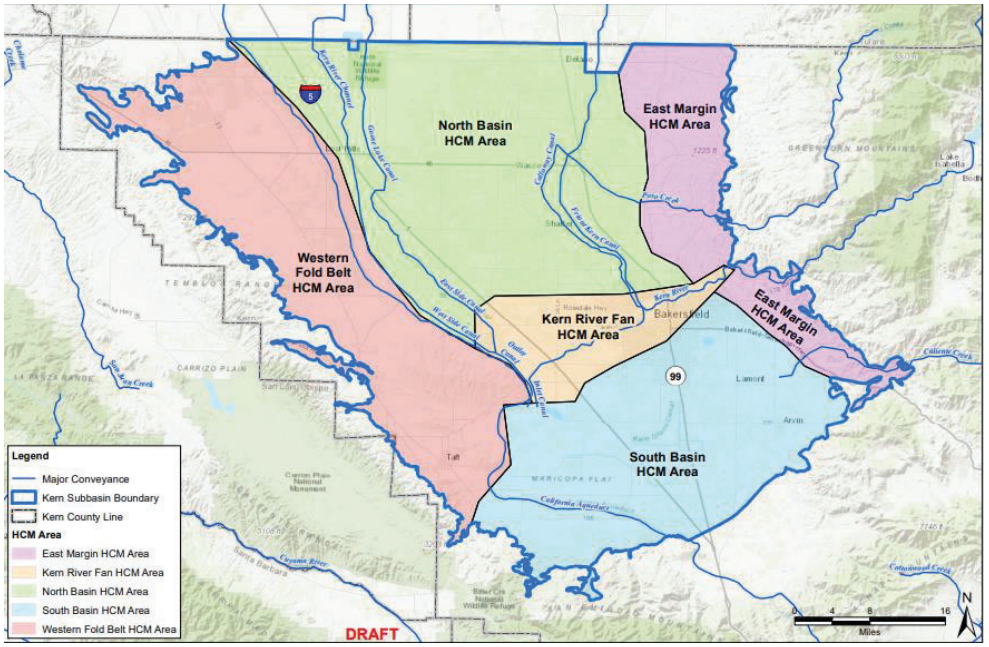
Provided word verification with submittal

- Confirms no changes to text on white pages

GSP Name	Blue Page Locations
Buena Vista WSD GSA GSP	• Executive Summary • Section 7 • Section 12 • Section 13 • Section 14
Henry Miller GSA GSP	• Executive Summary • Section 5 • Section 8 • Section 9 • Section 14
Kern-Tulare Water District GSA GSP	• Executive Summary • Section 6 • Section 14 • Section 16
Olcese Water District GSA GSP	• Executive Summary • Section 7 • Section 8 • Section 9
Semitropic Water Storage District GSA GSP	• Executive Summary • Section 5 • Section 14
Westside District Water Authority GSA GSP	• Executive Summary • Section 6 • Section 8 • Section 13 • Section 14

AMENDED SUBBASIN PLAN: GUIDING PRINCIPLES

- Commitment to Subbasin Coordination
- Address DWR Deficiencies
- Consider Beneficial Uses and Users
- Prioritize Demand Management
- Recognize Hydrogeologic Conceptual Model Areas



AMENDED SUBBASIN PLAN ORGANIZATION

Executive Summary	
Introduction	**Section 1:** Purpose of the Groundwater Sustainability Plan **Section 2:** Sustainability Goal **Section 3:** Agency Information **Section 4:** GSP Organization
Description of the Plan Area	**Section 5**
Basin Setting	**Section 6:** Introduction to Basin Setting **Section 7:** Hydrogeologic Conceptual Model **Section 8:** Current and Historical Groundwater Conditions **Section 9:** Water Budget Information **Section 10:** Management Areas
Sustainable Management Criteria	**Section 11:** Introduction to Sustainable Management Criteria **Section 12:** Sustainability Goal **Section 13:** Sustainable Management Criteria
Projects and Management Actions	**Section 14**
Monitoring Network	**Section 15**
Plan Implementation	**Section 16**
Appendices	

AMENDED SUBBASIN PLAN: EXECUTIVE SUMMARY

Amended GSP(s) are coordinated and ***completely replace 2022 GSPs***

- Incorporated SWRCB staff feedback, new information and data, and the best available science
- Revised Subbasin Sustainability Goal
- Clear identification of where deficiencies have been addressed

Deficiency #1: The GSPs do not establish Undesirable Results (URs) that are consistent for the entire Subbasin.

Deficiency #2: The Subbasin's Chronic Lowering of Groundwater Levels Sustainable Management Criteria (SMCs) do not satisfy the requirements of SGMA and the GSP Regulations.

Deficiency #3: The Subbasin's Land Subsidence SMCs do not satisfy the requirements of SGMA and the GSP Regulations.

Additional Revision: Revision to incorporate new data or information or respond to DWR and SWRCB comments that were not identified as Corrective Actions.

AMENDED SUBBASIN PLAN: INTRODUCTION

- Explains the purpose of the Amended Subbasin Plan and document structure
- Details the Subbasin coordination efforts to address DWR deficiencies
  - Section 1 Table 1-2 summarizes **SWRCB Technical Meetings**, including topics and summary of outcome, *and where feedback was considered in the Plan*
  - Section 1 Table 1-3 summarizes **Major Plan Updates** in response to 2023 DWR deficiencies, corrective actions, summary of Plan revisions, *and where information can be found in the Plan*
- Identifies updates to the Subbasin Plan to incorporate new information and data, and the best available science, *and where information can be found in the Plan*

ADDRESSING DEFICIENCIES: SWRCB CONSULTATION

Date	Meeting Topic	Outcome	Revision in Amended GSP(s)
5/17/2023	Plan manager introduction and GSA questions	GSAs considered Plan structure, striving for the majority of the Subbasin to be included under one plan. GSAs initiated plans to expand demand reduction P/MAs.	**Section 5 & 14**
6/23/2023	Technical Meeting #1 Chronic Lowering of Groundwater Levels SMCs	Initiated well inventory to improve identification of beneficial users. Revised Undesirable Results (UR) definition to include dewatered drinking water wells.	**Section 1.3.1, 5, 11.1, 13.1.1.1, & 13.1.1.4**
10/4/2023	Technical Meeting #2 Chronic Lowering of Groundwater Levels SMCs	Expanded justification for Chronic Lowering of Groundwater Levels SMCs to include a suite of 5 drinking water well impacts analyses and a "depletion of supply" calculation.	**Section 13.1.1.4 & 13.1.2.4**
11/1/2023	Technical Meeting #3 Chronic Lowering of Groundwater Levels SMCs	Initiated analysis to assess Chronic Lowering of Groundwater Level SMCs inter-relationship with Land Subsidence and Degraded Water Quality SMCs.	**Section 13.1.2.2, 13.3.2.2 & 13.5.2.2**
12/13/2023	Technical Meeting #4 Land Subsidence SMCs	Clarified definitions for the potential causes of subsidence with the GSA's authority and outside the GSA's authority to manage. Established Land Subsidence SMCs across the entire Subbasin.	**Section 8.5.2, 13.5 & 13.5.2.1**
1/24/2024	Technical Meeting #5 Degraded Water Quality SMCs	Expanded representative monitoring network for water quality. Expanded constituents with SMCs to include 1,2,3-TCP, nitrite, and uranium. Examined potential relationship between arsenic concentrations and land subsidence.	**Section 8.4, 13.1.1.4, 13.3.2.2, 13.5.2.2 & 15.2.4**
3/6/2024	Technical Meeting #6 Well Inventory & Mitigation Program	Expedited timeframe for well mitigation program framework, to be operational by Jan 2025.	**Section 14.2.3 & Appendices**
4/3/2024	Technical Meeting #7 Monitoring Networks and SMCs Approach	Expanded representative monitoring network. Increased water quality sampling frequency to semi-annual. Revised UR definition for Degraded Water Quality. Expanded Depletions of Interconnected Surface Waters description to include ICONS dataset.	**Section 8.6, 11.1, 13.3.1, 15.2.1, 15.2.4, 15.5.1 & Appendices**
4/23/2024	Technical Meeting #8 Water Budgets and P/MAs Approach	Summarized all planned P/MAs and expected benefits by category on the Subbasin level and moved GSA-specific details on P/MAs as supporting appendices.	**Section 14 & Appendices**

RESPONSE TO DEFICIENCY #1: CROSSWALK

"The GSPs do not establish undesirable results that are consistent for the entire Subbasin."

"While the Coordination Agreement presents Subbasin-wide undesirable results, the Subbasin's fragmented approach towards establishing management criteria that define undesirable conditions in various parts of the Subbasin does not satisfy SGMA's requirement to use same data and methodologies."

Corrective Actions	Summary of Plan Revisions	Revision in Amended GSP(s)
1a) • "Explain how the undesirable results definitions are consistent with the requirements of SGMA and the GSP Regulations." • "Include descriptions of how the Plans have utilized the same data and methodologies to define the Subbasin-wide undesirable results and how the Plan has considered the interests of beneficial uses and users of groundwater." **1b)** • "Commit to comprehensively reporting on the status of minimum threshold exceedances by area in the annual reports and describe how groundwater conditions at or below the minimum thresholds may impact beneficial uses and users prior to the occurrence of a formal undesirable result." **1c)** • "Adopt clear and consistent terminology to ensure the various plans are comparable and reviewable by the GSAs, interested parties, and Department staff. This terminology should also adhere to the definitions of various terms in SGMA and the GSP Regulations including the understanding that undesirable results are conditions occurring throughout the Subbasin." • "Clearly document how all of the various undesirable results definitions and methodologies achieve the same common sustainability goal."	• Defined Subbasin-wide URs, MTs, and MOs using consistent data and methodologies. • Developed UR definitions in line with SGMA and GSP Regulations, reflecting feedback from SWRCB staff. • Revised the Chronic Lowering of Groundwater Levels UR definition to address direct impacts on drinking water wells and Subbasin-wide MT exceedances. • Conducted a robust Subbasin-wide well impacts analysis to quantify potential impacts to beneficial users, projecting fewer than 77 impacted drinking water wells by 2040. • Conducted a surface properties and land use assessment in which infrastructure was defined and categorized based on potential subsidence-related risk • Established a Subbasin-wide MT Exceedance Policy to trigger GSA action in the event of a MT exceedance • Updated functionality of the Subbasin Data Management System (DMS) so that all GSAs are notified when an MT exceedance is uploaded. • Established a detailed Subbasin-wide Well Mitigation Program • Used common language and templates (and data and methodologies) for all Amended Plan sections • Used clear and consistent terminology for the Subbasin-wide definitions for URs, MTs, and MOs • Defined and used consistent, Subbasin-wide terminology to establish Land Subsidence SMCs • Revised the Sustainability Goal	**Sections 2, 5.10. 3.4, 8.5.2, 11, 12, 13.1, 13.1.1, 13.1.2.4, 13.2.1, 13.3, 13.3.1, 13.5, 13.5.1, 16. 2.1 & Appendices**

RESPONSE TO DEFICIENCY #2: CROSSWALK

"The Subbasin's chronic lowering of groundwater levels sustainable management criteria do not satisfy the requirements of SGMA and the GSP regulations."

"The GSPs do not consistently and sufficiently document the effects of their selected minimum thresholds on beneficial uses and users in the Subbasin, nor explain how the minimum thresholds and measurable objectives that are set below historical lows will impact other applicable sustainability indicators…"

Corrective Actions	Summary of Plan Revisions	Revision in Amended GSP(s)
All GSPs: • "Demonstrate the relationship between the minimum thresholds for each sustainability indicator, including an explanation of how the GSA has determined that basin conditions at each minimum threshold will avoid undesirable results for each of the sustainability indicators." • "The GSAs should address the specific corrective actions identified for the various GSPs and management area plans, as well as the corrective actions that apply to all the GSPs identified in Table 2. Where addressing those corrective actions includes modifications to the respective GSPs minimum thresholds, the GSPs should evaluate whether the Subbasin's 'with-projects' modeling scenarios still indicate that implementation of the projects and management actions would avoid minimum threshold exceedances. If not, the GSAs should modify their projects and management actions accordingly."	• Established a Subbasin-wide methodology for setting MTs and MOs for Chronic Lowering of Groundwater Levels using an iterative process that considered more than 11 potential MT methodologies • Conducted a robust Subbasin-wide well impacts analysis using the Subbasin well inventory, MTs and the quantitative criteria for URs • Conducted a "depletion of supply" analysis to quantify the percentage of urban supply that may be impacted at MTs and the UR definition. • Identified potential impacts of lowered groundwater levels on other Sustainability Indicators. • Projected the extent of subsidence that would occur under groundwater level MTs and determined that groundwater level MTs are protective of URs for land subsidence. • Selected Representative Monitoring Wells (RMWs) in areas with a potential correlation between groundwater levels and water quality . • Estimated the reduction of groundwater storage that would occur at MT groundwater levels and determined this decline in storage is not significant relative to the volume of total usable storage in the Subbasin. • Coordinated with neighboring subbasins on SMCs. • Confirmed that the Subbasin's model results indicate that there are no instances where more than 25% of the RMW-WLs have MT exceedances over two consecutive years seasonal measurements from 2020 through 2070 based on the Projected-Future "With Project" scenario; this suggests that the Subbasin GSAs have sufficiently designed Projects and Management Actions (P/MAs) to improve the Subbasin conditions to avoid URs	**Sections 8.1, 13.1, 13.2, 15.2.1, Appendices**

RESPONSE TO DEFICIENCY #3: CROSSWALK

"The Subbasin's land subsidence sustainable management criteria do not satisfy the requirements of SGMA."

"The Plan lacks a Subbasin-wide, coordinated approach to establishing land subsidence sustainable management criteria."

Corrective Actions	Summary of Plan Revisions	Revision in Amended GSP(s)
Subbasin: • "Coordinate and collectively satisfy the requirements of SGMA and the GSP Regulations to develop the sustainable management criteria for land subsidence." • "Document the conditions for undesirable results for which the GSAs are trying to avoid, supported by their understanding of land uses and critical infrastructure in the Subbasin and the amount of subsidence that would substantially interfere with those uses." • "Identify the rate and extent of subsidence corresponding with substantial interference that will serve as the minimum threshold." • "Clearly identify the undesirable result parameters for each of the GSPs, management areas, and management area plans so it is clear how the various plans work together at the Subbasin level." • "Explain how implementing projects and management actions proposed in the various GSPs is consistent with avoiding subsidence minimum thresholds." • "If land subsidence is not applicable to parts of the Subbasin, provide supported justification of such."	• Referenced and discussed key findings from the six independent subsidence studies to fill data gaps • Conducted extensive studies to explain InSAR time series methodologies to differentiate between subsidence caused by activities within and outside of the GSAs' authority to control. • Developed Subbasin-wide definitions for Regional and GSA Area Critical Infrastructure. • Developed a Subbasin-wide approach to land subsidence SMCs, including a decision tree and risk-based matrix approach. • The GSAs have committed to minimize GSA-related subsidence by 2040. • Established land subsidence SMCs based on a projection of the average historical subsidence rates. • Assessed the potential change in slope to confirm minimal impacts to land surface uses. • Assessed potential impacts on regional critical infrastructure from future GSA-related subsidence. • Coordinated with key beneficial users of regional critical infrastructure • Updated the Subbasin-wide Land Subsidence monitoring network	**Sections 8.5, 13.5, 15.2.5, Appendices**

AMENDED SUBBASIN PLAN: SUSTAINABLE MANAGEMENT CRITERIA

Chronic Lowering of GW Levels

- Revised SMCs definition
  - MOs changed by +11 feet on average
  - MTs changed by +21 ft on average
  - Reduced number of impacted domestic wells from 390 to 77 "most likely" impacted based on modeling scenario
- Subbasin-wide well impacts analyses
- MT Exceedance Policy

Land Subsidence

- Revised SMCs definition
  - Predominantly GW levels by proxy to Site-specific SMCs established along Critical Infrastructure
  - SMCs established across the entire Subbasin, based on an average across the HCM Area.
- Subbasin-wide change in slope analysis along critical infrastructure
- MT Exceedance Policy

Seawater Intrusion

Does not apply to the Subbasin

Degraded Water Quality

- Predominantly GW levels by proxy, or limited COCs to subbasin wide
- COCs: Arsenic, nitrate, nitrite, nitrate+nitrite, TDS, 1,2,3-TCP, uranium
- Revised SMCs definition
- Established semi-annual sampling
- Revised RMWs
- MT Exceedance Policy

Reduction of GW Storage

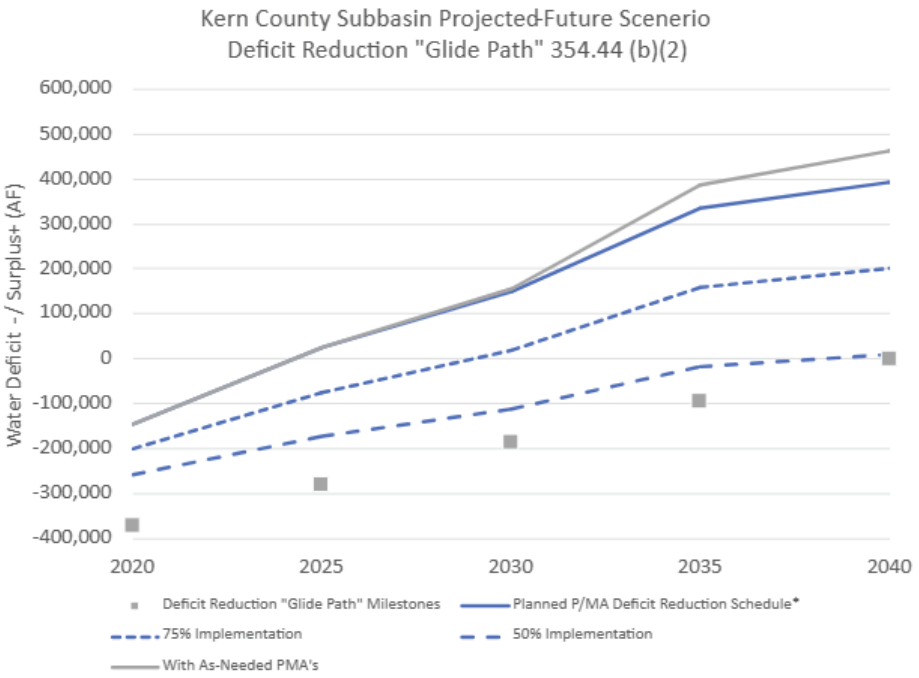
- Using groundwater levels as proxy
- Calculated a range of total useable groundwater storage
- Specified a UR definition

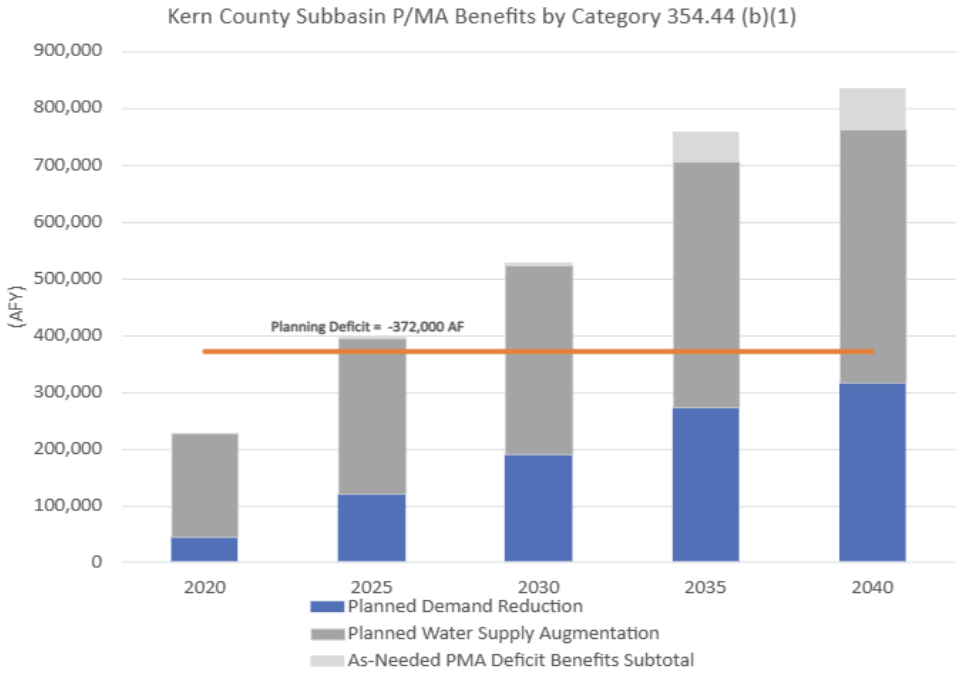
Depletions of Interconnected Surface Waters

- A few areas with potential ISWs connection is likely transient, short-lived, and involves shallow or perched groundwater that is not part of the principal aquifer systems, so therefore does not apply
- Will re-assess after full DWR guidance on ISWs is released

AMENDED SUBBASIN PLAN: PROJECTS & MANAGEMENT ACTIONS

- **P/MAs Section** focuses on the Subbasin
- Individual GSA details are included in an **Appendix**





AMENDED SUBBASIN PLAN: PROJECTS & MANAGEMENT ACTIONS

- Coordinated Subbasin-wide Projects and Management Actions

  - KSB-1 Friant-Kern Canal Capacity Mitigation
  - KSB-2 Coordination with Groundwater Regulatory Programs
  - KSB-3 Exceedance Policy
  - KSB-4 Coordination with Basin Study (Data Gaps)
  - KSB-5 Domestic Well Mitigation Plan/Emergency Water Supply
  - KSB-6 White Land Demand Management
  - KSB-7 Well Registry
  - KSB-8 Consumptive-Use Study

AMENDED SUBBASIN PLAN: IMPLEMENTATION

- Annual Reporting
- Monitoring and data collection
- Data gap filling
- Projects and Management Actions
- Coordination with other entities
- Outreach and Engagement
- Enforcement and Response
- Evaluation and Updates

SUSTAINABILITY INDICATOR	DATA	START DATE	FREQUENCY	REPORTING
Groundwater Levels	Field Measurements	WY 1993	Semi-annual	DMS, SGMA Portal, Annual Reports
Groundwater Storage	Simulated from the numerical model	WY 1995	Annual	Annual Reports
Subsidence	InSAR Benchmark Surveys	WY 2016	Annual	DMS, Annual Reports
Water Quality	Collect Samples	WY 2024*	Semi-annual	DMS, SGMA Portal, Annual Reports
Interconnected Surface Water	*Not Applicable*			
Seawater Intrusion	*Not Applicable*			

SUBBASIN EXCEEDANCE POLICY

- Establishes protocols and guidelines for GSAs to investigate exceedance of MTs at RMWs following data collection identification of a MT Exceedance *(reported to GSAs through DMS)*
- Each GSA is responsible for: *monitoring GW conditions, complying with Subbasin Plan requirements, coordinating with other agencies, entities, and beneficial users within their boundaries*
  - Requires GSAs to report MT Exceedances in Annual Reports
  - Reaffirms data collection protocols and policies
- Steps for identification, investigation, and involvement of the Subbasin Coordination Committee to consider actions to prevent continued exceedance

SUBBASIN DOMESTIC WELL MITIGATION PROGRAM

- Subbasin initiated contract negotiations with **Self-Help Enterprises** for implementation of a *Subbasin-wide Domestic Well Mitigation Program* and **Kern Water Collaborative** for *water quality*
  - Implementation by January 2025

AMENDED SUBBASIN PLAN: SUBBASIN NEXT STEPS

Subbasin GSAs are requesting SWRCB staff review this Final Draft Amended Subbasin Plan as the basis for the staff report.

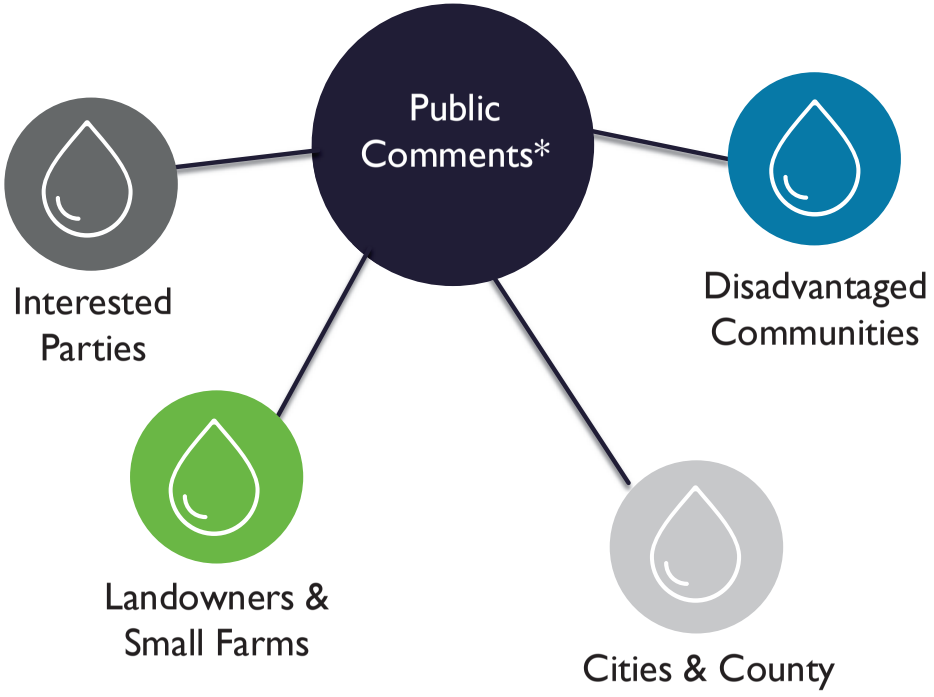
Additional SWRCB Meetings

- July Amended Plan Feedback Review *(Request)*

June 1 begins Public Comment Review Period*

Building Partnerships

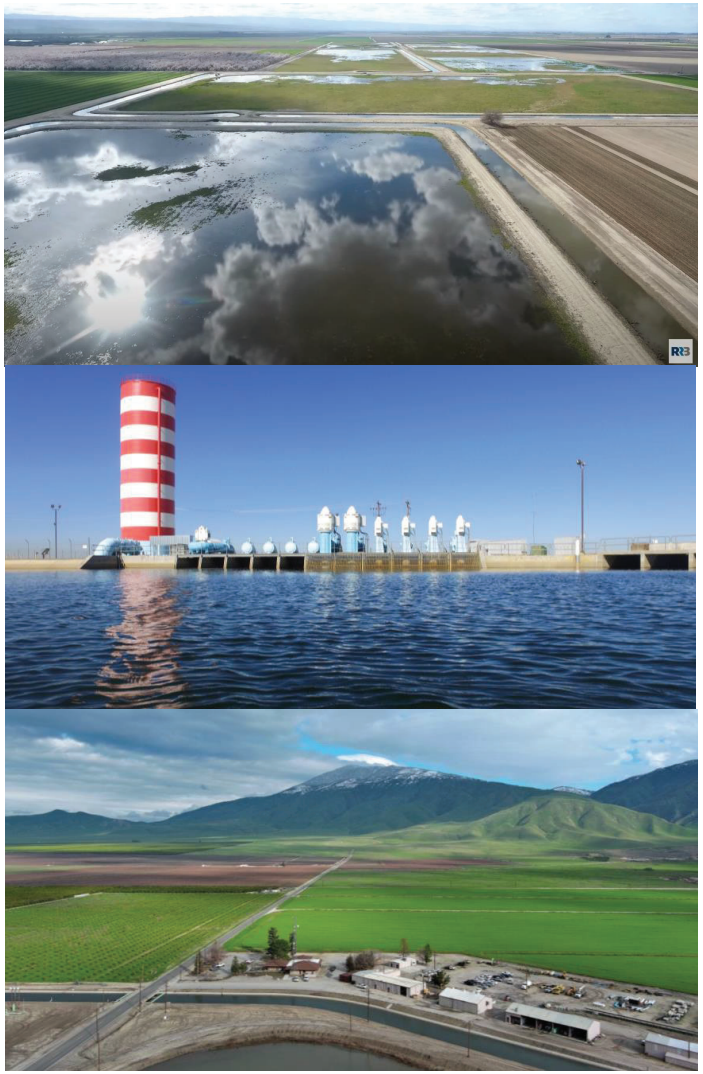
- Kern County Environmental Health
- Self-Help Enterprises
- Kern Water Collaborative
- California Aqueduct Subsidence Program (CASP)
- Friant Water Authority
- Water Association of Kern County
- Municipalities & Purveyors



*SWRCB Guidance

CLOSING REMARKS

- The Final Draft Amended Subbasin Plan has been drafted to addresses DWR Corrective Actions and the feedback provided by SWRCB staff.
- The Kern County Subbasin GSAs are committed to ongoing and coordinated SGMA implementation.



May 30, 2024

Kathleen Krause
Clerk of the Board of Supervisors
County of Kern
1115 Truxtun Ave., 5th Floor
Bakersfield, CA 93301
clerkofboard@kerncounty.com

Jeff Jones
City Manager
City of Arvin
200 Campus Drive
Arvin, CA 93203
jeffjones@arvin.org

Re: Updated Notice of Intent to Amend the GSP for the South of Kern River Pursuant to Water Code Section 10728.4

Dear Ms. Krause and Mr. Jones:

The Sustainable Groundwater Management Act (SGMA) requires each groundwater sustainability agency (GSA) that is adopting or amending a groundwater sustainability plan (GSP) to provide notice of such adoption or amendment to any city or county within the area of the proposed or amended GSP. *See* Water Code § 10728.4. Accordingly, on September 14, 2023, the Arvin Groundwater Sustainability Agency (GSA), Wheeler-Ridge Maricopa GSA, and Tejon-Castac Water District GSA (collectively, South of Kern River GSAs), in coordination with the Arvin Community Service District, provided notice of our intent to amend the GSP for areas of the Kern Subbasin located within our GSA boundaries. This updated notice provides supplemental information about the proposed, amended Kern Subbasin GSP that the South of Kern River GSAs intend to adopt no earlier than 90-days from today.

In July 2022, we adopted the South of Kern River GSP, which was one of six GSPs developed pursuant to SGMA to cover the Kern Subbasin. In January 2023, the Department of Water Resources (DWR) determined the six GSPs submitted for the Kern Subbasin were, collectively, inadequate. In the ensuing months, we have worked with other GSAs and stakeholders in the Subbasin to develop an amended Kern Subbasin GSP that corrects the deficiencies identified by DWR and includes other improvements based on feedback from State Water Resources Control Board staff.

The public review draft of the amended Kern Subbasin GSP will be available for download on May 31, 2024, at the South of Kern River's website, www.sokrgsp.com, and each individual GSA's

website. We will review and consider comments from the County of Kern and City of Arvin (and other interested parties) and, upon request, consult with the County and/or City within 30 days of receipt of this updated notice. Please direct comments and requests for additional information regarding the proposed, amended GSP to:

Jeevan Muhar, South of Kern River Plan Manager
P.O. Box 175
Arvin, CA 93203
jmuhar@aewsd.org
661-854-5573.

We look forward to continued cooperation with the County and City in implementing SGMA throughout the Subbasin, and within our management areas specifically.

Sincerely,

Arvin-Edison Water Storage District

By: _____
Jeevan Muhar, Engineer-Manager

Wheeler ridge-Maricopa Water Storage District

By:_____
Sheridan Nicolas, Engineer-Manager

Tejon-Castac Water District

By:_____
Angelica Martin, Water Resources Manager

Arvin Community Services District

By:_____
Raul Barraza, Jr., General Manager