



Stanislaus & Tuolumne Rivers Groundwater Basin Association
Groundwater Sustainability Agency
1231 11th Street | Modesto, CA 95354
Email: strgba@mid.org

STRGBA GSA AGENDA

February 14, 2024 (1:30 p.m. – 3:00 p.m.)

Webinar Digital Platform or Phone Meeting

<https://us02web.zoom.us/j/82844864384>

By phone: 1-669-900-9128

Webinar ID: 828 4486 4384

PUBLIC PARTICIPATION

The public may participate in this meeting in the two ways described below.

Instructions for Participating in STRGBA GSA & Technical Advisory Meeting via Zoom Webinar or Phone

On your desktop/iPad or tablet/laptop:

1. To join the webinar, click the link published in the Agenda for the current meeting about 5 minutes before the webinar begins.
2. Follow the on-screen instructions to install and/or launch the Zoom application.
3. If prompted, enter the Webinar ID published in the Agenda.
4. All public attendees will enter the meeting muted.
5. If you wish to speak under Business from the Public, or after the Chairman calls for Public Comment, click on the “Raise Hand” button to request to speak.

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1. To join the meeting by phone, call the number published in the Agenda for the meeting.
2. Enter the Webinar ID published in the Agenda, then hit the # symbol.
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4. If you wish to speak under Business from the Public, or after the Chairman calls for Public Comment, press *9 on your phone to “Raise Hand” or simply request to speak.



1. Call to Order/Welcome and Introductions
(Four agencies are needed for a quorum)
2. Business from the Public
Who: Public
Expected Outcome: Interested persons are welcome to introduce any topic within the Agency's jurisdiction. Matters presented under this heading may be discussed but no action will be taken by the Agency at this meeting.
3. Topic: Approve 10/11/2023 Meeting Minutes [[Action Item](#)]
Who: Eric Thorburn, Committee
Expected Outcome: Approval
4. Topic: Amend 2024 STRGBA GSA Budget [[Action Item](#)]
Who: Eric Thorburn, Committee
Expected Outcome: Approval
5. Topic: Approve GSP Amendment Proposal from Todd Groundwater [[Action Item](#)]
Who: Eric Thorburn, Committee
Expected Outcome: Approval
6. Topic: Elect 2024 STRGBA GSA Chairman and Vice Chairman [[Action Item](#)]
Who: Eric Thorburn, Committee
Expected Outcome: Approval
7. Topic: 2022 STRGBA GSA GSP Incomplete Determination by DWR & Update on DWR Consultation Meeting
Who: Todd Groundwater, Committee
Expected Outcome: Discussion
8. Topic: Fall 2023 Groundwater Level Analysis
Who: Todd Groundwater/ Woodard & Curran, Committee
Expected Outcome: Discussion



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9. Topic: 2023 Water Year Annual Report Schedule
Who: Todd Groundwater, Committee
Expected Outcome: Discussion

10. Next Meeting
March 13, 2024, at 1:30 p.m. via Zoom
In-person offered at Oakdale Irrigation District

11. Items too late for the agenda



Stanislaus & Tuolumne Rivers Groundwater Basin Association
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MEETING MINUTES

October 11, 2023 (1:30 p.m. – 3:00 p.m.)

The meeting was called to order at 1:31 p.m.

1. Welcome and Introductions

The following members of the Stanislaus and Tuolumne Rivers Groundwater Basin Association Groundwater Sustainability Agency (STRGBA GSA) attended either in-person or via Zoom.

In-Person Attendees:

Modesto Irrigation District (MID):	Jesse Franco
Oakdale Irrigation District (OID):	Eric Thorburn
Stanislaus County:	Christy McKinnon
City of Modesto:	Miguel Alvarez
City of Waterford:	Michael Pitcock
City of Oakdale:	Ian Sather

Other Attendees:

Emily Sheldon	Scott Moody
John Mauterer	Timothy Barahona
Iris Priestaf	Brent Johnson
Kelly Doyle	William Lyons
Dana Ferreira	Stacy Henderson
John Schneider	Joanna Szeremeta
Juan Ochoa	Julia Stornetta

2. Business from the Public

N/A

3. Approve 8/9/2023 Meeting Minutes and Correction to the 2024 Operating Budget [Action item]

Pitcock moved, 2nd by McKinnon to approve the 8/9/2023 meeting minutes.



- Eric revised the minutes to reflect the proposed 2024 Operating Budget. Also, Thorburn clarified a question McKinnon had regarding monitoring well installation. McKinnon asked will there be more wells on the west side of the subbasin after the data gaps are addressed. Thorburn stated “in the Non-District East and East there are fewer *existing wells available*. In the West, there are more *existing wells available*. *However, there will need to be more wells on the west side too in order to address current data gaps*”. Revision is italicized.

4. Amended 2024 Operating Budget [Action]

Pitcock moved, 2nd by Alvarez to approve the 2024 Operating Budget.

5. Draft Cost Distribution Agreement for Subsequent Approval by Each Member Agency [Action]

Alvarez provided a status update regarding the Cost Distribution Agreement for the annual report.

6. 2023 Water Year Groundwater Level Analysis

Wells presented on the Groundwater Level Analysis. Presentation can be found at <https://www.youtube.com/watch?v=63QDaVofbbk&t=10s>

7. Next Meeting

November 8, 2023, at 1:30 p.m.

8. Items too late for the agenda

N/A

2024 OPERATING BUDGET

Revised 2/14/2024		
OPERATING EXPENSES	2023 BUDGET	2024 BUDGET
Administration	\$10,000.00	\$5,000.00
2022 GSP Amendment	N/A	\$330,000.00
Annual Report	\$75,000.00	\$190,000.00
Preparation	\$25,000.00	\$25,000.00
Insurance	\$1,500.00	\$1,500.00
Legal and auditing	\$20,000.00	\$20,000.00
Model Update	\$50,000.00	\$0.00
Monitoring Wells	\$4,500.00	\$0.00
Public Outreach	\$5,000.00	\$10,000.00
Website Maintenance	\$5,000.00	\$5,000.00
Data Management System	\$10,000.00	\$0.00
Total Operating Budget	\$206,000.00	\$586,500.00

Notes:

1. Each STRGBA GSA member agency will be responsible to pay 1/8 of the total operating budget (+/- \$73,312.50). Stanislaus County will also be invoiced for the Tuolumne County GSA's 1/8 share of the total operating budget.
2. Payment for the annual report operating expense will be made to the City of Modesto. Payment for the remaining 2024 Operating Budget will be made to Modesto Irrigation District.



CALIFORNIA DEPARTMENT OF WATER RESOURCES

SUSTAINABLE GROUNDWATER MANAGEMENT OFFICE

715 P Street, 8th Floor | Sacramento, CA 95814 | P.O. Box 942836 | Sacramento, CA 94236-0001

January 18, 2024

Eric Thorburn
Oakdale Irrigation District
1205 East F Street
Oakdale CA 95361
ethorburn@oakdaleirrigation.com

RE: San Joaquin Valley – Modesto Subbasin - 2022 Groundwater Sustainability Plan

Dear Eric Thorburn,

The Department of Water Resources (Department) has evaluated the groundwater sustainability plan (GSP or Plan) submitted for the San Joaquin Valley – Modesto Subbasin. The Department has determined that the Plan is “incomplete” pursuant to Section 355.2(e)(2) of the GSP Regulations.

The Department based its incomplete determination on recommendations from the Staff Report, included as an enclosure to the attached Statement of Findings, which describes that the Subbasin’s Plan does not satisfy the objectives of the Sustainable Groundwater Management Act (SGMA) nor substantially comply with the GSP Regulations. The Staff Report also provides corrective actions which the Department recommends the Subbasin’s groundwater sustainability agency (GSA) review while determining how to address the deficiencies.

The Subbasin’s GSA has 180 days, the maximum allowed by the GSP Regulations, to address the identified deficiencies. Where addressing the deficiencies requires modification of the Plan, the GSA must adopt those modifications into the respective GSP and all applicable coordination agreement materials, or otherwise demonstrate that those modifications are part of the Plan before resubmitting it to the Department for evaluation no later than July 16, 2024. The Department understands that much work has occurred to advance sustainable groundwater management since the GSA submitted the GSP in January 2022. To the extent to which those efforts are related or responsive to the Department’s identified deficiencies, we encourage you to document that as part of your Plan resubmittal. The Department prepared a [Frequently Asked Questions](#) document to provide general information and guidance on the process of addressing deficiencies in an “incomplete” determination.

Department staff will work expeditiously to review the revised components of your Plan resubmittal. If the revisions sufficiently address the identified deficiencies, the Department will determine that the Plan is “approved”. In that scenario, Department staff will identify additional recommended corrective actions that the GSAs should address early in implementing the GSP (i.e., no later than the first required periodic evaluation).

Among other items, those corrective actions will recommend the GSAs provide more detail on the plans and schedules to address data gaps. Those recommendations will call for significantly expanded documentation of the plans and schedules to implement specific projects and management actions. Regardless of those recommended corrective actions, the Department expects the first periodic evaluations, required no later than January 2027 – one-quarter of the way through the 20-year implementation period – to document significant progress toward achieving sustainable groundwater management.

If the Subbasin's GSA cannot address the deficiencies identified in this letter by July 16, 2024, then the Department, after consultation with the State Water Resources Control Board, will determine the GSP to be "inadequate". In that scenario, the State Water Resources Control Board may identify additional deficiencies that the GSA would need to address in the state intervention processes outlined in SGMA.

Please contact Sustainable Groundwater Management staff by emailing sgmps@water.ca.gov if you have any questions related to the Department's assessment or implementation of your GSP.

Thank You,

Paul Gosselin

Paul Gosselin
Deputy Director
Sustainable Groundwater Management

Attachment:

1. Statement of Findings Regarding the Determination of Incomplete Status of the San Joaquin Valley – Modesto Subbasin Groundwater Sustainability Plan

**STATE OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES**

**STATEMENT OF FINDINGS REGARDING THE
DETERMINATION OF INCOMPLETE STATUS OF THE
SAN JOAQUIN VALLEY - MODESTO SUBBASIN
GROUNDWATER SUSTAINABILITY PLAN**

The Department of Water Resources (Department) is required to evaluate whether a submitted groundwater sustainability plan (GSP or Plan) conforms to specific requirements of the Sustainable Groundwater Management Act (SGMA or Act), is likely to achieve the sustainability goal for the Subbasin, and whether the GSP adversely affects the ability of an adjacent basin or subbasin to implement its GSP or impedes achievement of sustainability goals in an adjacent basin or subbasin. (Water Code § 10733.) The Department is directed to issue an assessment of the GSP within two years of its submission. (Water Code § 10733.4.) This Statement of Findings explains the Department's decision regarding the submitted Plan by the Stanislaus and Tuolumne Rivers Groundwater Basin Association Groundwater Sustainability Agency and the County of Tuolumne Groundwater Sustainability Agency (GSAs or Agencies) for the San Joaquin Valley - Modesto Subbasin (Basin No. 5-022.02).

Department management has reviewed the enclosed Staff Report, which recommends that the identified deficiencies should preclude approval of the GSP. Based on its review of the Staff Report, Department management is satisfied that staff have conducted a thorough evaluation and assessment of the Plan and concurs with, and hereby adopts, staff's recommendation and all the corrective actions provided. The Department thus determines the Plan **Incomplete** based on the staff assessments and recommendations. In particular, the Department finds:

- A. The GSAs must provide more detailed explanation and justification regarding the selection for the sustainable management criteria for the chronic lowering of groundwater sustainability indicator. Department staff recommend the GSAs consider and address the following:
 - 1. The GSAs should revise the GSP to include a complete and thorough discussion of how the interests of beneficial uses and users of groundwater in the Subbasin have been considered. Department staff recommend that additional assessment be conducted to understand the impacts to beneficial uses and users from continued overdraft, including what impacts may result if groundwater levels reach the established interim milestones in 2027. The GSP should also include a well impact analysis identifying the anticipated number and location of wells that may

Statement of Findings

San Joaquin Valley - Modesto Subbasin (No. 5-022.02)

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go dry during the 20-year implementation period based on the proposed interim milestones, for how long they may go dry, and the impacts to land uses and property interests, among others. Additionally, the GSP should include a discussion of how its approach to groundwater management may affect all identified beneficial uses and users in the Subbasin, including environmental users.

2. The GSAs should revise the GSP to describe how impacts to wells experienced at interim milestone levels below minimum thresholds will be managed or mitigated. If the GSAs plan to implement a well mitigation program to avoid causing significant and unreasonable effects to beneficial uses and users, details such as the number of wells anticipated to be eligible for the program, estimated costs, funding sources, and an implementation schedule should be included in the GSP. The GSAs should revise the GSP to include an analysis describing whether or how managing the Subbasin to allow groundwater levels to drop to interim milestone levels that are below the established minimum thresholds will avoid causing undesirable results for other sustainability indicators.
 3. The GSAs should revise the GSP to include an analysis describing whether or how managing the Subbasin to allow groundwater levels to drop to interim milestone levels that are below the established minimum thresholds will avoid causing undesirable results for other sustainability indicators.
- B. The GSAs should revise the GSP to provide specific details of feasible projects and management actions that will be implemented to mitigate overdraft and that will raise groundwater levels from interim milestones towards the minimum thresholds and measurable objectives to achieve sustainability in the Subbasin. Specifically, the Plan must be amended as follows:
1. The GSAs should revise the GSP to include a reasonable means to arrest groundwater level declines and stop the overdraft that is continuing to occur in the Subbasin. Specifically, the GSAs should describe feasible, effective proposed projects and management actions that are commensurate with the level of understanding of groundwater conditions in the Subbasin and provide sufficient details for Department staff to be able to clearly evaluate how the Plan's projects and management actions will ensure achieving the sustainability goal in the Subbasin.
 2. The GSAs should revise the GSP to include a feasible collection of projects and management actions to raise groundwater levels to avoid

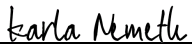
Statement of Findings
San Joaquin Valley - Modesto Subbasin (No. 5-022.02)

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undesirable results that would occur as a result of groundwater levels dropping below minimum thresholds towards the proposed interim milestones levels.

Based on the above, the GSP submitted by the Agencies for the San Joaquin Valley – Modesto Subbasin is determined to be incomplete because the GSP does not satisfy the requirements of SGMA, nor does it substantially comply with the GSP Regulations. The corrective actions provided in the Staff Report are intended to address the deficiencies that, at this time, preclude approval. The Agencies have up to 180 days to address the deficiencies outlined above and detailed in the Staff Report. Once the Agencies resubmit their Plan, the Department will review the revised GSP to evaluate whether the deficiencies were adequately addressed. Should the Agencies fail to take sufficient actions to correct the deficiencies identified by the Department in this assessment, the Department shall disapprove the Plan if, after consultation with the State Water Resources Control Board, the Department determines the Plan inadequate pursuant to 23 CCR § 355.2(e)(3)(C).

Signed:



Karla Nemeth, Director
Date: January 18, 2024

Enclosure: Groundwater Sustainability Plan Assessment Staff Report – San Joaquin Valley – Modesto Subbasin

State of California
Department of Water Resources
Sustainable Groundwater Management Program
Groundwater Sustainability Plan Assessment
Staff Report

Groundwater Basin Name: San Joaquin Valley – Modesto Subbasin (No. 5-022.02)
Stanislaus and Tuolumne Rivers Groundwater Basin
Submitting Agency: Association Groundwater Sustainability Agency,
County of Tuolumne Groundwater Sustainability Agency
Submittal Type: Initial GSP Submission
Submittal Date: January 31, 2022
Recommendation: Incomplete
Date: January 18, 2024

The Stanislaus and Tuolumne Rivers Groundwater Basin Association Groundwater Sustainability Agency and the County of Tuolumne Groundwater Sustainability Agency (collectively, the GSAs) jointly submitted the Modesto Subbasin Groundwater Sustainability Plan (GSP or Plan) to the Department of Water Resources (Department) for evaluation and assessment as required by the Sustainable Groundwater Management Act (SGMA)¹ and the GSP Regulations.² The GSP covers the entire San Joaquin Valley – Modesto Subbasin (Subbasin) for the implementation of SGMA.

Evaluation and assessment by the Department is based on whether an adopted and submitted GSP, either individually or in coordination with other adopted and submitted GSPs, complies with SGMA and substantially complies with the GSP Regulations. Department staff base their assessment on information submitted as part of an adopted GSP, public comments submitted to the Department, and other materials, data, and reports that are relevant to conducting a thorough assessment. Department staff have evaluated the GSP and have identified deficiencies that staff recommend should preclude its approval.³ In addition, consistent with the GSP Regulations, Department staff have provided corrective actions⁴ that the GSAs should review while determining how and whether to address the deficiencies. The deficiencies and corrective actions are explained in greater detail in Section 3 of this staff report and are generally related to the need to define sustainable management criteria in the manner required by SGMA and the GSP Regulations.

¹ Water Code § 10720 *et seq.*

² 23 CCR § 350 *et seq.*

³ 23 CCR §355.2(e)(2).

⁴ 23 CCR §355.2(e)(2)(B).

This assessment includes four sections:

- **Section 1 – Evaluation Criteria**: Describes the legislative requirements and the Department’s evaluation criteria.
- **Section 2 – Required Conditions**: Describes the submission requirements, GSP completeness, and basin coverage required for a GSP to be evaluated by the Department.
- **Section 3 – Plan Evaluation**: Provides a detailed assessment of identified deficiencies in the GSP. Consistent with the GSP Regulations, Department staff have provided corrective actions for the GSAs to address the deficiencies.
- **Section 4 – Staff Recommendation**: Provides staff’s recommendation regarding the Department’s determination.

1 EVALUATION CRITERIA

The Department evaluates whether a Plan conforms to the statutory requirements of SGMA⁵ and is likely to achieve the basin’s sustainability goal.⁶ To achieve the sustainability goal, the Plan must demonstrate that implementation will lead to sustainable groundwater management, which means the management and use of groundwater in a manner that can be maintained during the planning and implementation horizon without causing undesirable results.⁷ Undesirable results are required to be defined quantitatively by the GSAs overlying a basin and occur when significant and unreasonable effects for any of the applicable sustainability indicators are caused by groundwater conditions occurring throughout the basin.⁸ The Department is also required to evaluate whether the Plan will adversely affect the ability of an adjacent basin to implement its groundwater sustainability program or achieve its sustainability goal.⁹

For a Plan to be evaluated by the Department, it must first be determined that it was submitted by the statutory deadline¹⁰ and that it is complete and covers the entire basin.¹¹ Additionally, for those GSAs choosing to develop multiple GSPs, the Plan submission must include a coordination agreement.¹² The coordination agreement must explain how the multiple GSPs in the basin have been developed and implemented utilizing the same data and methodologies and that the elements of the multiple GSPs are based upon consistent interpretations of the basin’s setting. If these required conditions are satisfied, the Department evaluates the Plan to determine whether it complies with SGMA and substantially complies with the GSP Regulations.¹³ As stated in the GSP Regulations,

⁵ Water Code §§ 10727.2, 10727.4, 10727.6.

⁶ Water Code § 10733(a).

⁷ Water Code § 10721(v).

⁸ 23 CCR § 354.26.

⁹ Water Code § 10733(c).

¹⁰ 23 CCR § 355.4(a)(1).

¹¹ 23 CCR §§ 355.4(a)(2), 355.4(a)(3).

¹² 23 CCR § 357.4.

¹³ 23 CCR § 350 *et seq.*

“[s]ubstantial compliance means that the supporting information is sufficiently detailed and the analyses sufficiently thorough and reasonable, in the judgment of the Department, to evaluate the Plan, and the Department determines that any discrepancy would not materially affect the ability of the Agency to achieve the sustainability goal for the basin, or the ability of the Department to evaluate the likelihood of the Plan to attain that goal.”¹⁴

When evaluating whether the Plan is likely to achieve the sustainability goal for the basin, Department staff review the information provided for sufficiency, credibility, and consistency with scientific and engineering professional standards of practice.¹⁵ The Department’s review considers whether there is a reasonable relationship between the information provided by the GSAs and the assumptions and conclusions presented in the Plan, including: whether the interests of the beneficial uses and users of groundwater in the basin have been considered; whether sustainable management criteria and projects and management actions described in the Plan are commensurate with the level of understanding of the basin setting; and whether those projects and management actions are feasible and likely to prevent undesirable results.¹⁶ The Department also considers whether the GSAs have the legal authority and financial resources necessary to implement the Plan.¹⁷

To the extent overdraft is present in a basin, the Department evaluates whether the Plan provides a reasonable assessment of the overdraft and includes reasonable means to mitigate it.¹⁸ When applicable, the Department will assess whether coordination agreements have been adopted by all relevant parties and satisfy the requirements of SGMA and the GSP Regulations.¹⁹ The Department also considers whether the Plan provides reasonable measures and schedules to eliminate identified data gaps.²⁰ Lastly, the Department’s review considers the comments submitted on the Plan and evaluates whether the GSAs have adequately responded to the comments that raise credible technical or policy issues with the Plan.²¹

The Department is required to evaluate the Plan within two years of its submittal date and issue a written assessment.²² The assessment is required to include a determination of

¹⁴ 23 CCR § 355.4(b).

¹⁵ 23 CCR § 351(h).

¹⁶ 23 CCR §§ 355.4(b)(1), (3), (4) and (5).

¹⁷ 23 CCR § 355.4(b)(9).

¹⁸ 23 CCR § 355.4(b)(6).

¹⁹ 23 CCR § 355.4(b)(8).

²⁰ 23 CCR § 355.4(b)(2).

²¹ 23 CCR § 355.4(b)(10).

²² Water Code § 10733.4(d); 23 CCR § 355.2(e).

the Plan's status.²³ The GSP Regulations provide three options for determining the status of a Plan: approved,²⁴ incomplete,²⁵ or inadequate.²⁶

Even when the Department determines a Plan is approved, indicating that it satisfies the requirements of SGMA and is in substantial compliance with the GSP Regulations, the Department may still recommend corrective actions.²⁷ Recommended corrective actions are intended to facilitate progress in achieving the sustainability goal within the basin and the Department's future evaluations, and to allow the Department to better evaluate whether implementation of the Plan adversely affects adjacent basins. While the issues addressed by the recommended corrective actions in an approved Plan do not, at the time the determination was made, preclude its approval, the Department recommends that the issues be addressed to ensure the Plan's implementation continues to be consistent with SGMA and the Department is able to assess progress in achieving the basin's sustainability goal.²⁸ Unless otherwise noted, the Department proposes that recommended corrective actions be addressed by the submission date for the first periodic assessment.²⁹

After review of the Plan, Department staff may conclude that the information provided is not sufficiently detailed, or the analyses not sufficiently thorough and reasonable, to evaluate whether it is likely to achieve the sustainability goal for the basin. If the Department determines the deficiencies precluding approval may be capable of being corrected by the GSAs in a timely manner,³⁰ the Department will determine the status of the Plan to be incomplete. A Plan deemed incomplete may be revised and resubmitted to the Department for reevaluation of whether all deficiencies have been addressed and incorporated into the Plan within 180 days after the Department makes its incomplete determination. The Department will review the revised Plan to evaluate whether the identified deficiencies were sufficiently addressed. Depending on the outcome of that evaluation, the Department may determine the resubmitted Plan is approved. Alternatively, the Department may find a formerly deemed incomplete GSP is inadequate if, after consultation with the State Water Resources Control Board, it determines that the GSAs have not taken sufficient actions to correct any identified deficiencies.³¹

The staff assessment of the Plan involves the review of information presented by the GSAs, including models and assumptions, and an evaluation of that information based on scientific reasonableness. In conducting its assessment, the Department does not recalculate or reevaluate technical information provided in the Plan or perform its own geologic or engineering analysis of that information. The recommendation to approve a

²³ Water Code § 10733.4(d); 23 CCR § 355.2(e).

²⁴ 23 CCR § 355.2(e)(1).

²⁵ 23 CCR § 355.2(e)(2).

²⁶ 23 CCR § 355.2(e)(3).

²⁷ Water Code § 10733.4(d).

²⁸ Water Code § 10733.8.

²⁹ 23 CCR § 356.4.

³⁰ 23 CCR § 355.2(e)(2)(B)(i).

³¹ 23 CCR § 355.2(e)(3)(C).

Plan does not signify that Department staff, were they to exercise the professional judgment required to develop a Plan for the basin, would make the same assumptions and interpretations as those contained in the Plan, but simply that Department staff have determined that the assumptions and interpretations relied upon by the submitting GSAs are supported by adequate, credible evidence, and are scientifically reasonable.

Lastly, the Department's review and assessment of an approved Plan is a continual process. Both SGMA and the GSP Regulations provide the Department with the ongoing authority and duty to review the implementation of the Plan.³² Also, GSAs have an ongoing duty to reassess their GSPs, provide annual reports to the Department, and, when necessary, update or amend their GSPs.³³ The passage of time or new information may make what is reasonable and feasible at the time of this review to not be so in the future. The emphasis of the Department's periodic reviews will be to assess the GSA's progress toward achieving the basin's sustainability goal and whether implementation of the Plan adversely affects the ability of GSAs in adjacent basins to achieve their sustainability goals.

2 REQUIRED CONDITIONS

A GSP, to be evaluated by the Department, must be submitted within the applicable statutory deadline.³⁴ The GSP must also be complete and must, either on its own or in coordination with other GSPs, cover the entire basin. If a GSP is determined to be incomplete, Department staff may require corrective actions that address minor or potentially significant deficiencies identified in the GSP. The GSAs in a basin, whether developing a single GSP covering the basin or multiple GSPs, must sufficiently address those required corrective actions within the time provided, not to exceed 180 days, for the GSP to be reevaluated by the Department and potentially approved.

2.1 SUBMISSION DEADLINE

SGMA required basins categorized as high- or medium-priority as of January 1, 2017 and to submit a GSP no later than January 31, 2022.³⁵

The GSAs submitted the Modesto Subbasin GSP to the Department on January 31, 2022 in compliance with the statutory deadline.

³² Water Code § 10733.8; 23 CCR § 355.6.

³³ Water Code §§ 10728, 10728.2.

³⁴ Water Code § 10720.7.

³⁵ Water Code § 10720.7(a)(2).

2.2 COMPLETENESS

GSP Regulations specify that the Department shall evaluate a GSP if that GSP is complete and includes the information required by SGMA and the GSP Regulations.³⁶

The GSAs submitted an adopted GSP for the entire Subbasin. Department staff found the Modesto Subbasin GSP to be complete and include the required information, sufficient to warrant a thorough evaluation by the Department. Therefore, the Department posted the GSP to its website on February 14, 2022.

2.3 BASIN COVERAGE

A GSP, either on its own or in coordination with other GSPs, must cover the entire basin.³⁷ A GSP that intends to cover the entire basin may be presumed to do so if the basin is fully contained within the jurisdictional boundaries of the submitting GSAs.

The GSP intends to manage the entire Modesto Subbasin and the jurisdictional boundaries of the submitting GSAs appear to cover the entire Subbasin.

3 PLAN EVALUATION

As stated in Section 355.4 of the GSP Regulations, a basin “shall be sustainably managed within 20 years of the applicable statutory deadline consistent with the objectives of the Act.” The Department’s assessment is based on a number of related factors including whether the elements of a GSP were developed in the manner required by the GSP Regulations, whether the GSP was developed using appropriate data and methodologies and whether its conclusions are scientifically reasonable, and whether the GSP, through the implementation of clearly defined and technically feasible projects and management actions, is likely to achieve a tenable sustainability goal for the basin.

Department staff have identified deficiencies in the GSP, the most serious of which preclude staff from recommending approval of the GSP at this time. Department staff believe the GSAs may be able to correct the identified deficiencies within 180 days. Consistent with the GSP Regulations, Department staff are providing corrective actions related to the deficiencies, detailed below, including the general regulatory background, the specific deficiency identified in the GSP, and the specific actions to address the deficiency.

³⁶ 23 CCR § 355.4(a)(2).

³⁷ Water Code § 10727(b); 23 CCR § 355.4(a)(3).

3.1 DEFICIENCY 1. THE GSP DOES NOT PROVIDE SUFFICIENT INFORMATION TO SUPPORT THE SELECTION OF CHRONIC LOWERING OF GROUNDWATER LEVELS SUSTAINABLE MANAGEMENT CRITERIA.

3.1.1 Background

SGMA defines sustainable groundwater management as the management and use of groundwater in a manner that can be maintained during the planning and implementation horizon without causing undesirable results.³⁸ The avoidance of undesirable results is thus explicitly part of sustainable groundwater management, as established by SGMA, and critical to the success of a GSP. To achieve sustainable groundwater management under SGMA, the basin must experience no undesirable results by the end of the 20-year GSP implementation period and be able to demonstrate an ability to maintain sustainable conditions over the 50-year planning and implementation horizon. SGMA requires the Department to develop and publish best management practices for GSAs.³⁹ The best management practice for sustainable management criteria describe activities, practices, and procedures for defining the sustainable management criteria required by the GSP Regulations.⁴⁰

The definition of undesirable results is critical to the establishment of an objective method to define and measure sustainability for a basin. As an initial matter, SGMA provides a qualitative definition of undesirable results as “one or more” of six specific “effects caused by groundwater conditions occurring throughout the basin.”⁴¹ SGMA identifies the effects related to chronic lowering of groundwater levels as those “...indicating a significant and unreasonable depletion of supply if continued over the planning and implementation horizon.”

It is up to GSAs to define, in their GSPs, the specific significant and unreasonable effects that would constitute undesirable results and to define the groundwater conditions that would produce those results in their basins.⁴² The GSA’s definition needs to include a description of the processes and criteria relied upon to define undesirable results and must describe and disclose the effect of undesirable results on the beneficial uses and users of groundwater. From this definition, the GSA establishes minimum thresholds, which are quantitative values that represent groundwater conditions at representative monitoring sites that, when exceeded individually or in combination with minimum thresholds at other monitoring sites, may cause the basin to experience undesirable results.⁴³ Put another way, the minimum thresholds represent conditions that, if not

³⁸ Water Code § 10721(v).

³⁹ Water Code § 10729.

⁴⁰ 23 CCR § 350 et seq.

⁴¹ Water Code § 10721(x).

⁴² 23 CCR § 354.26.

⁴³ 23 CCR § 354.28, DWR Best Management Practices for the Sustainable Management of Groundwater: Sustainable Management Criteria (DRAFT), November 2017.

exceeded, should prevent the basin from experiencing the undesirable results identified by the GSA.

Some basins may experience undesirable results within the 20-year period, particularly if the basin already had or was experiencing undesirable results as of January 1, 2015. The occurrence of one or more undesirable results within the initial 20-year period does not, by itself, necessarily indicate that a basin is not being managed sustainably, or that it will not achieve sustainability within the 20-year period. For example, a basin that experiences a period of minimum threshold exceedance can still be sustainably managed if the GSA has planned for that period of exceedances via their interim milestones, and if the GSA has a feasible and effective plan to implement necessary projects and management actions to eliminate the undesirable result and achieve the measurable objective. Note that if the GSA has not planned for continued groundwater level decline via appropriate interim milestones or has not implemented the necessary projects and management actions to eliminate the undesirable result, the Department may determine that the GSA is not likely to achieve the sustainability goal for the basin within the 20-year period.⁴⁴ The GSP Regulations also require the Department to evaluate whether the minimum thresholds and interim milestones are reasonable⁴⁵ and established in a manner to avoid undesirable results for each of the other sustainability indicators.⁴⁶

SGMA leaves the task of establishing undesirable results, minimum thresholds, measurable objectives, and interim milestones largely to the discretion of the GSA, subject to review by the Department. In its review, the Department requires a thorough and reasonable analysis of the groundwater conditions the GSA is trying to avoid, and the GSA's stated rationale for setting objective and quantitative sustainable management criteria to prevent those conditions from occurring. If a Plan does not meet this requirement, the Department is unable to evaluate the likelihood of the Plan achieving its sustainability goal. This does not necessarily mean that the GSP or its objectives are inherently unreasonable; however, it is unclear which conditions the GSA seeks to avoid, making it difficult for the Department to monitor whether the GSA will be successful in that effort or likely to achieve sustainability consistent with SGMA timeframes when implementing its GSP.

GSPs must clearly define a planned pathway to reach sustainability in the form of interim milestones and show actual progress in annual reporting. Failing to eliminate undesirable results within 20 years or failing to implement a GSP to achieve the sustainability goal established for a basin will result in the Department deeming the GSP inadequate and could result in State Water Resources Control Board intervention.

⁴⁴ DWR Best Management Practices for the Sustainable Management of Groundwater: Sustainable Management Criteria (DRAFT), November 2017. (pp. 25-26)

⁴⁵ 23 CCR § 355.4(b)(1).

⁴⁶ 23 CCR § 354.28(b)(2).

3.1.2 Deficiency Details

The Plan describes sustainable management criteria for chronic lowering of groundwater levels in relation to documented historical impacts on beneficial uses and users of groundwater; however, it then establishes interim milestones that are below the minimum thresholds. This proposed management would allow a portion of the Subbasin to operate below minimum thresholds for an extended duration during the 20-year implementation period. However, the GSP fails to include sufficient explanations, rationale, and supporting details regarding: how the GSA has considered beneficial uses and users in developing and adopting this approach, how the GSAs will implement projects and management actions to raise water levels from interim milestones back up to minimum thresholds, and how this approach will avoid undesirable results for other sustainability indicators; therefore, a deficiency that precludes plan approval at this time has been identified.

The GSP defines undesirable results for chronic lowering of groundwater levels as “significant and unreasonable groundwater level declines – either due to multi-year droughts or due to chronic declines where groundwater is the sole supply – such that water supply wells are adversely impacted in a manner that cannot be readily managed or mitigated.”⁴⁷ The quantitative criteria defining when and where groundwater conditions could cause undesirable results to occur is defined as “when at least 33% of representative monitoring wells exceed the MT for a principal aquifer in 3 consecutive Fall monitoring events.”⁴⁸ Three consecutive fall measurements are chosen to manage groundwater based on “long-term trends rather than seasonal fluctuations” and since “three critically dry years (WY 2013 – WY 2015, see Figure 3-2) led to previous undesirable results”.⁴⁹

The GSP identifies the 2014-2017 drought period—when historic groundwater level declines were experienced—as a period when a combination of over-pumping and drought caused adverse impacts to water supply wells, resulting in undesirable results.⁵⁰ Specific examples of adverse impacts to wells during this drought period are provided, such as: failure of 159 domestic wells (representing five percent of the then-current number of domestic wells), loss of capacity in municipal wells, and increased costs associated with replacing or lowering pumps in three agency wells.⁵¹ The GSP notes that impacts to wells that occurred during the recent drought “appear to be mostly mitigated” at current [2021]⁵² groundwater levels.”⁵³ As stated, the GSP strives to avoid similar undesirable results in the future by arresting groundwater levels; therefore, the GSP establishes minimum thresholds as the historical low groundwater level experienced in

⁴⁷ Modesto Subbasin GSP, Table 6-3, p. 332.

⁴⁸ Modesto Subbasin GSP, Table 6-3, p. 332.

⁴⁹ Modesto Subbasin GSP, Section 6.3.1.3, p. 333.g

⁵⁰ Modesto Subbasin GSP, Section 6.3.1.1, p. 329 and Section 6.3.1.2, p. 331.

⁵¹ Modesto Subbasin GSP, Table 6-2, p. 329; Section 6.3.1.3, p. 333

⁵² Modesto Subbasin GSP, Section 6.3.1.3, p. 333.

⁵³ Modesto Subbasin GSP, Section 6.3.1.2, p. 331.

the Subbasin.⁵⁴ Specifically, minimum thresholds are the historical lows that occurred between water year (WY) 1991 to WY 2020, with many minimum thresholds occurring during the 2015-2016 period.⁵⁵

Department staff believe that establishing minimum thresholds based on the historical low groundwater level, largely during the 2015-2016 period, is a reasonable approach since the GSP has disclosed effects at those levels. However, the GSAs intend to allow continued groundwater level declines, below minimum threshold levels, during part of the 20-year implementation period based on the GSP's proposed interim milestones. For wells with observed groundwater level declines over the last seven years, the GSP defines 2027 interim milestones below the minimum thresholds. Given the proposed interim milestones, groundwater levels are likely to exceed (i.e., be below) minimum thresholds in portions of the Subbasin for a period of ten years. Based on information submitted in the 2022 Annual Report, groundwater levels have already fallen below minimum threshold levels in 11 of 50 representative monitoring sites.⁵⁶

The GSP does not describe how the GSAs considered the interests of beneficial uses and users of groundwater in the Subbasin in developing the proposed management approach of lowering groundwater levels below minimum thresholds for an extended period or explain how the Plan is likely to affect those interests. While the GSP does provide an analysis of domestic wells considered to be vulnerable at Fall 2015 groundwater levels, it does not provide a similar analysis at interim milestone groundwater levels, which in portions of the Subbasin will be below historical lows. Department staff believe a thorough analysis of effects on beneficial uses and users of groundwater at interim milestone levels to be necessary and appropriate supporting information to consider and disclose in the Plan because the relevant monitoring wells are in particularly vulnerable parts of the Subbasin (i.e., the eastern portion of the Subbasin and along rivers). Department staff also believe that groundwater conditions at these lower interim milestone levels may cause significant and unreasonable effects in the Subbasin as defined in the Plan, such as impacts to water supply wells that cannot be readily managed or mitigated.⁵⁷ Since the GSP was submitted, the Subbasin has experienced over 15 additional dry wells based on the Household Dry Well Reporting System.⁵⁸ The GSAs should conduct a well impact analysis to fully consider and disclose the potential effects of planned groundwater management to operate the Subbasin below minimum thresholds during the 20-year implementation period (see [Corrective Action 1a](#)).

Although the GSAs plan to only temporarily fall below minimum threshold groundwater levels and to then raise groundwater levels back above minimum thresholds over the 20-year implementation period, impacts from this approach—such as wells going dry for

⁵⁴ Modesto Subbasin GSP, Section 6.3.1.2, p. 331.

⁵⁵ Modesto Subbasin GSP, Section 6.3.2, p. 334.

⁵⁶ Modesto Subbasin Annual Report WY 2022 Table 3-4, pp. 33-35.

⁵⁷ Modesto Subbasin GSP, Table 6-3, p. 332.

⁵⁸ "Dry Well Reporting System." *Mydrywell.water.ca.gov*, mydrywell.water.ca.gov/report/publicpage. Accessed 21, November, 2023.

multiple years—would likely have significant, permanent impacts on beneficial uses and users as well as property interests in the Subbasin, which the GSAs have a responsibility to consider and disclose in the GSP. It does not appear from the GSP that the GSA considered lasting impacts that may occur even if groundwater levels improve after years of being below minimum threshold levels, such as permanent changes in land use practices (e.g., farmland fallowed, converted, or sold), decreased property values and population changes associated with years of inadequate or unreliable groundwater supplies (because below existing well or pump depths), and impacts or damage to, or abandonment of, domestic or agricultural wells whose productivity decreases or ceases at groundwater levels below minimum thresholds. The Plan does not consider or disclose these kinds of impacts that may first occur during Plan implementation, but then could have lasting, permanent impacts within the Subbasin even if groundwater levels are subsequently raised and then maintained above minimum thresholds levels. The GSAs should describe how impacts to wells experienced at interim milestones levels that are below minimum thresholds will be managed or mitigated to avoid resulting in undesirable results. If the GSAs plan to implement a well mitigation program to avoid causing significant and unreasonable effects to beneficial uses and users, details such as the number of wells anticipated to be eligible for the program, estimated costs, funding sources, and an implementation schedule should be provided (see [Corrective Action 1b](#)).

In addition to the concerns above, Department staff also believe the interim milestones below minimum thresholds have the potential to cause lasting or irreversible undesirable results related to land subsidence, water quality, and interconnected surface water in the Subbasin even if groundwater levels recover above the minimum thresholds after 20 years of Plan implementation. Department staff are concerned that impacts on other sustainability indicators may not recover in the same manner that groundwater levels may. The GSP acknowledges that widespread collapse of well casings and interference with water canal capacity and conveyance from over-pumping resulting in land subsidence has been well-documented in the Central Valley.⁵⁹ Although the Plan describes the relationship between minimum thresholds for chronic lowering of groundwater levels and how the minimum thresholds will avoid undesirable results for other sustainability indicators,⁶⁰ the Plan does not describe the potential impacts to other sustainability indicators that may occur because of the GSAs allowing groundwater levels to decline below minimum thresholds. There is no indication in the GSP that this issue was considered by the GSA or disclosed to interested parties. Therefore, the GSAs should analyze whether or how groundwater levels at the selected interim milestones will avoid causing undesirable results for other sustainability indicators (see [Corrective Action 1c](#)).

⁵⁹ Modesto Subbasin GSP, Section 6.7.1.1, p. 368.

⁶⁰ Modesto Subbasin GSP, Section 6.3.2.2, pp. 337-339.

3.1.3 Corrective Action 1

The GSAs must provide more detailed explanation and justification regarding the selection for the sustainable management criteria for the chronic lowering of groundwater sustainability indicator. Department staff recommend the GSAs consider and address the following:

- a) The GSAs should revise the GSP to include a complete and thorough discussion of how the interests of beneficial uses and users of groundwater in the Subbasin have been considered. Department staff recommend that additional assessment be conducted to understand the impacts to beneficial uses and users from continued overdraft, including what impacts may result if groundwater levels reach the established interim milestones in 2027. The GSP should also include a well impact analysis identifying the anticipated number and location of wells that may go dry during the 20-year implementation period based on the proposed interim milestones, for how long they may go dry, and the impacts to land uses and property interests, among others. Additionally, the GSP should include a discussion of how its approach to groundwater management may affect all identified beneficial uses and users in the Subbasin, including environmental users.
- b) The GSAs should revise the GSP to describe how impacts to wells experienced at interim milestone levels below minimum thresholds will be managed or mitigated. If the GSAs plan to implement a well mitigation program to avoid causing significant and unreasonable effects to beneficial uses and users, details such as the number of wells anticipated to be eligible for the program, estimated costs, funding sources, and an implementation schedule should be included in the GSP.
- c) The GSAs should revise the GSP to include an analysis describing whether or how managing the Subbasin to allow groundwater levels to drop to interim milestone levels that are below the established minimum thresholds will avoid causing undesirable results for other sustainability indicators.

3.2 DEFICIENCY 2. THE GSP DOES NOT INCLUDE SUFFICIENT DETAILS OF PROJECTS AND MANAGEMENT ACTIONS TO MITIGATE OVERDRAFT IN THE SUBBASIN OR PROVIDE A FEASIBLE PATH TO ACHIEVE SUSTAINABILITY.

3.2.1 Background

For basins where overdraft conditions occur, the GSP Regulations require a Plan to quantify the overdraft over a period of years during which water year and water supply conditions approximate average conditions.⁶¹ Furthermore, the Plan must describe feasible projects or management actions, including a quantification of demand reduction

⁶¹ 23 CCR § 354.18(b)(5).

or other methods, for the mitigation of overdraft and achieving the sustainability goal for the basin.⁶²

As part of the Department's evaluation, staff assess whether the Plan provides a reasonable assessment of overdraft conditions and includes reasonable means to mitigate overdraft, if present.⁶³ To substantially comply with the GSP Regulations⁶⁴, the assessment provided in the Plan must be supported with sufficiently detailed information and the analyses must be sufficiently thorough and reasonable. Discussion and analyses in a Plan must be detailed and thorough enough for Department staff to evaluate whether any discrepancy in the information provided in the Plan may materially affect the ability of the Agency to achieve the sustainability goal for the basin.

3.2.2 Deficiency Details

GSP Regulations require the Department to evaluate whether the projects and management actions are feasible and likely to prevent undesirable results and ensure that the basin is operated within its sustainable yield.^{65,66} Based on the GSAs' proposed management to operate the Subbasin at groundwater levels below minimum thresholds during a portion of the 20-year implementation period, implementing a robust combination of projects and management actions is a key aspect of successful Plan implementation and achieving sustainability, because under the Plan, the GSAs will have to timely implement and complete these projects and management actions to raise groundwater levels and reach the sustainability goal for the Subbasin consistent with SGMA timeframes. Under the currently proposed management approach where groundwater levels are managed to levels below the minimum thresholds, the suite of projects and management actions in the Plan must be sufficient to not only arrest groundwater level declines, but also to raise groundwater levels to offset and mitigate the temporary removal of groundwater in storage that occurred during the implementation period when groundwater levels were below the minimum threshold levels.

While the GSP documents that there has been historical groundwater overdraft in the Subbasin, it does not appear to provide reasonable means to mitigate actual overdraft, mainly because the Plan does not demonstrate that the proposed suite of projects and management actions would be sufficient to mitigate the anticipated overdraft and groundwater in storage depletions. The Plan's projected baseline overdraft estimate—which is used as the basis for developing projects to mitigate overdraft⁶⁷—is substantially lower than actual reported values for the Subbasin in recent annual reports. For example, the values of negative change in groundwater storage (i.e., overdraft) reported for water year (WY) 2021 (which represents change between October 1, 2020, and September 30,

⁶² 23 CCR §§ 354.44 and 354.44(b)(2).

⁶³ 23 CCR § 355.4 (b)(6).

⁶⁴ 23 CCR § 355.4 (b).

⁶⁵ 23 CCR § 355.4(b)(6).

⁶⁶ 23 CCR § 355.4(b)(5).

⁶⁷ Modesto Subbasin GSP, Section 8.5.1, p 484.

2021) was -132,500 acre-feet (AF) and -172,300 AF for WY 2022.⁶⁸ In contrast, the GSP's estimate of projected overdraft is more than 10 times less at only -11,000 acre-feet per year (AFY).⁶⁹ Still, the GSP attempts to demonstrate through a 50-year modeling scenario that the implementation of seven projects will mitigate the estimated overdraft by yielding an estimated average increase in groundwater storage of 1,400 AFY.⁷⁰ Assuming Plan implementation proceeds according to the modeled scenario, the expected cumulative effect to groundwater in storage would be an increase of 70,000 AF over the 50-year period. However, this projected maximum gain in storage is less than a quarter of the storage loss reported to have been experienced in the Subbasin in just two years of annual reporting (i.e., a cumulative loss in groundwater storage of 304,800 AF). It would take nearly 218 years of full implementation of the Plan's proposed projects combined with the Subbasin operating without further overdraft to offset this loss of storage. Department staff are concerned that continued overdraft will exacerbate the current problems the Subbasin is experiencing, which include dry wells. Based on the information contained in the GSP, it does not appear the GSAs have proposed a suite of projects and management actions that will be sufficient or effective in offsetting the recent overdraft observed in the Subbasin and are therefore unlikely to achieve sustainability.

According to the GSP's sustainable conditions groundwater budget, to reach sustainability in the Subbasin, there would need to be a reduction of approximately 44,000 AFY of groundwater pumping from historical conditions, or an approximate 15 percent reduction in overall groundwater pumping from the Subbasin.⁷¹ The required reduction in pumping is much greater when compared to the current water budget which would require a reduction of approximately 149,000 AFY, or an approximate 35 percent reduction in overall groundwater pumping from the Subbasin.⁷² The GSP does not provide details of how the projected reduction in pumping would be achieved or implemented. The GSP describes six management actions that include demand management strategies such as conservation, land fallowing, and a water accounting framework to reduce groundwater pumping; however, the Plan does not commit to take these actions or present detailed tasks, milestones, and timelines depicting how these projects will be completed and implemented. To the contrary, the GSP asserts the sustainability goals can be met without demand management and that management actions need only be undertaken if projects are insufficient.⁷³ The GSP states that most of the management actions are presented as frameworks and that potential management actions will be implemented by each GSA, as needed, using an adaptive management approach which will be informed by continued monitoring of groundwater conditions, using the monitoring network and methods

⁶⁸ Department of Water Resources, SGMA Portal, Annual Report Module, WY 2021 and WY 2022 Data, Reported Overdraft, Modesto Subbasin.

⁶⁹ Modesto Subbasin GSP, Table 5-8, p. 266.

⁷⁰ Modesto Subbasin GSP, Section 8.5.1, p. 487.

⁷¹ Modesto Subbasin GSP, Table 5-8, p. 266 and Table 5-15, p. 314.

⁷² Modesto Subbasin GSP, Table 5-8, p. 266 and Table 5-15, p. 314.

⁷³ Modesto Subbasin GSP, Section 8.4, p. 465 and Section 8.5.1, p. 487.

described in the GSP.⁷⁴ However, the Plan does not provide details clarifying when any particular GSA's adaptive management approach would trigger increased actions by the GSA through implementation of more immediate projects and management actions. This approach is problematic for several reasons. First, the equivocation and lack of firm commitments to implement certain projects or management actions is inconsistent and contrary to conditions the GSP has committed to address, including overdraft, that are already occurring--meaning there is no need to wait for a triggering event to decide whether certain projects and management actions should be implemented. Second, equivocation and ambiguity in whether, when, or how projects and management actions will be implemented creates uncertainty, gives rise to potential disputes, and makes it difficult for interested parties and the Department to monitor and assess whether the Plan is being properly implemented. While adaptive management, used in the sense of reacting or adjusting management to conditions based on new or recent information can generally be a useful or reasonable approach to managing groundwater under SGMA, clear, express procedures, methodology, and triggers are required for the Department to be able to evaluate whether the approach will be effective in achieving sustainable groundwater management, and more generally to avoid disputes or delays in implementation.

For all the above reasons, the GSP does not include sufficient details of, or commitment to, implementation of projects and management actions for Department staff to conclude that the measures proposed by the GSP to arrest groundwater level declines and mitigate overdraft are feasible, reasonable, or that the basin is likely to achieve its sustainability goals according to SGMA timelines (see [Corrective Action 2a](#)).

Additionally, while these projects are being implemented, the GSAs intend to allow continued groundwater level declines based on the GSP's proposed interim milestones. As previously discussed, the GSAs have selected a management path where groundwater levels will likely fall below minimum threshold levels for multiple, successive years during the 20-year implementation period. Under such a scenario, GSAs have a responsibility to consider and disclose the effects of proposed groundwater management on beneficial uses and users and to develop an adequate suite of feasible and effective projects and management actions that can be implemented to raise groundwater levels above minimum thresholds to avoid undesirable results. The GSAs should expand on the proposed projects and management actions to define a feasible path for how groundwater levels will rise from the proposed interim milestone levels back up to the minimum thresholds (see [Corrective Action 2b](#)).

3.2.3 Corrective Action 2

The GSAs should revise the GSP to provide specific details of feasible projects and management actions that will be implemented to mitigate overdraft and that will raise groundwater levels from interim milestones towards the minimum thresholds and

⁷⁴ Modesto Subbasin GSP, Section 8.4, p. 466.

measurable objectives to achieve sustainability in the Subbasin. Specifically, the Plan must be amended as follows:

- a. The GSAs should revise the GSP to include a reasonable means to arrest groundwater level declines and stop the overdraft that is continuing to occur in the Subbasin. Specifically, the GSAs should describe feasible, effective proposed projects and management actions that are commensurate with the level of understanding of groundwater conditions in the Subbasin and provide sufficient details for Department staff to be able to clearly evaluate how the Plan's projects and management actions will ensure achieving the sustainability goal in the Subbasin.
- b. The GSAs should revise the GSP to include a feasible collection of projects and management actions to raise groundwater levels to avoid undesirable results that would occur as a result of groundwater levels dropping below minimum thresholds towards the proposed interim milestones levels.

4 STAFF RECOMMENDATION

Department staff believe that the deficiencies identified in this assessment should preclude approval of the GSP for the San Joaquin Valley – Modesto Subbasin. Department staff recommend that the GSP be determined incomplete.



MODESTO SUBBASIN GSP

FALL 2023 WATER LEVEL ANALYSIS

STRGBA GSA Meeting
February 14, 2024



AGENDA

- Fall 2023 GSP Monitoring Event
- Water Level Analysis – Draft Results
 - Sustainable Management Criteria
 - Hydrographs
- Putting the results in perspective



MW-9

DEFINITION OF UNDESIRABLE RESULTS

Chronic Lowering of Groundwater Levels



An undesirable result will occur when at least 33% of representative monitoring wells exceed the MT for a principal aquifer in three (3) consecutive Fall monitoring events.

Interconnected Surface Water



An undesirable result will occur on one of the rivers when 33% to 50% of the representative monitoring wells for that river exceed the MT in three (3) consecutive Fall monitoring events.

(33% on Stanislaus and Tuolumne rivers, 50% on San Joaquin River)

FALL 2023 GSP MONITORING EVENT

- 4th GSP Monitoring Event
- Groundwater elevations measured in 59 representative monitoring wells (RMWs)
- 2 RMWs not measured due to casing obstructions (Wood and Quesenberry)

FALL 2023 MINIMUM THRESHOLDS (MTs)

Chronic Lowering of Water Levels

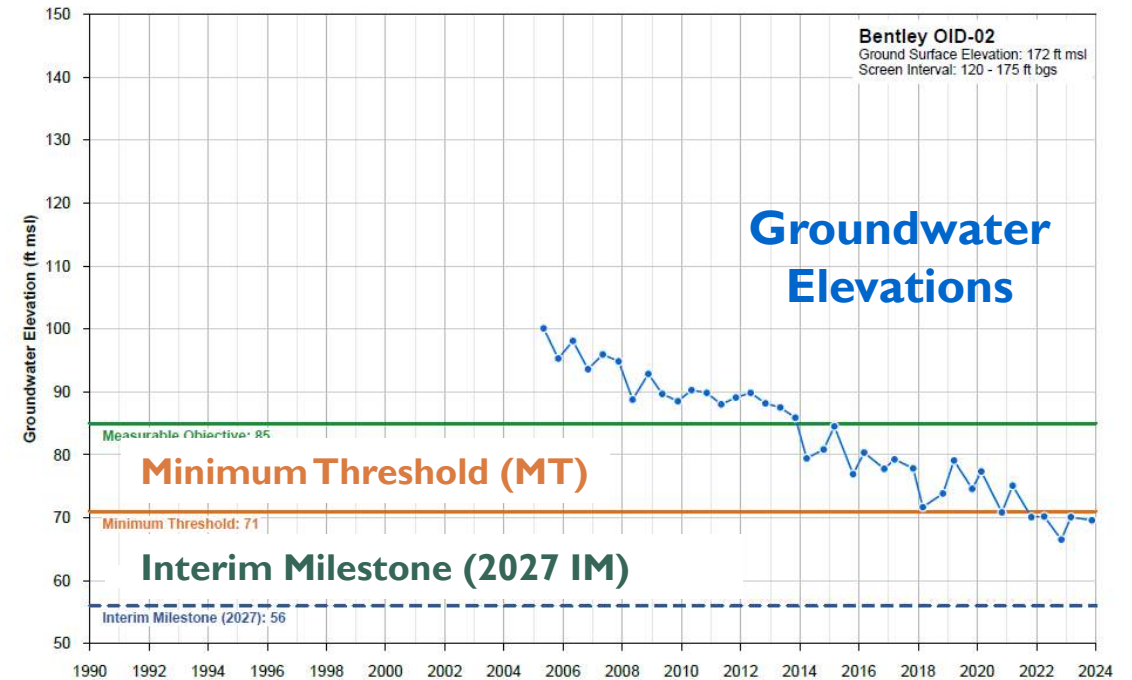
	Fall 2023
Western Upper Principal Aquifer	
Above MT	17
Below MT	0
Not Measured	0
% Below (includes measured wells)	0%
Western Lower Principal Aquifer	
Above MT	4
Below MT	1
Not Measured	0
% Below (includes measured wells)	20%
Eastern Principal Aquifer	
Above MT	26
Below MT	11
Not Measured	2
% Below (includes measured wells)	30%

Interconnected Surface Water

	Fall 2023
San Joaquin River	
Above MT	2
Below MT	0
Not Measured	0
% Below (includes measured wells)	0%
Stanislaus River	
Above MT	6
Below MT	2
Not Measured	0
% Below (includes measured wells)	25%
Tuolumne River	
Above MT	8
Below MT	1
Not Measured	1
% Below (includes measured wells)	11%

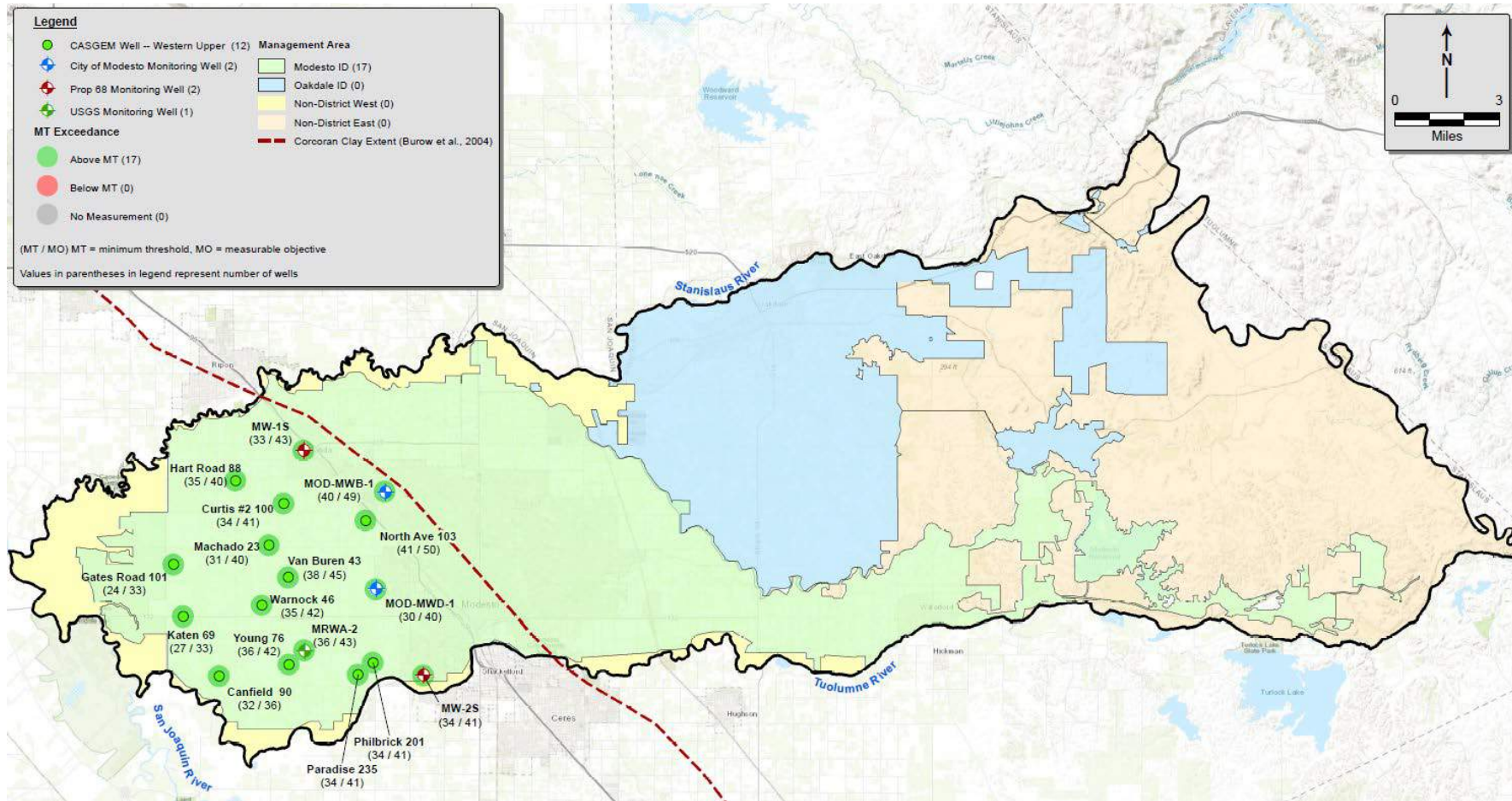
INTERIM MILESTONES (IMs)

- **Chronic Lowering of Water Levels**
 - 14 wells with IMs
 - No wells exceeded their IM during Fall 2023
- **Interconnected Surface Water**
 - 5 wells with IMs
 - No wells exceeded their IM during Fall 2023



FALL 2023

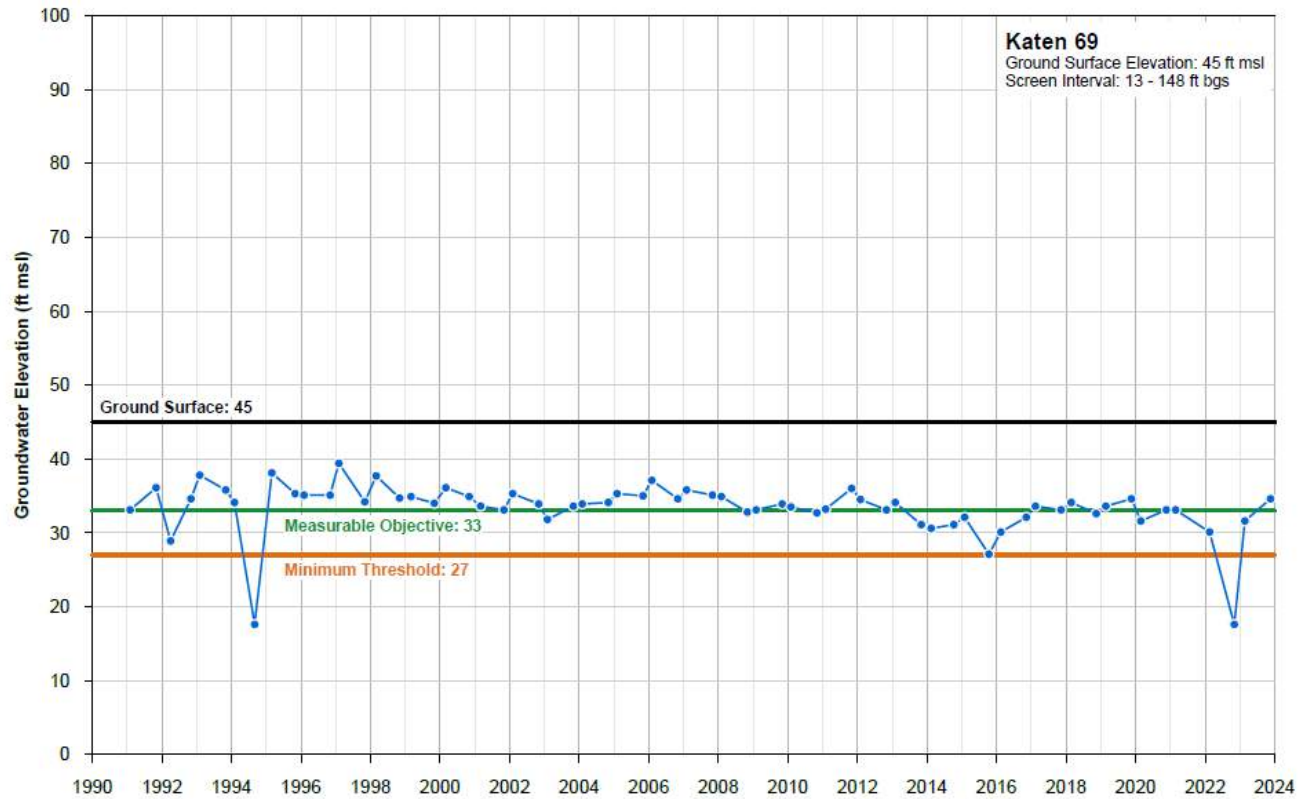
WESTERN UPPER PRINCIPAL AQUIFER



- No RMWs below MT
- Many wells over MOs
- Fall 2022:
I RMW was below MT (Katen 69)

HYDROGRAPHS

WESTERN UPPER PRINCIPAL AQUIFER



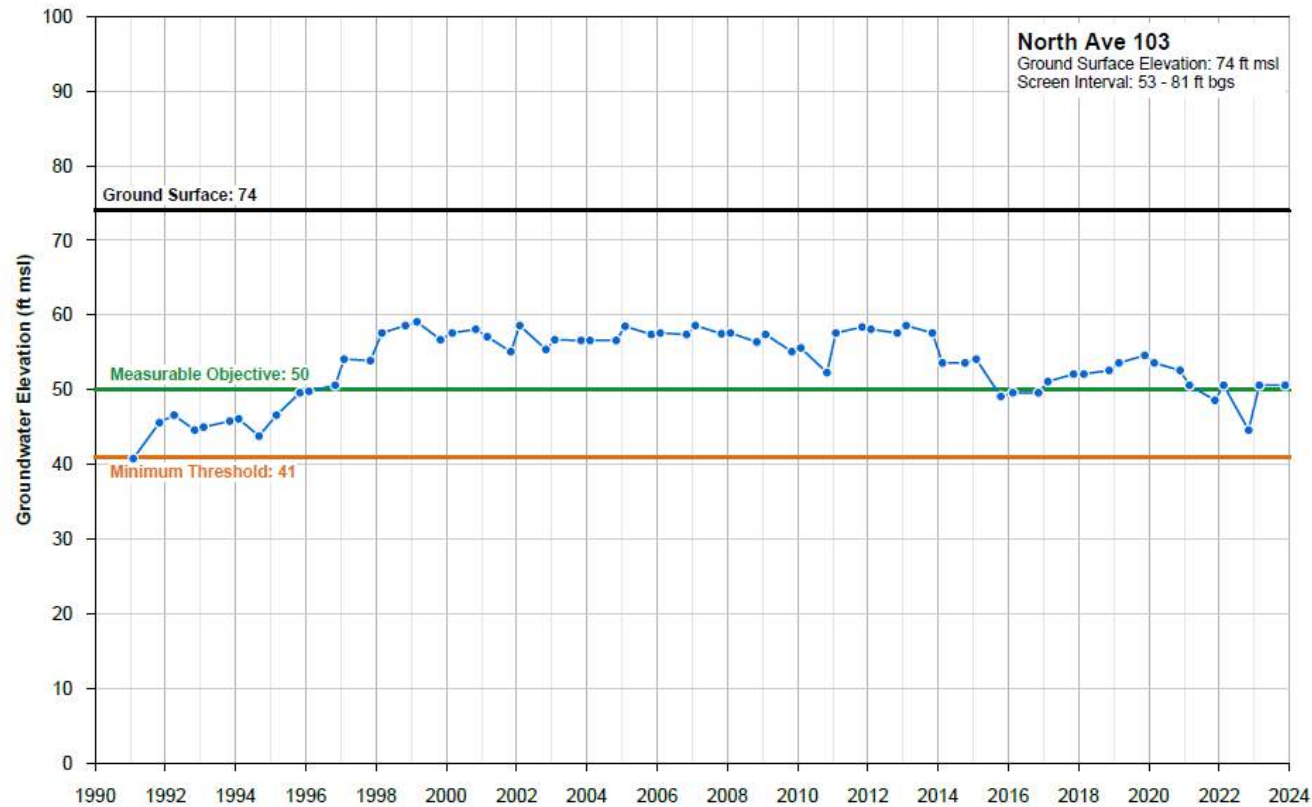
- Since Fall 2022, water levels have increased and are above the MT in 2023



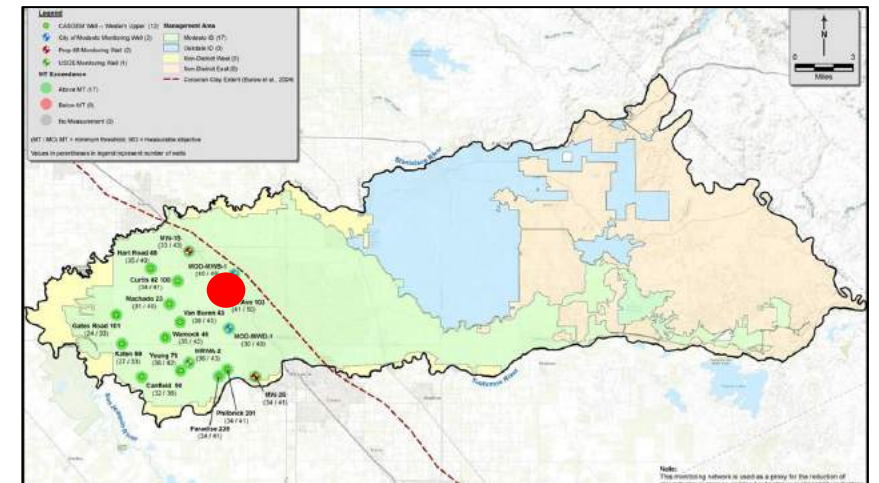
DRAFT

HYDROGRAPHS

WESTERN UPPER PRINCIPAL AQUIFER



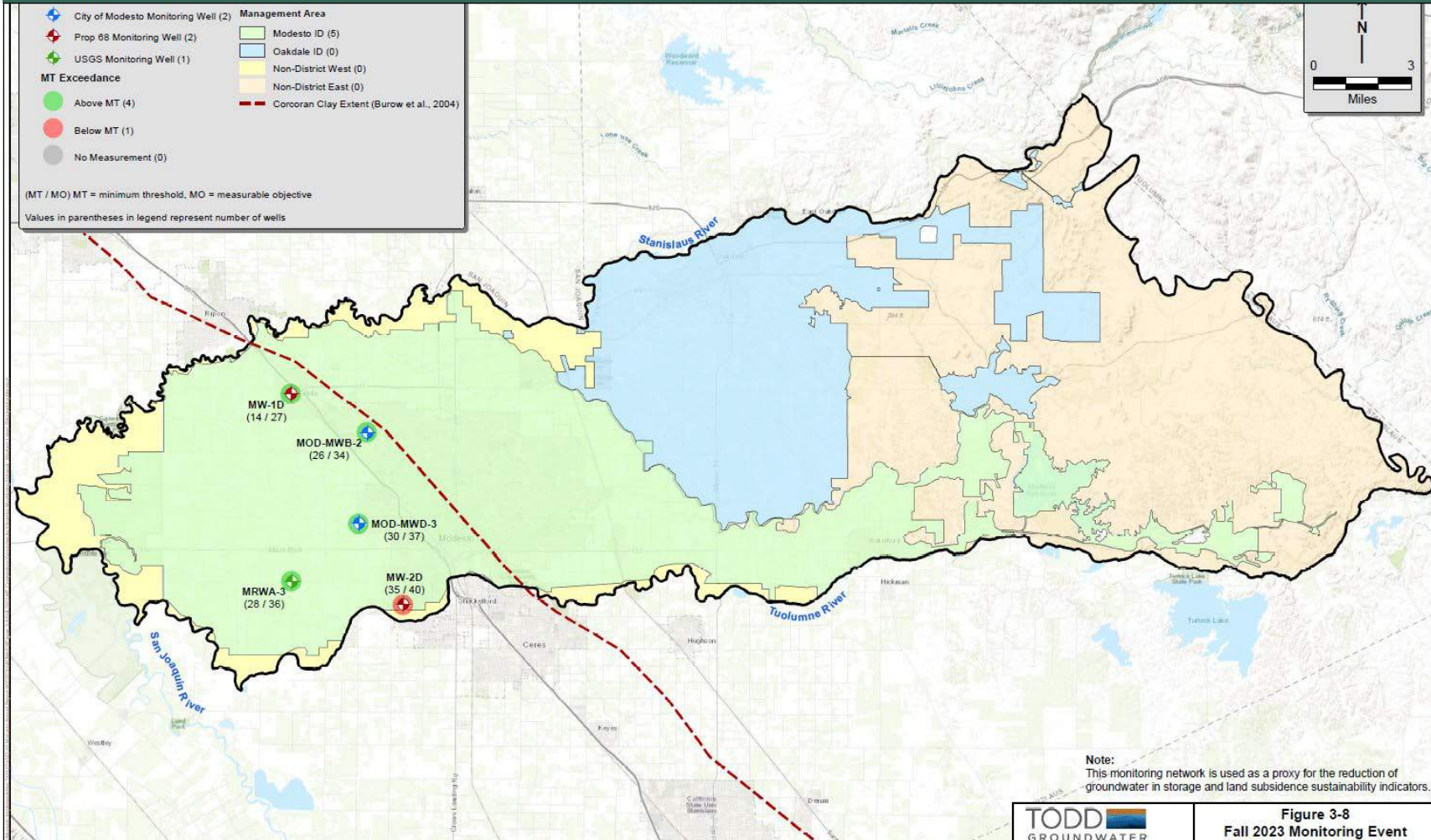
- Water levels are above the MO
- Water level recovered and is stable during 2023



DRAFT

FALL 2023

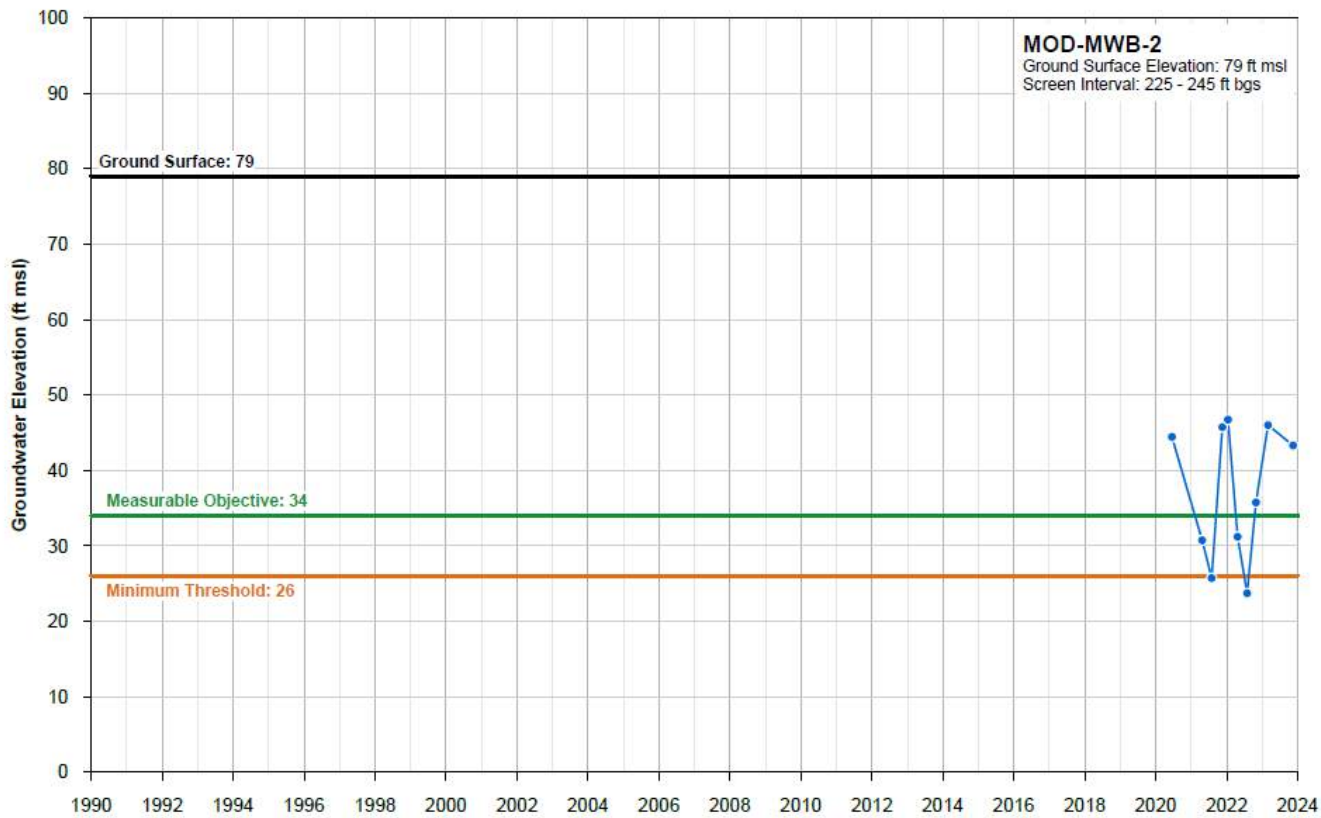
WESTERN LOWER PRINCIPAL AQUIFER



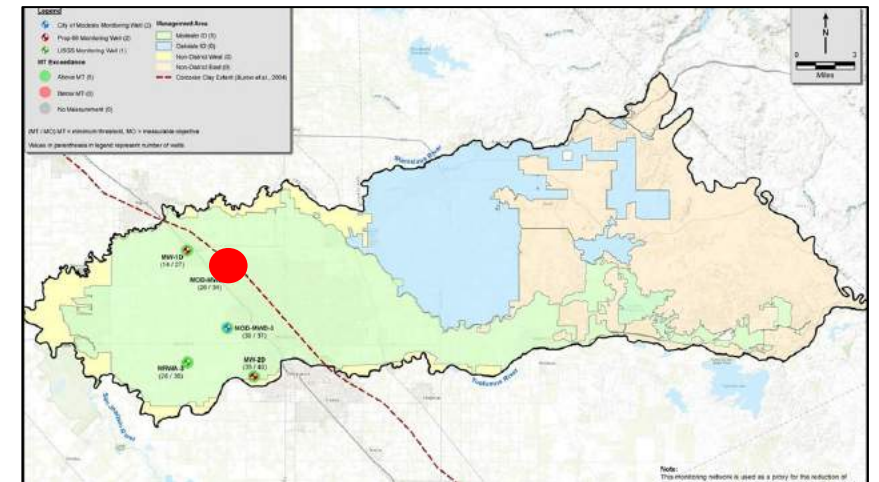
- 20% RMWs below MT
 - 4 wells > MT
 - 1 well < MT
- Fall 2022: 1 RMW was below MT (MW-2D)

HYDROGRAPHS

WESTERN LOWER PRINCIPAL AQUIFER



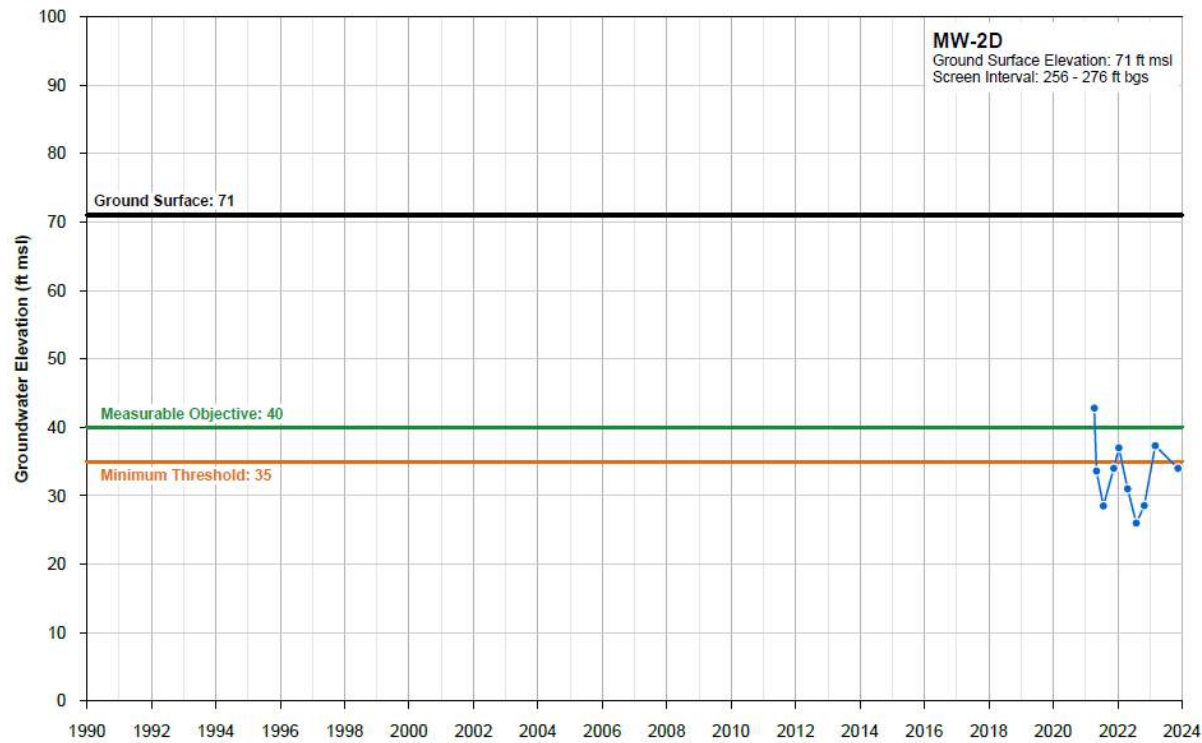
- Water levels in eastern portion of Western Lower Principal Aquifer are above the MO in 2023



DRAFT

HYDROGRAPHS

WESTERN LOWER PRINCIPAL AQUIFER

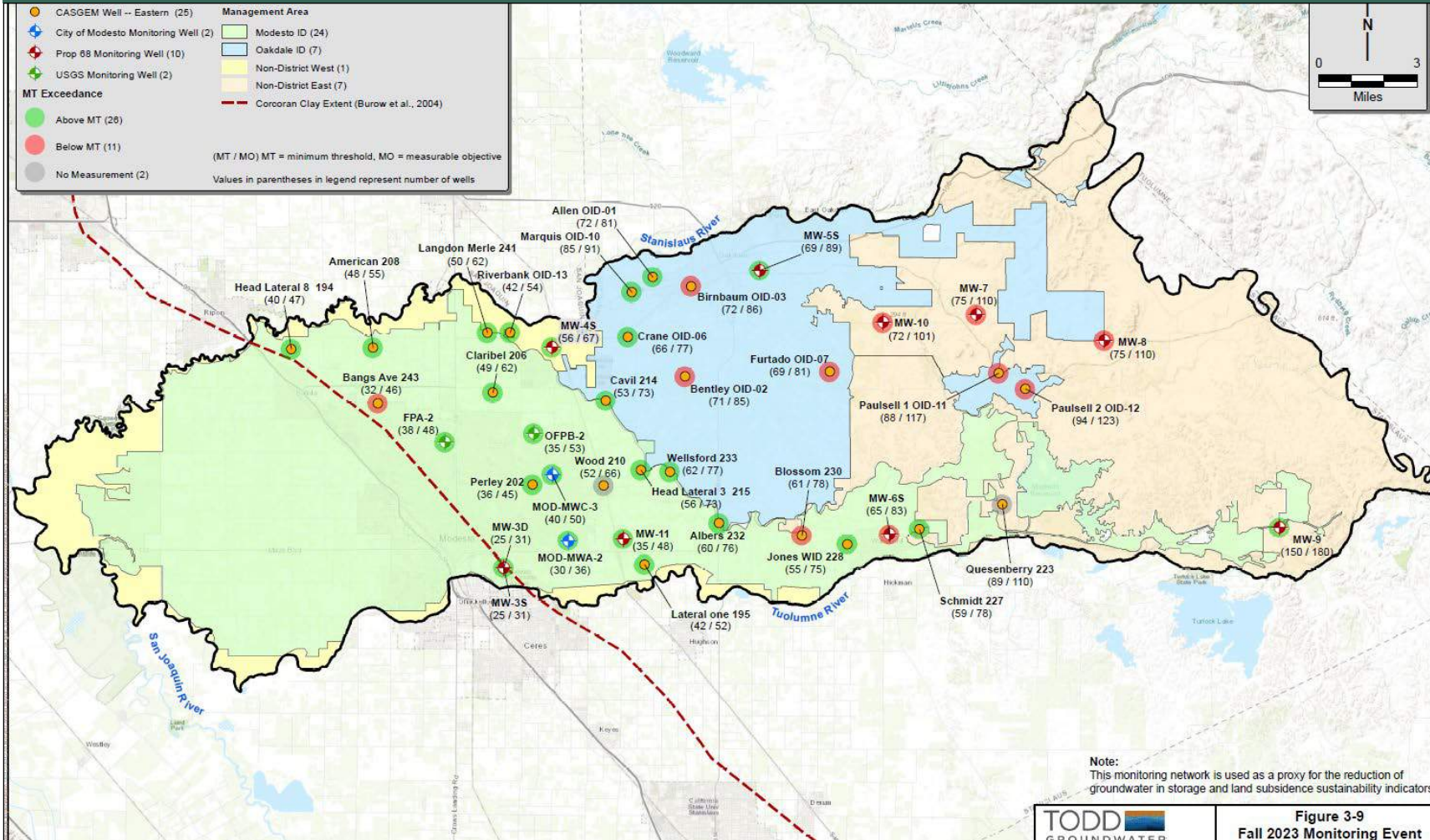


- Water levels recovered in 2023, but are slightly below the MT in Fall 2023



DRAFT

FALL 2023 EASTERN PRINCIPAL AQUIFER

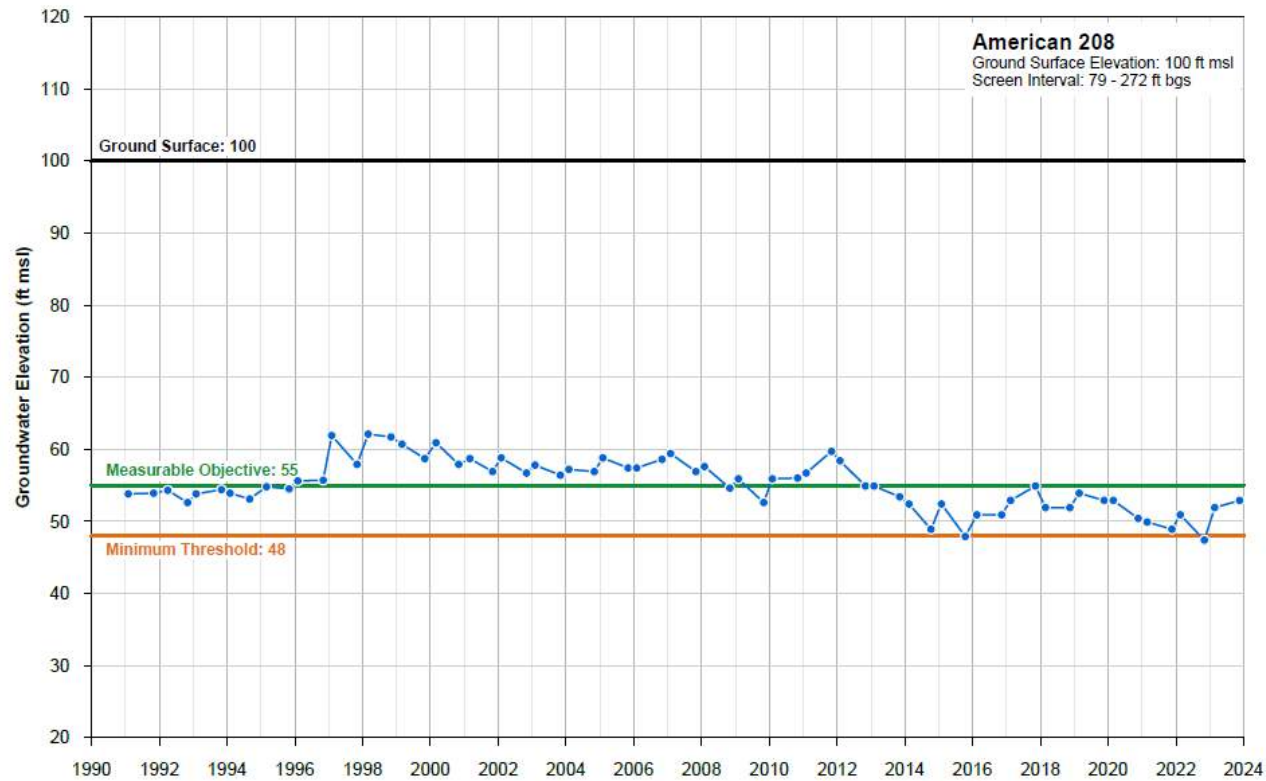


- 30% of RMWs below MT
 - 26 wells > MT
 - 11 wells < MT
 - 2 wells not monitored
- 14 RMWs have IMs (13 above and 1 NM)
- Fall 2022: 21 wells (57%) were below MT

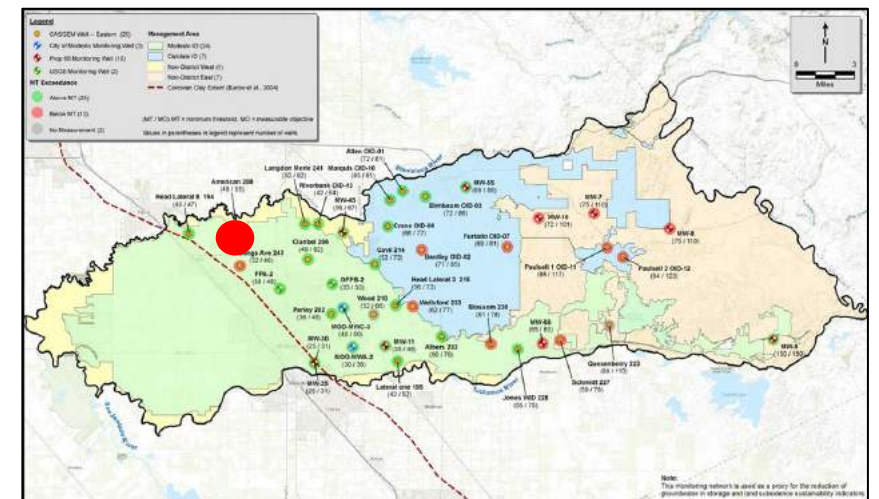
Figure 3-9
Fall 2023 Monitoring Event

HYDROGRAPHS

EASTERN PRINCIPAL AQUIFER



- Water level was below MT in Fall 2022
- Rebounded in Spring 2023 and increased further in Fall 2023



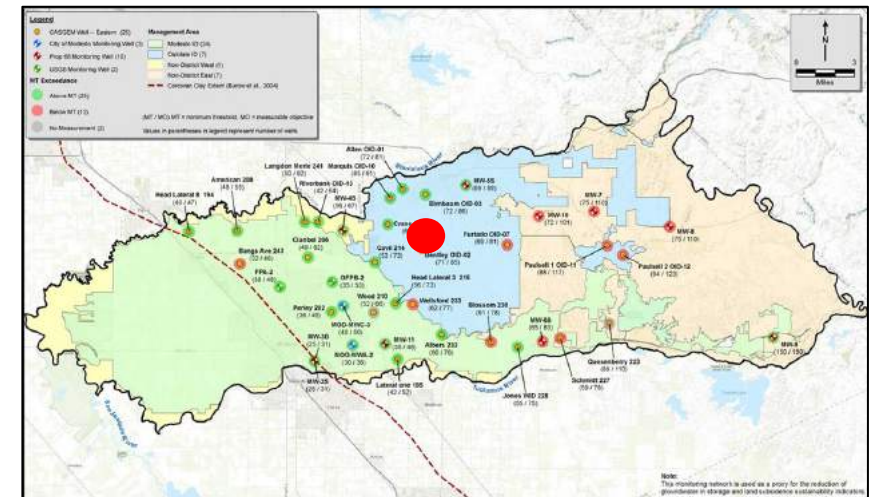
DRAFT

HYDROGRAPHS

EASTERN PRINCIPAL AQUIFER



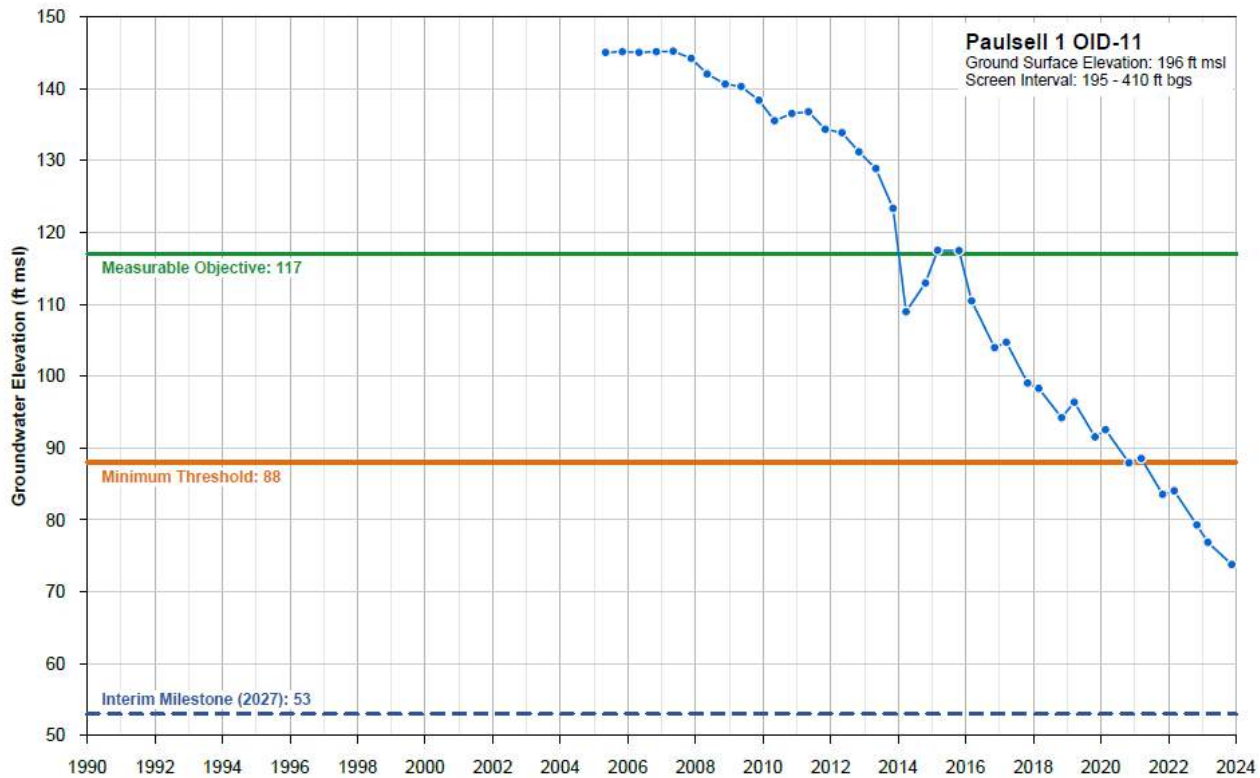
- Water level in Fall 2023 was below the MT
- Slight decline from Spring 2023 to Fall 2023, much less than typical seasonal decline



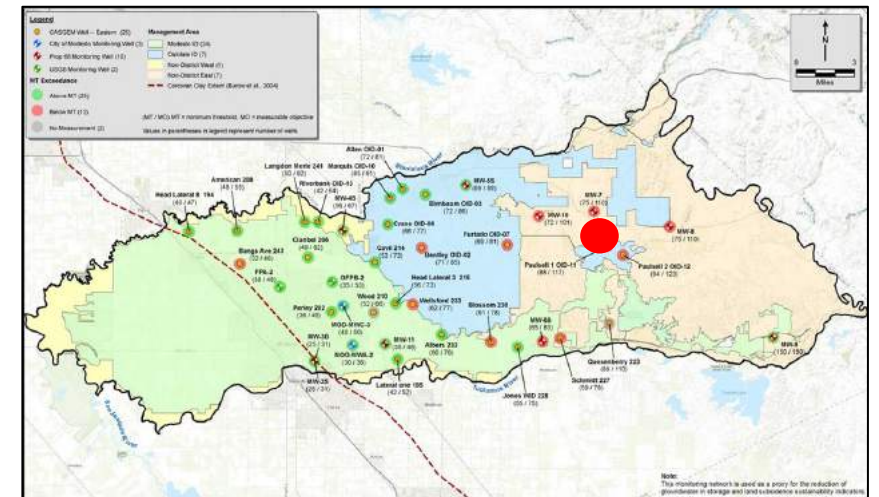
DRAFT

HYDROGRAPHS

EASTERN PRINCIPAL AQUIFER

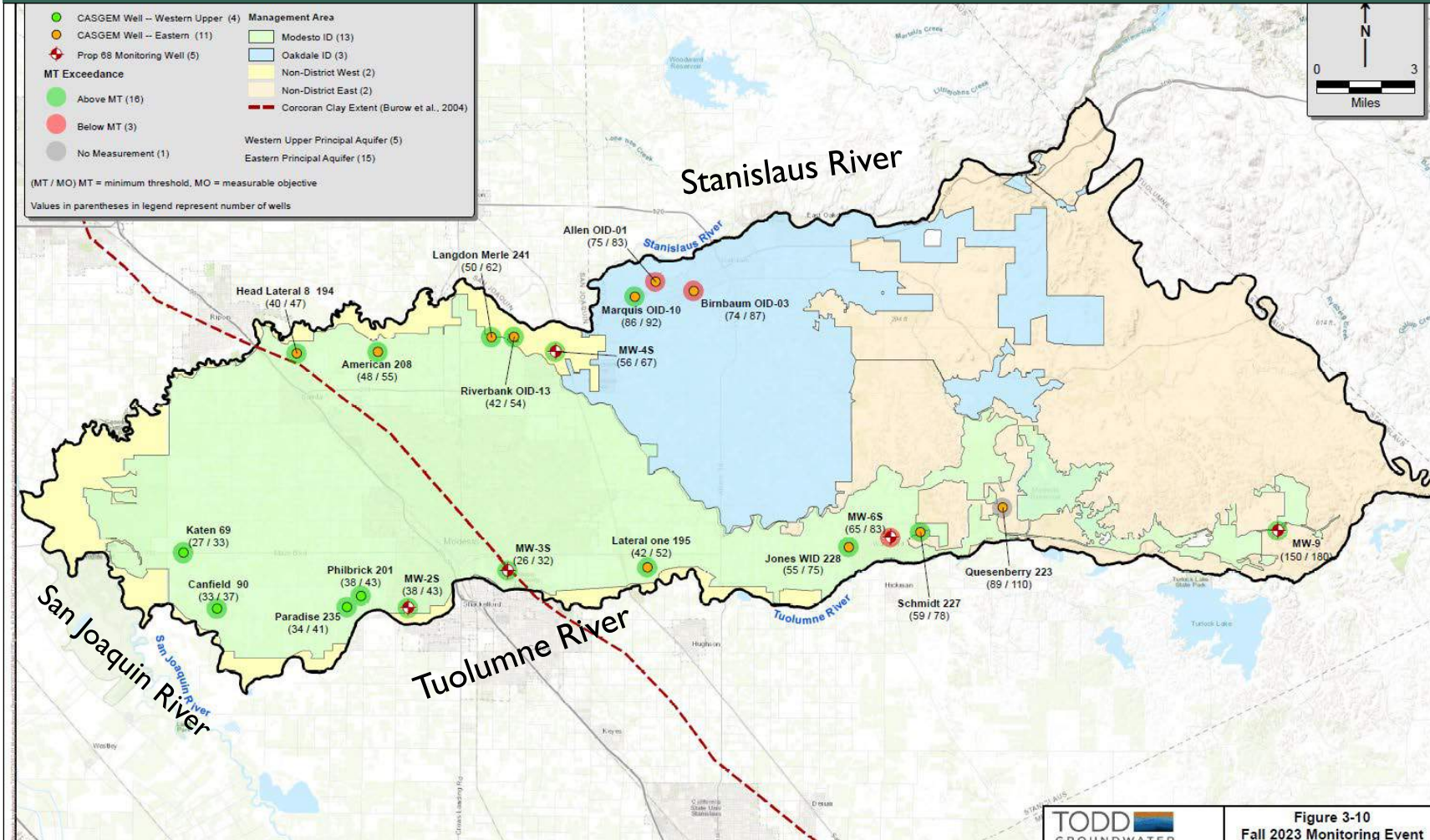


- WY 2023 water levels below the MT
- Eastern wells have highest rates of water level declines
- 3-foot decline from Spring to Fall 2023



DRAFT

FALL 2023 INTERCONNECTED SURFACE WATER



San Joaquin River

- 0 of 2 below MT (0% below MT)

Fall 2022: 50% below

Stanislaus River

- 2 of 8 below MT (25% below MT)

Fall 2022: 75% below

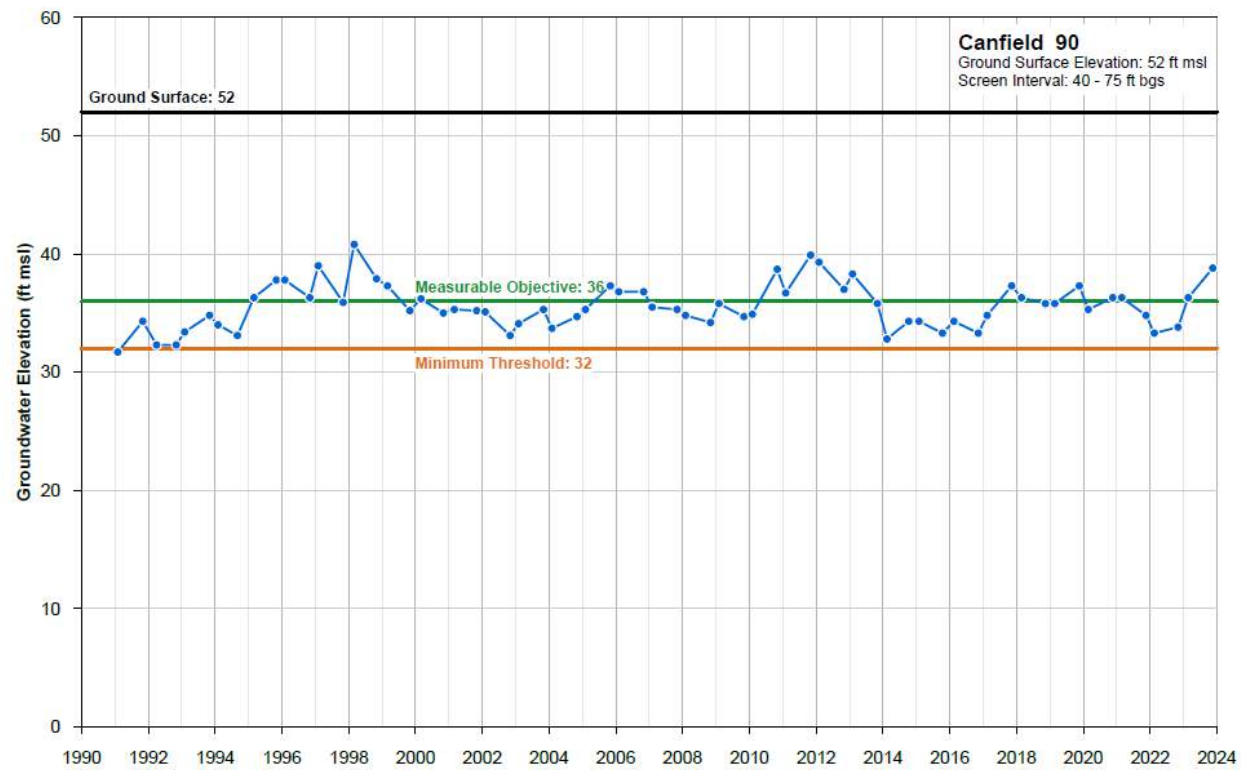
Tuolumne River

- 1 of 9 below MT (11% below MT)

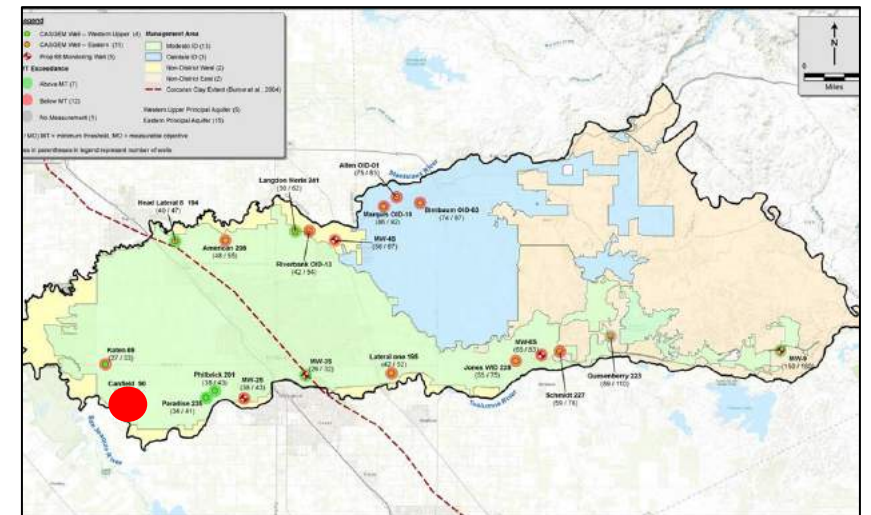
Fall 2022: 56% below

HYDROGRAPHS

INTERCONNECTED SURFACE WATER



- Water levels increased throughout 2023
- Water levels above the MT and the MO



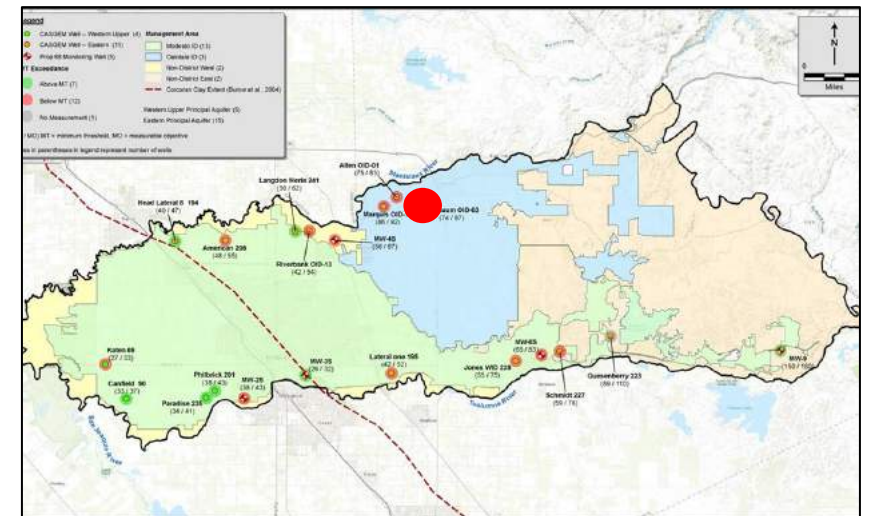
DRAFT

HYDROGRAPHS

INTERCONNECTED SURFACE WATER



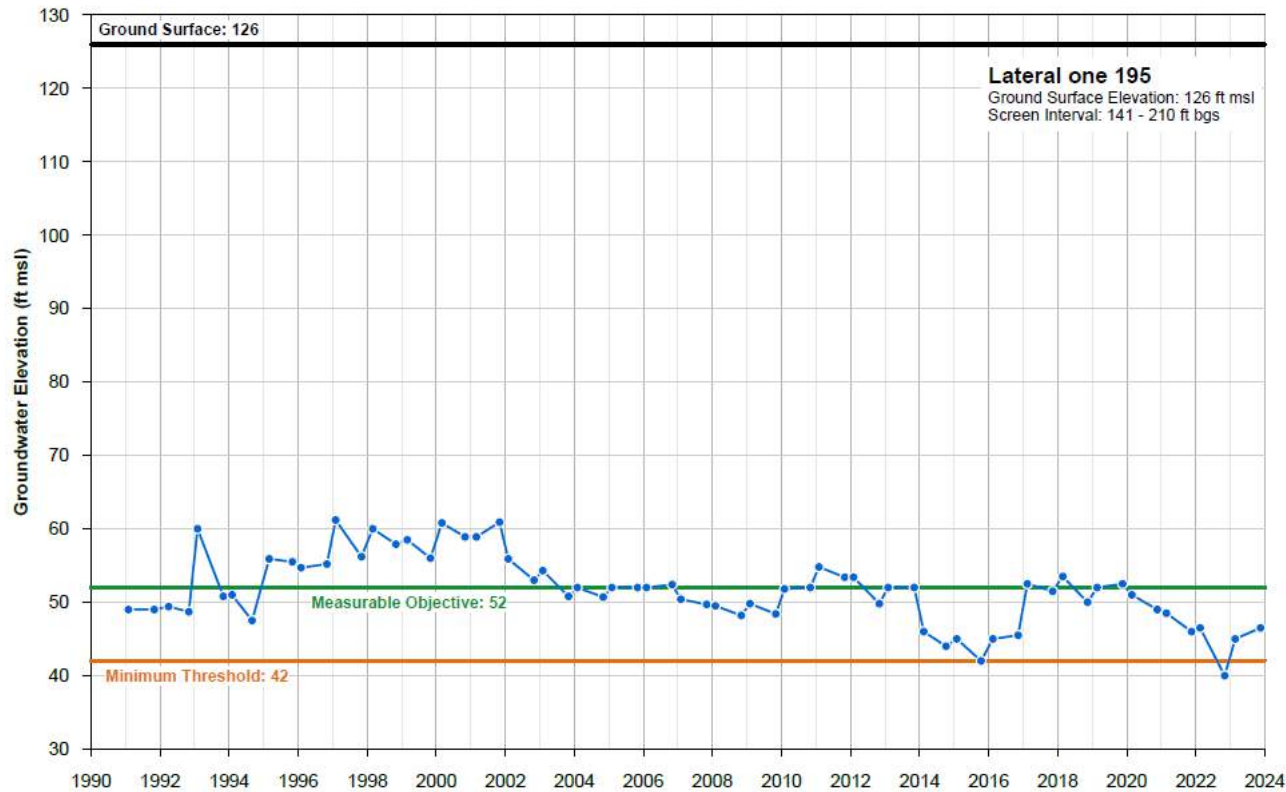
- Fall 2023 levels slightly below the MT
- 2023 seasonal decline was less than usual



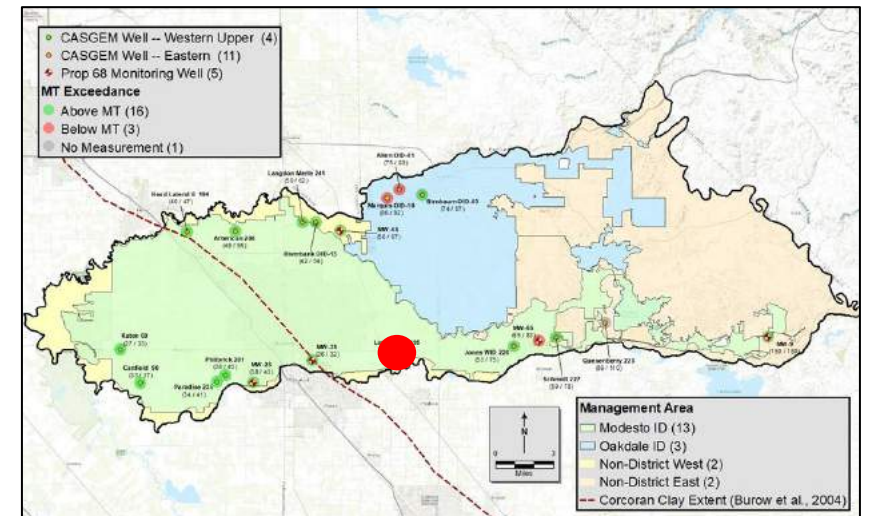
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HYDROGRAPHS

INTERCONNECTED SURFACE WATER



- Water level rose throughout 2023 and is above the MT



DRAFT

PUTTING THESE RESULTS IN PERSPECTIVE

- Fall 2023 monitoring event showed water level recovery in most of the Subbasin after two consecutive critically dry years
- Some wells in Eastern Principal Aquifer showed further decline despite a wet year
- MT exceedances were below the threshold for undesirable results
- “Reset” of sustainability criteria for undesirable results
 - Requires 33% exceedances in 3 consecutive Fall events for Chronic Lowering of GW
 - Requires 33% to 50% exceedances in 3 consecutive Fall events for ISW
- No wells are below IMs



QUESTIONS?