



CALIFORNIA DEPARTMENT OF WATER RESOURCES

SUSTAINABLE GROUNDWATER MANAGEMENT OFFICE

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October 26, 2023

RECEIVED

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Gaylon Norwood
County of Lassen Groundwater Sustainability Agency
707 Nevada Street, Suite 5
Susanville, CA 96130
gnorwood@co.lassen.ca.us

LASSEN COUNTY DEPARTMENT OF
PLANNING AND BUILDING SERVICES

RE: Big Valley Basin – 2022 Groundwater Sustainability Plan

Dear Gaylon Norwood,

The Department of Water Resources (Department) has evaluated the groundwater sustainability plan (GSP or Plan) submitted for the Big Valley Basin. 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 Basin’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 Basin’s groundwater sustainability agencies (GSAs) review while determining how to address the deficiencies.

The Basin’s GSAs have 180 days, the maximum allowed by the GSP Regulations, to address the identified deficiencies. Where addressing the deficiencies requires modification of the Plan, the GSAs must adopt those modifications into their respective GSPs 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 April 23, 2024. The Department understands that much work has occurred to advance sustainable groundwater management since the GSAs submitted their GSPs 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 their GSPs (i.e., no later than the first required periodic evaluation). Among other items, those corrective actions will recommend the GSAs provide more detail on their 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 Basin's GSAs cannot address the deficiencies identified in this letter by April 23, 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 GSAs 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 Big Valley Basin Groundwater Sustainability Plan

**STATE OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES**

**STATEMENT OF FINDINGS REGARDING THE
DETERMINATION OF INCOMPLETE STATUS OF THE
BIG VALLEY BASIN
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 Basin, 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 County of Lassen Groundwater Sustainability Agency and County of Modoc Groundwater Sustainability Agency (GSAs or Agencies) for the Big Valley Basin (Basin) (Basin No. 5-004).

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 deems the Plan incomplete based on the Staff Report and the findings contained herein. In particular, the Department finds:

- A. The GSP does not include a reasonable assessment of overdraft conditions and reasonable means to mitigate overdraft.
 - 1. The GSAs should reevaluate the assessment of overdraft conditions in the Basin. The assessment should include the latest information for the Basin to ensure the GSP includes the required projects and management actions to mitigate overdraft in the Basin.
 - 2. The GSAs should describe feasible proposed management actions that are commensurate with the level of understanding of groundwater conditions of the Basin and with sufficient details for Department staff to be able to clearly understand how the Plan's projects and management actions will mitigate overdraft in the Basin. The Department plans to

release guidance on funding in early 2024. The GSAs are encouraged to review the guidance for options to fund projects and management actions.

B. The GSP does not establish sustainable management criteria for chronic lowering of groundwater levels in a manner substantially compliant with the GSP Regulations. The GSP lacks a thorough explanation and justification regarding the selection of the sustainable management criteria for groundwater levels, particularly undesirable results and minimum thresholds. The GSP also lacks quantitative descriptions of the effects of those criteria on the interests of beneficial uses and users of groundwater.

1. The GSAs should refine the description of undesirable results to clearly describe the significant and unreasonable conditions the GSAs are managing the Basin to avoid. The GSAs should fully disclose, describe, and explain the rationale for determining the number of wells that may be dewatered and the level of impacts that may occur without rising to significant and unreasonable levels constituting undesirable results. The GSAs should explain how well mitigation will be considered by the GSAs during management of the Basin in a project or management action as part of the GSP. The GSAs are encouraged to review the Department's April 2023 guidance document titled *Considerations for Identifying and Addressing Drinking Water Well Impacts*.¹
2. The GSAs should revise minimum thresholds to be set at the level where the depletion of supply across the Basin may lead to undesirable results and provide the criteria used to establish and justify minimum thresholds.
3. The GSAs should provide an evaluation of how minimum thresholds may affect the interests of beneficial uses and users of groundwater, as well as land uses and property interests.

C. The GSP does not develop sustainable management criteria for degraded water quality.

1. The GSAs should evaluate the occurrence of constituents of concern in the Basin—based on the best available information and science—to either explain why each constituent of concern is not likely to affect sustainability or cause undesirable results in the Basin, or include monitoring and sustainable management criteria for each constituent of concern. The GSAs are encouraged to continue coordinating with the appropriate groundwater users, including drinking water, environmental, and

¹ <https://water.ca.gov/Programs/Groundwater-Management/Drinking-Water-Well>

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agricultural users as identified in the Plan, and water quality regulatory agencies and programs in the Basin.

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Based on the above, the GSP submitted by the Agencies for the Big Valley Basin 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: October 26, 2023

Enclosure: Groundwater Sustainability Plan Assessment Staff Report – Big Valley Basin

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

Groundwater Basin Name:	Big Valley Basin (No. 5-004)
Submitting Agency:	County of Modoc Groundwater Sustainability Agency and County of Lassen Groundwater Sustainability Agency
Submittal Type:	Initial GSP Submission
Submittal Date:	January 27, 2023
Recommendation:	Incomplete
Date:	October 26, 2023

The County of Modoc Groundwater Sustainability Agency and County of Lassen Groundwater Sustainability Agency (collectively, the GSAs) submitted the Big Valley Basin 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 Big Valley Basin (Basin) for the implementation of SGMA. As presented in this staff report, a single GSP covering the entire basin was adopted and submitted to the Department for review by the GSAs.³

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.⁴ In addition, consistent with the GSP Regulations, Department staff have provided corrective actions⁵ 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

¹ Water Code § 10720 *et seq.*

² 23 CCR § 350 *et seq.*

³ Water Code §§ 10727(b)(1), 10733.4; 23 CCR § 355.2.

⁴ 23 CCR §355.2(e)(2).

⁵ 23 CCR §355.2(e)(2)(B).

define sustainable management criteria in the manner required by SGMA and the GSP Regulations.

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 SGMA⁶ and is likely to achieve the basin's sustainability goal.⁷ 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.⁸ 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.⁹ 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.¹⁰

For a Plan to be evaluated by the Department, it must first be determined that it was submitted by the statutory deadline¹¹ and that it is complete and covers the entire basin.¹² Additionally, for those GSAs choosing to develop multiple GSPs, the Plan submission must include a coordination agreement.¹³ 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.¹⁴ As stated in the GSP Regulations, "[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."¹⁵

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.¹⁶ The Department's review considers whether there is a reasonable relationship between the

⁶ Water Code §§ 10727.2, 10727.4, 10727.6.

⁷ Water Code § 10733(a).

⁸ Water Code § 10721(v).

⁹ 23 CCR § 354.26.

¹⁰ Water Code § 10733(c).

¹¹ 23 CCR § 355.4(a)(1).

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

¹³ 23 CCR § 357.4.

¹⁴ 23 CCR § 350 *et seq.*

¹⁵ 23 CCR § 355.4(b).

¹⁶ 23 CCR § 351(h).

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.¹⁷ The Department also considers whether the GSAs have the legal authority and financial resources necessary to implement the Plan.¹⁸

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.¹⁹ 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.²⁰ The Department also considers whether the Plan provides reasonable measures and schedules to eliminate identified data gaps.²¹ 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.²²

The Department is required to evaluate the Plan within two years of its submittal date and issue a written assessment.²³ The assessment is required to include a determination of the Plan's status.²⁴ The GSP Regulations provide three options for determining the status of a Plan: approved,²⁵ incomplete,²⁶ or inadequate.²⁷

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.²⁸ 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

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

¹⁸ 23 CCR § 355.4(b)(9).

¹⁹ 23 CCR § 355.4(b)(6).

²⁰ 23 CCR § 355.4(b)(8).

²¹ 23 CCR § 355.4(b)(2).

²² 23 CCR § 355.4(b)(10).

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

²⁴ Water Code § 10733.4(d); 23 CCR § 355.2(e).

²⁵ 23 CCR § 355.2(e)(1).

²⁶ 23 CCR § 355.2(e)(2).

²⁷ 23 CCR § 355.2(e)(3).

²⁸ Water Code § 10733.4(d).

basin's sustainability goal.²⁹ Unless otherwise noted, the Department proposes that recommended corrective actions be addressed by the submission date for the first periodic assessment.³⁰

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,³¹ 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.³²

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 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.³³ Also, GSAs have an ongoing duty to reassess their GSPs, provide annual reports to the Department, and, when necessary, update or amend their GSPs.³⁴ 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

²⁹ Water Code § 10733.8.

³⁰ 23 CCR § 356.4.

³¹ 23 CCR § 355.2(e)(2)(B)(i).

³² 23 CCR § 355.2(e)(3)(C).

³³ Water Code § 10733.8; 23 CCR § 355.6.

³⁴ Water Code §§ 10728, 10728.2.

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.³⁵ 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, 2022.³⁶

The GSAs submitted the Big Valley Basin GSP to the Department on January 27, 2022, in compliance with the statutory deadline.

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.³⁷

The GSAs submitted an adopted GSP for the entire Basin. Department staff found the Big Valley Basin GSP to be complete and include the required information, sufficient to warrant an evaluation by the Department. Therefore, the Department posted the GSP to its website on February 7, 2022.

2.3 BASIN COVERAGE

A GSP, either on its own or in coordination with other GSPs, must cover the entire basin.³⁸ 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 Big Valley Basin and the jurisdictional boundaries of the submitting GSAs appear to cover the entire Basin.

³⁵ Water Code § 10720.7.

³⁶ Water Code § 10720.7(a)(2).

³⁷ 23 CCR § 355.4(a)(2).

³⁸ Water Code § 10727(b); 23 CCR § 355.4(a)(3).

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.

Additionally, Department staff note the GSP’s approach to not manage depletions of interconnected surface water due to existence of data gaps is problematic. The GSAs should prepare to establish initial sustainable management criteria in future updates to the Plan as they have not provided sufficient evidence that undesirable results are not occurring and are unlikely to occur.

3.1 DEFICIENCY 1. THE GSP DOES NOT INCLUDE A REASONABLE ASSESSMENT OF OVERDRAFT CONDITIONS AND REASONABLE MEANS TO MITIGATE OVERDRAFT.

3.1.1 Background

For basins where overdraft conditions occur, the GSP Regulations require a Plan quantify the overdraft over a period of years related to the historical, current, and projected water budgets.³⁹ Furthermore, the Plan shall describe projects or management actions, including a quantification of demand reduction or other methods, for the mitigation of overdraft and achieving the sustainability goal for the basin.⁴⁰

As part of the Department’s evaluation, staff assess if the Plan provides a reasonable assessment of overdraft conditions and includes reasonable means to mitigate overdraft, if present.⁴¹ To substantially comply with the GSP Regulations⁴², the assessment provided in the Plan must be supported with sufficiently detailed information and the analyses must be sufficiently thorough and reasonable. Staff rely on the Plan to be

³⁹ 23 CCR § 354.18(b)(5).

⁴⁰ 23 CCR §§ 354.44 and 354.44(b)(2).

⁴¹ 23 CCR § 355.4 (b)(6).

⁴² 23 CCR § 355.4 (b).

detailed and thorough to evaluate if any discrepancy in the information provided may materially affect the ability of the Agency to achieve the sustainability goal for the basin.

3.1.2 Deficiency Details

The GSP Regulations require the Department to evaluate whether the Plan includes a reasonable assessment of overdraft conditions and includes a reasonable means to mitigate overdraft.⁴³ While the GSP does present information about overdraft, it is unclear whether this assessment is reasonable because the projected overdraft varies greatly from the overdraft quantified for historical and current water budget conditions. Furthermore, the projects and management actions as proposed in the GSP, which have been developed to address the projected overdraft conditions, do not appear to be a reasonable means to mitigate the actual overdraft conditions in the Basin. Department staff have identified this as a deficiency that precludes Plan approval at this time. The following section describes specific details about the deficiency and outlines corrective actions the GSAs must take to address it.

The Plan provides historical, current, and projected water budgets using a non-modeling, spreadsheet approach.⁴⁴ Historical overdraft in the Basin is estimated to be approximately 5,000 acre-feet per year for the period 1984 to 2018, equating to a cumulative loss in storage of over 175,000 acre-feet.⁴⁵ The GSP states the current water budget “is demonstrated by estimating future water budget holding current conditions, land use and water use ... therefore [the projected water budget] represents both the current and projected.”⁴⁶ Staff assume—since the GSP does not clearly identify—that overdraft under current conditions is defined by the first year of the projected modeling period, which is 2019. The estimated overdraft for that year is 18,748 acre-feet, or more than three times the historical average.⁴⁷ For the projected water budget, the GSP provides two scenarios (one baseline, and one with climate change) for the period 2019 to 2068.⁴⁸ Under the baseline condition, overdraft is projected to be approximately 2,000 acre-feet per year, or less than half of the estimated historical overdraft.⁴⁹ With climate change, projected overdraft is estimated to be even lower; around 1,000 acre-feet per year, which is about 20% of the historical overdraft and 5% of the current overdraft estimates.⁵⁰

After reviewing the information provided, Department staff believe the GSP may potentially underestimate levels of projected overdraft the Basin may experience when compared to estimates from the historical and current conditions, and submitted annual reports. Since the GSP submittal, annual report data documents that the actual change

⁴³ 23 CCR § 355.4(b)(6).

⁴⁴ Big Valley Basin GSP, Chapter 6.1, p. 130.

⁴⁵ Big Valley Basin GSP, Figure 6-4, p. 132 and Appendix 6B, p. 374.

⁴⁶ Big Valley Basin GSP, Chapter 6.3, p. 135.

⁴⁷ Big Valley Basin GSP, Appendix 6B, p. 381.

⁴⁸ Big Valley Basin GSP, Appendix 6B, pp. 388-396.

⁴⁹ Big Valley Basin GSP, Chapter 6.4.1, p. 135.

⁵⁰ Big Valley Basin GSP, Chapter 6.4.2, p. 136.

in groundwater storage within the Basin has continued to decrease. Including the reported years, the Basin has experienced a change of storage of over -250,000 acre-feet since 2000⁵¹ and -59,700 acre-feet since October 2019. Yet, the GSP assumes conditions will drastically improve resulting in overdraft decreasing to -2,000 acre-feet per year under baseline conditions and -1,000 acre-feet per year with climate change. Department staff are concerned the GSAs may be underestimating the actual overdraft likely to occur in the Basin by estimating an overdraft value of -50,000 acre-feet over the 50-year planning horizon with climate change,⁵² a smaller value than what the Basin experienced in the past few years. Based on a review of the information included in the GSP and annual reports, Department staff conclude the GSAs have not included a reasonable assessment of overdraft conditions for the Basin (See [Corrective Action 1a](#)).

GSP regulations also require the Department to evaluate whether the Plan includes a reasonable means to mitigate overdraft.⁵³ While the GSP documents that there has been historical and projects ongoing groundwater overdraft in the Basin, it does not appear to provide reasonable means to mitigate that overdraft through implementation of projects and management actions. The GSP states that the “GSAs and residents of Big Valley have no ability to take on the ongoing costs of implementing this GSP and contend that SGMA is an unfunded mandate”.⁵⁴ The GSAs plan to rely on funding mechanisms from sources outside the Basin and its beneficial groundwater users (i.e., state and federal assistance and grants) stating they do not have the ability to implement new taxes or fees because those would “harm the community and alter the ability of residents to live and work in the Basin.”⁵⁵ Considering the Basin has experienced overdraft conditions over the last 25 years and projects that overdraft will continue into the future, it is unclear and uncertain whether or how the GSAs will achieve sustainability within the Basin if it does not fund and implement appropriate projects and management actions. While the GSP provides details of projects that can be implemented immediately while others that require significantly more time,⁵⁶ it is important to note that most projects have no specific timelines⁵⁷ or schedules⁵⁸ and require either up-to ten years to complete or are ongoing. Additionally, the GSP’s estimate of the volume of water that would be provided from these projects lacks important details. For instance, the GSP attempts to quantify expected benefits with largely qualitative descriptions such as “...water use savings could be significant” or “...could result several thousand [acre-feet] AF of water.”⁵⁹ The anticipated benefits from the Basin Recharge Projects are more specifically stated to be 10,000 acre-feet of water per year;⁶⁰ however, the GSP does not explain if the required acreage (1,000

⁵¹ Big Valley Basin GSP, Figure 6-8, p. 134.

⁵² Big Valley GSP, Figure 6-12, p. 137.

⁵³ 23 CCR § 355.4(b)(6).

⁵⁴ Big Valley Basin GSP, Chapter 10.7, p. 195.

⁵⁵ Big Valley Basin GSP, Chapter 10.7, p. 195.

⁵⁶ Big Valley Basin GSP, Chapter 9, p. 162.

⁵⁷ Big Valley Basin GSP, Table 9-2, p. 165.

⁵⁸ Big Valley Basin GSP, Figure 10-4, p. 192

⁵⁹ Big Valley Basin GSP, Table 9-3, p. 167.

⁶⁰ Big Valley Basin GSP, Table 9-3, p. 166.

acres) is available or describe process to identify and obtain the required acreage. The GSP also acknowledges the projects are limited by the availability of “excess surface water” but does not define that quantity or provide historical averages of such excess water for evaluation. Another project with an expected benefit of an additional 1,900 acre-feet of surface water storage, proposes to raise Roberts Reservoir by three feet.⁶¹ However, this is likely the costliest project⁶² and relies on other entities to permit, construct, and fund it.

Basin groundwater conditions since adoption of the GSP have not improved. Department staff believe that due to persistent overdraft conditions occurring in the Basin, the GSAs should consider implementing more proactive measures to prevent groundwater conditions from getting worse to minimize impacts to beneficial uses and users. Currently, the GSP lacks sufficient detail and commitment to implementing projects and management actions to address ongoing overdraft in the Basin. Accordingly, for the above reasons, Department staff conclude that the GSP has not presented a reasonable means to mitigate overdraft (See [Corrective Action 1b](#)).

3.1.3 Corrective Action 1

The GSAs should revise the GSP to provide a reasonable assessment of overdraft conditions and include a reasonable means to mitigate overdraft. Specifically, the Plan must be amended as follows:

- a. Reevaluate the assessment of overdraft conditions in the Basin. Specifically, the GSAs should examine the assumptions that were used to develop the projected overdraft estimates in the projected water budget considering the results vary greatly from the values reported in the historical and current water budgets and the recent annual report data. The assessment should include the latest information for the Basin to ensure the GSP includes the required projects and management actions to mitigate overdraft in the Basin.
- b. Provide a reasonable means to mitigate the overdraft that is continuing to occur in the Basin. Specifically, the GSAs should describe feasible proposed management actions that are commensurate with the level of understanding of groundwater conditions of the Basin and with sufficient details for Department staff to be able to clearly understand how the Plan’s projects and management actions will mitigate overdraft in the Basin under different climate scenarios. For projects and management actions that involve supply augmentation or groundwater recharge, the GSP should clarify whether the source of water would reduce water availability in other parts of the Basin. The Department plans to release guidance on funding in early 2024. The GSAs are encouraged to review the guidance for options to fund projects and management actions.

⁶¹ Big Valley Basin GSP, Chapter 9.3.1, pp. 174-176.

⁶² Big Valley Basin GSP, Table 9-3, pp. 166-167.

3.2 DEFICIENCY 2. THE GSP DOES NOT ESTABLISH SUSTAINABLE MANAGEMENT CRITERIA FOR CHRONIC LOWERING OF GROUNDWATER LEVELS IN A MANNER SUBSTANTIALLY COMPLIANT WITH THE GSP REGULATIONS.

3.2.1 Background

It is up to the GSA to define undesirable results and describe the effect of undesirable results on the beneficial uses and users of groundwater.⁶³ 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.⁶⁴ Put another way, the minimum thresholds represent conditions that, if not exceeded, should prevent the basin from experiencing the undesirable results identified by the GSA. Minimum thresholds for chronic lowering of groundwater levels are the groundwater elevation indicating a depletion of supply at a given location that may lead to undesirable results.⁶⁵ Quantitative values for minimum thresholds should be supported by information and criteria relied upon to establish and justify the minimum threshold,⁶⁶ and a quantitative description of how conditions at minimum thresholds may affect the interests of beneficial uses and users of groundwater.⁶⁷

3.2.2 Deficiency Details

Based on its review, Department staff conclude the Plan has not defined sustainable management criteria for chronic lowering of groundwater levels in a manner required by SGMA and the GSP Regulations. Generally, the GSP's descriptions of undesirable results are overly narrow and the justification for the establishment of minimum thresholds does not provide sufficient supporting information to demonstrate that the interests of beneficial uses and users have been thoroughly considered. The lack of this information does not allow Department staff to evaluate whether the criteria are reasonable or whether the GSAs will operate the Basin to avoid undesirable results.⁶⁸

GSP Regulations require that GSAs define undesirable results caused by the chronic lowering of groundwater levels by identifying and describing a significant and unreasonable depletion of supply such that undesirable results would occur.⁶⁹ The GSP describes an undesirable result as groundwater conditions that would render agricultural pursuits in the affected areas unviable. Specifically, this groundwater elevation is "where the energy cost to lift groundwater exceeds the economic value of the water for

⁶³ 23 CCR § 354.26 (b)(3), § 354.28 (b)(4).

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

⁶⁵ 23 CCR § 354.28 (c)(1).

⁶⁶ 23 CCR § 354.28 (b)(1).

⁶⁷ 23 CCR § 354.28 (b)(4).

⁶⁸ 23 CCR §§ 354.28(b)(1), 354.28(b)(2), 354.28(b)(3), 354.28(b)(4), 354.28(c)(1).

⁶⁹ 23 CCR § 354.26 (a)

agriculture.”⁷⁰ The GSP quantitatively defines undesirable results as occurring when “the groundwater level in one-third of the representative monitoring wells drop below their minimum threshold for five consecutive years.”⁷¹

Department staff have identified multiple problems with how the GSAs have defined undesirable results. First, the GSP’s definition of undesirable results only considers one of the Basin’s beneficial uses and users although the GSAs acknowledge that community/domestic and environmental are “major beneficial uses.”⁷² Moreover, while the GSP acknowledges that lowering of water levels to the minimum threshold could result in a “significant percentage of wells going dry”,⁷³ the Plan does not identify when this depletion of supply would be considered significant and unreasonable. Second, the attempt at quantifying undesirable results as one-third of the representative monitoring wells dropping below their minimum threshold for five consecutive years is unsatisfactory because the values and timing of exceedances appear to be arbitrary: the Plan does not provide an explanation or rationale to support the criteria.⁷⁴

The lack of understanding of when the depletion of supply for the other beneficial uses and users in the Basin would be considered significant and unreasonable is especially problematic considering current and projected conditions. The Plan does not state how many wells could be impacted; however, it includes a graph that appears to show that 25% of all production wells could go dry, along with 49% of all domestic wells at the proposed minimum thresholds. Nonetheless, the Plan does not explain how this depletion of supply to domestic and production wells was considered in the establishment of sustainable management criteria for chronic lowering of groundwater levels. The Plan briefly mentions a “shallow well mitigation program”⁷⁵ that would rely solely on a “good neighbor practice”⁷⁶. Without more information, Department staff are unable to evaluate when and how the well mitigation program may be implemented or evaluate its potential feasibility and effectiveness at this time. Department staff conclude the GSAs must reevaluate and clearly define and provide its rationale for when undesirable results would occur in the Basin based on a thorough consideration of the interests of beneficial uses and users as required by the GSP Regulations (See [Corrective Action 2a](#)).

The GSP Regulations also require GSAs to set their minimum thresholds for chronic lowering of groundwater levels at “the groundwater elevation indicating a depletion of supply at a given location that may lead to undesirable results.”⁷⁷ The Plan explains that minimum thresholds are set at 140 feet below the 2015 water level for agricultural pursuits to be viable based on increased lift costs.⁷⁸ The GSAs acknowledge the thresholds were

⁷⁰ Big Valley Basin GSP, Chapter 7.3.1, p. 141.

⁷¹ Big Valley Basin GSP, Chapter 7.3.1, p. 144.

⁷² Big Valley Basin GSP, Chapter 1.1, p. 28.

⁷³ Big Valley Basin GSP, Chapter 7.3.1, p. 141.

⁷⁴ Big Valley Basin GSP, Chapter 7.3.1, p. 144.

⁷⁵ Big Valley Basin GSP, Chapter 7.3.1, p. 144.

⁷⁶ Big Valley Basin GSP, Chapter 7.3.1, p. 145.

⁷⁷ 23 CCR § 354.28(c)(1).

⁷⁸ Big Valley Basin GSP, 7.3.1., p. 141.

not developed to represent a depletion of supply that would lead to undesirable results, but instead developed at “the level where the energy cost to lift groundwater exceeds the economic value of the water for agriculture.”⁷⁹ Department staff conclude that the minimum thresholds must be revised by the GSAs to be based upon the depletion of supply that would lead to undesirable results, as required by the regulations (See [Corrective Action 2b](#)).

The GSP Regulations require GSAs to consider how conditions at minimum thresholds may affect the interests of beneficial uses and users of groundwater⁸⁰ and require the Department to evaluate whether the interests of beneficial uses and users were considered.⁸¹ While the GSP includes an analysis which concludes the minimum threshold “could result in a significant percentage of wells going dry” and projects 25% of production wells and 49% domestic wells may be at risk of being impacted,⁸² it is unclear where these wells are located or the actual number of wells that could be impacted. More importantly, the GSAs do not describe how these particular beneficial uses and users were considered in proposing a management program that would allow this number of wells to go dry. Considering that the GSAs are proposing to manage the Basin below historical lows, the Plan does not provide a sufficiently thorough description of the circumstances under which such impacts would become significant and unreasonable to these particular beneficial uses and users. Department staff are unable to determine whether the interests of beneficial uses and users of groundwater, as well as the land uses and property interests potentially affected by the use of groundwater in the Basin, have been considered.⁸³ The GSAs must identify the number, location, and percentage of all wells that may be impacted at the proposed minimum thresholds that will not receive assistance through the well mitigation program and explain how the interests of beneficial uses and users were considered (See [Corrective Action 2c](#)).

3.2.3 Corrective Action 2

The GSAs must provide a thorough explanation and justification regarding the selection of the sustainable management criteria for groundwater levels, particularly undesirable results and minimum thresholds, and quantitatively describe the effects of those criteria on the interests of beneficial uses and users of groundwater.

Department staff recommend the GSAs consider and address the following:

- a. Refine the description of undesirable results to clearly describe the significant and unreasonable conditions the GSAs are managing the Basin to avoid. This must include a quantitative description of the negative effects to all beneficial uses and users that would be experienced at undesirable result conditions.⁸⁴ The GSAs

⁷⁹ Big Valley Basin GSP, 7.3.1., p. 141.

⁸⁰ 23 CCR 354.28 (b)(4)

⁸¹ 23 CCR 355.4 (b)(4)

⁸² Big Valley Basin GSP, Figure 7-2, p. 142.

⁸³ 23 CCR § 355.4 (b)(4).

⁸⁴ 23 CCR § 354.28 (b)(3).

should fully disclose, describe, and explain the rationale for determining the number of wells that may be dewatered and the level of impacts that may occur without rising to significant and unreasonable levels constituting undesirable results. Lastly, the GSAs should explain how well mitigation will be considered by the GSAs during management of the Basin in a project or management action as part of the GSP. Department staff also encourage the GSAs to review the Department's April 2023 guidance document titled *Considerations for Identifying and Addressing Drinking Water Well Impacts*.⁸⁵

- b. The GSAs should revise minimum thresholds to be set at the level where the depletion of supply across the Basin may lead to undesirable results⁸⁶ and provide the criteria used to establish and justify minimum thresholds.⁸⁷ Fully document the justifications and analysis performed to establish the criteria used to establish minimum thresholds. Clearly show each step of the analysis and provide supporting information used in the analysis.⁸⁸
- c. Provide an evaluation of how minimum thresholds may affect the interests of beneficial uses and users of groundwater, as well as land uses and property interests.⁸⁹ Identify the number and location of wells that may be negatively affected when minimum thresholds are reached. Compare well infrastructure for all well types in the Basin with minimum thresholds at nearby representative monitoring sites. Document all assumptions and steps clearly so it will be understood by readers of the GSP. Include maps of potentially affected well locations, identify the number of potentially affected wells by well type, and provide a supporting discussion of the effects.

3.3 DEFICIENCY 3. THE GSP DOES NOT DEVELOP SUSTAINABLE MANAGEMENT CRITERIA FOR DEGRADED WATER QUALITY.

3.3.1 Background

SGMA identifies six effects of groundwater conditions occurring throughout the basin that GSAs must evaluate to achieve sustainable groundwater management. The GSP Regulations refer to these effects as sustainability indicators and they are chronic lowering of groundwater levels, reduction of groundwater storage, seawater intrusion, degraded water quality, land subsidence, and depletions of interconnected surface water.⁹⁰ Generally, when any of these effects are significant and unreasonable, as defined in SGMA, they are referred to as undesirable results.⁹¹ SGMA requires GSAs to

⁸⁵ <https://water.ca.gov/Programs/Groundwater-Management/Drinking-Water-Well>

⁸⁶ 23 CCR 354.28 (c)(1).

⁸⁷ 23 CCR 354.28 (a).

⁸⁸ 23 CCR 354.28 (b)(1).

⁸⁹ 23 CCR 354.28 (b)(4).

⁹⁰ 23 CCR § 351(ah).

⁹¹ Water Code § 10721(x).

sustainably manage groundwater, which is defined as avoiding undesirable results for any sustainability indicator during the planning and implementation horizon.⁹² Specifically, for each applicable indicator a GSA must develop sustainable management criteria, describe the process used to develop those criteria, and establish a monitoring network to adequately monitor conditions.⁹³

A GSA that is able to demonstrate that undesirable results related to one or more sustainability indicators are not present and are not likely to occur in the basin is not required to develop sustainable management criteria related to those sustainability indicators.⁹⁴ Absent an explanation of why a sustainability indicator is not applicable, the Department assumes all sustainability indicators apply.⁹⁵ Demonstration of applicability (or non-applicability) of sustainability indicators must be supported by best available information and science and should be provided in descriptions throughout the Plan (e.g., information describing basin setting, discussion of the interests of beneficial users and uses of groundwater).

The Department's assessment of a Plan's likelihood to achieve its sustainability goal for its basin is based, in part, on whether it provides sufficiently detailed and reasonable supporting information and analysis for all applicable indicators. The GSP Regulations require the Department to evaluate whether establishment of sustainable management criteria is commensurate with the level of understanding of the basin setting.⁹⁶

3.3.2 Deficiency Details

The GSP Regulations require a Plan to identify the degradation of water quality, including the migration of contaminant plumes that impair water supplies or other indicator of water quality as determined by the GSA that may lead to undesirable results, using the best available information.⁹⁷ In setting minimum thresholds for degraded water quality, GSAs shall consider local, state, and federal water quality standards applicable to the basin. As noted above, absent a demonstration of the inapplicability of the degradation of water quality sustainability indicator, GSAs in basins with degradation of water quality concerns must develop sustainable management criteria for those degradations as described in the GSP Regulations.

The GSP states that groundwater quality in the Basin is "overall excellent" (citing studies from 1963 and 1979) with a significant amount of existing water quality monitoring, generally low impact land uses, and conservation efforts by agricultural and domestic users.⁹⁸ The GSP acknowledges the presence of localized contamination plumes in the

⁹² Water Code §§ 10721(v), 10721(r).

⁹³ 23 CCR §§ 354.22, 354.32.

⁹⁴ 23 CCR §§ 354.22, 354.26(d), 354.28(e).

⁹⁵ DWR Best Management Practices for the Sustainable Management of Groundwater: Sustainable Management Criteria (DRAFT), November 2017.

⁹⁶ 23 CCR § 355.4(b)(3).

⁹⁷ 23 CCR § 354.28(c)(4).

⁹⁸ Big Valley Basin GSP, Chapter 7.3.4, pp. 146-147.

Basin. However, the GSAs conclude that the constituents elevated above suitable thresholds are naturally occurring; specifically, the naturally occurring constituents are arsenic, boron, fluoride, iron, manganese, and sulfate.⁹⁹ Additionally, a map provided in the GSP that displays cleanup sites within the Basin indicates that groundwater contamination sites and plumes are concentrated near the towns of Bieber and Nubieber.¹⁰⁰ The GSP explains that sites such as the Bieber landfill are subject to ongoing semi-annual monitoring of groundwater levels and groundwater quality at nearby shallow wells.¹⁰¹ The GSP also describes efforts by residents/landowners, domestic well owners, agricultural users, and local agencies to study, coordinate on management and contamination prevention activities, and monitor water quality in the Basin.¹⁰² Therefore, the GSP states that no contamination plumes or cleanup sites are likely to affect groundwater quality for beneficial uses.¹⁰³ As such, the GSP does not develop sustainable management criteria for degraded water quality in the Basin.

The GSP states that in preparing for the periodic update of the Plan, data from various existing programs (e.g., Regional Water Quality Control Board sites, public supply wells regulated by the Division of Drinking Water) and electrical conductivity transducers installed by the GSAs at three wells will be assessed to determine if degradation trends are occurring in the principal aquifer. If trends indicate that undesirable results are likely to occur in the subsequent five years, the GSP states that sustainable management criteria will be considered.

Based on its review, Department staff conclude that the GSP does not sufficiently demonstrate undesirable results related to degraded water quality are not likely to occur in the Basin. Key concerns are the presence of known groundwater contamination sites and the GSP's proposed minimum thresholds for chronic lowering of groundwater levels that exceed historic lows. Additionally, the GSP's assessment of groundwater quality is based on information up to 60 years old and may not incorporate recent groundwater conditions. Accordingly, the GSAs should establish sustainable management criteria and have a plan to act to arrest identified plumes from migration caused by groundwater pumping that poses a risk of significant and unreasonable effects to beneficial uses and users of groundwater, as determined by the GSAs (See [Corrective Action 3](#))

3.3.3 Corrective Action 3

Establish sustainable management criteria for degraded water quality, as required in the GSP Regulations,¹⁰⁴ based on the best available information and science. The GSAs should evaluate the occurrence of constituents of concern in the Basin, to either explain why each constituent of concern is not likely to affect sustainability or cause undesirable results in the Basin or, alternatively, the GSAs should include monitoring and sustainable

⁹⁹ Big Valley Basin GSP, Chapter 5.4, p. 107; Chapter 7.3.4, p. 146; Chapter 5.4.1, p. 110.

¹⁰⁰ Big Valley Basin GSP, Figure 5-15, p. 120.

¹⁰¹ Big Valley Basin GSP, Chapter 5.4.2, p. 118.

¹⁰² Big Valley Basin GSP, Chapter 7.3.4, pp. 146-147.

¹⁰³ Big Valley Basin GSP, Chapter ES.2, p. 19.

¹⁰⁴ 23 CCR §§ 354.26, 354.28, 354.30.

management criteria for each constituent of concern, which would allow the GSAs to develop an understanding of the connection between pumping in the Basin and the migration or concentration of constituents of concern over the GSP's planning and implementation horizon.

Department staff also encourage the GSAs to continue coordinating with the appropriate groundwater users, including drinking water, environmental, and agricultural users as identified in the Plan, and water quality regulatory agencies and programs in the Basin to understand and develop a process for determining if groundwater management and extraction is resulting in migration or concentration of constituents of concern or degraded water quality in the Basin.

4 STAFF RECOMMENDATION

Department staff believe that the deficiencies identified in this assessment should preclude approval of the GSP for the Big Valley Basin. Department staff recommend that the GSP be determined incomplete.