CALIFORNIA DEPARTMENT OF WATER RESOURCES
SUSTAINABLE GROUNDWATER MANAGEMENT OFFICE
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January 18, 2024

Mark Iverson
Western Heights Mutual Water Company
32352 Avenue D
Yucaipa, CA 92399
m.iverson@westernheights.org

RE: Upper Santa Ana Valley – Yucaipa Subbasin - 2022 Groundwater Sustainability Plan

Dear Mark Iverson,

The Department of Water Resources (Department) has evaluated the groundwater sustainability plan (GSP or Plan) submitted for the Upper Santa Ana Valley – Yucaipa Subbasin and has determined the GSP is approved. The approval is based on recommendations from the Staff Report, included as an exhibit to the attached Statement of Findings, which describes that the Subbasin GSP satisfies the objectives of the Sustainable Groundwater Management Act (SGMA) and substantially complies with the GSP Regulations. The Staff Report also proposes recommended corrective actions that the Department believes will enhance the GSP and facilitate future evaluation by the Department. The Department strongly encourages the recommended corrective actions be given due consideration and suggests incorporating all resulting changes to the GSP in future updates.

Recognizing SGMA sets a long-term horizon for groundwater sustainability agencies (GSAs) to achieve their basin sustainability goals, monitoring progress is fundamental for successful implementation. GSAs are required to evaluate their GSPs at least every five years and whenever the Plan is amended, and to provide a written assessment to the Department. Accordingly, the Department will evaluate approved GSPs and issue an assessment at least every five years. The Department will initiate the first periodic review of the Subbasin GSP no later than January 27, 2027.

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 Approval of the Upper Santa Ana Valley – Yucaipa Subbasin Groundwater Sustainability Plan

STATE OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES

STATEMENT OF FINDINGS REGARDING THE APPROVAL OF THE UPPER SANTA ANA VALLEY - YUCAIPA 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 covered by the Plan, and whether the Plan adversely affects the ability of an adjacent basin to implement its GSP or impedes achievement of sustainability goals in an adjacent basin. (Water Code § 10733.) The Department is directed to issue an assessment of the Plan within two years of its submission. (Water Code § 10733.4.) This Statement of Findings explains the Department's decision regarding the Plan submitted by the Yucaipa Basin Groundwater Sustainability Agency (GSA or Agency) for the Upper Santa Ana Valley – Yucaipa Subbasin (No. 8-002.07).

Department management has discussed the Plan with staff and has reviewed the Department Staff Report, entitled Sustainable Groundwater Management Program Groundwater Sustainability Plan Assessment Staff Report, attached as Exhibit A, recommending approval of the GSP. Department management is satisfied that staff have conducted a thorough evaluation and assessment of the Plan and concurs with staff's recommendation and all the recommended corrective actions. The Department therefore **APPROVES** the Plan and makes the following findings:

A. The Plan satisfies the required conditions as outlined in § 355.4(a) of the GSP Regulations (23 CCR § 350 et seq.):

    1. The Plan was submitted within the statutory deadline of January 31, 2022. (Water Code § 10720.7(a); 23 CCR § 355.4(a)(1).)

    2. The Plan was complete, meaning it generally appeared to include the information required by the Act and the GSP Regulations sufficient to warrant a thorough evaluation and issuance of an assessment by the Department. (23 CCR § 355.4(a)(2).)

    3. The Plan, either on its own or in coordination with other Plans, covers the entire Subbasin. (23 CCR § 355.4(a)(3).)

B. The general standards the Department applied in its evaluation and assessment of the Plan are: (1) "conformance" with the specified statutory requirements, (2) "substantial compliance" with the GSP Regulations, (3) whether the Plan is likely to achieve the sustainability goal for the Subbasin within 20 years of the

implementation of the Plan, and (4) whether the Plan adversely affects the ability of an adjacent basin to implement its GSP or impedes achievement of sustainability goals in an adjacent basin. (Water Code § 10733.) Application of these standards requires exercise of the Department's expertise, judgment, and discretion when making its determination of whether a Plan should be deemed "approved," "incomplete," or "inadequate."

The statutes and GSP Regulations require Plans to include and address a multitude and wide range of informational and technical components. The Department has observed a diverse array of approaches to addressing these technical and informational components being used by GSAs in different basins throughout the state. The Department does not apply a set formula or criterion that would require a particular outcome based on how a Plan addresses any one of SGMA's numerous informational and technical components. The Department finds that affording flexibility and discretion to local GSAs is consistent with the standards identified above; the state policy that sustainable groundwater management is best achieved locally through the development, implementation, and updating of local plans and programs (Water Code § 113); and the Legislature's express intent under SGMA that groundwater basins be managed through the actions of local governmental agencies to the greatest extent feasible, while minimizing state intervention to only when necessary to ensure that local agencies manage groundwater in a sustainable manner. (Water Code § 10720.1(h)) The Department's final determination is made based on the entirety of the Plan's contents on a case-by-case basis, considering and weighing factors relevant to the particular Plan and Subbasin under review.

C. In making these findings and Plan determination, the Department also recognized that: (1) the Department maintains continuing oversight and jurisdiction to ensure the Plan is adequately implemented; (2) the Legislature intended SGMA to be implemented over many years; (3) SGMA provides Plans 20 years of implementation to achieve the sustainability goal in a Subbasin (with the possibility that the Department may grant GSAs an additional five years upon request if the GSA has made satisfactory progress toward sustainability); and, (4) local agencies acting as GSAs are authorized, but not required, to address undesirable results that occurred prior to enactment of SGMA. (Water Code §§ 10721(r); 10727.2(b); 10733(a); 10733.8.)

D. The Plan conforms with Water Code §§ 10727.2 and 10727.4, substantially complies with 23 CCR § 355.4, and appears likely to achieve the sustainability goal for the Subbasin. It does not appear at this time that the Plan will adversely affect the ability of adjacent basins to implement their GSPs or impede achievement of sustainability goals.

1. The sustainable management criteria and the goal to maintain groundwater levels at or above historical low conditions are sufficiently justified and explained. The Plan relies on credible information and science to quantify the groundwater conditions that the Plan seeks to avoid and provides an objective way to determine whether the Subbasin is being managed sustainably in accordance with SGMA. (23 CCR § 355.4(b)(1).)

2. The Plan demonstrates a reasonable understanding of where data gaps exist and demonstrates a commitment to eliminate those data gaps. For example, expanding the monitoring network to improve Subbasin characterization, updating the integrated hydrologic model with new collected data, and increasing understanding of surface water and groundwater interaction, with respect to interconnected surface water depletion, groundwater dependent ecosystems, and the water budget. Filling those known data gaps, and other described in the Plan, should lead to refinement of the GSA's integrated hydrologic model, monitoring networks, and sustainable management criteria and help guide future adaptative management strategies. (23 CCR § 355.4(b)(2).)

3. The projects and management actions proposed are designed to help achieve the sustainable management goals in the Subbasin and avoid undesirable results. Projects and management actions aim to improve the groundwater levels by recharging the Subbasin with supplemental water from State Water Project as well as surplus surface water when available and by implementing allocation methods for groundwater extractions when groundwater levels start declining below measurable objectives as described in the GSP. The projects and management actions are reasonable and commensurate with the level of understanding of the Subbasin setting. The projects and management actions described in the Plan provide a feasible approach to achieving the Subbasin's sustainability goal and should provide the GSA with greater versatility to adapt and respond to changing conditions and future challenges during GSP implementation. (23 CCR § 355.4(b)(3).)

4. The Plan provides a detailed explanation of how the varied interests of groundwater uses and users in the Subbasin were considered in developing the sustainable management criteria and how those interests, including urban, municipal, rural, agricultural, and ecological uses and users, would be impacted by the chosen minimum thresholds. (23 CCR § 355.4(b)(4).)

5. The Plan's projects and management actions appear feasible at this time and capable of preventing undesirable results and ensuring that the

Subbasin is operated within its sustainable yield within 20 years. The Department will continue to monitor Plan implementation and reserves the right to change its determination if projects and management actions are not implemented or appear unlikely to prevent undesirable results or achieve sustainability within SGMA timeframes. (23 CCR § 355.4(b)(5).)

6. The Plan includes a reasonable assessment of overdraft conditions and includes reasonable means to mitigate overdraft, if present. (23 CCR § 355.4(b)(6).)

7. At this time, it does not appear that the Plan will adversely affect the ability of an adjacent basin to implement its GSP or impede achievement of sustainability goals in an adjacent basin. The Plan states an analysis of potential impacts to adjacent basins is not applicable because the neighboring subbasins are not required to develop a groundwater sustainability plan. Department staff recognizes the GSA did not have adequate data to perform an analysis of potential impacts to adjacent basins from the established sustainable management criteria of the Yucaipa Subbasin, and recommend the GSA coordinate with neighboring subbasins to ensure the sustainable management criteria established for the Yucaipa Subbasin do not prevent neighboring subbasins from meeting their adjudication requirements, and to understand whether assumptions in the GSP regarding inter-basin flow remain valid during plan implementation. (23 CCR § 355.4(b)(7).)

8. Because a single plan was submitted for the Subbasin, a coordination agreement was not required. (23 CCR § 355.4(b)(8).)

9. The GSA's eight member agencies, South Mesa Water Company, South Mountain Water Company, Western Heights Water Company, Yucaipa Valley Water District, City of Redlands, City of Yucaipa, San Bernardino Valley Water District, and San Gorgonio Pass Water Agency have historically implemented several projects and management actions including groundwater recharge projects, and groundwater quality maximum benefits program to address problematic groundwater conditions in the Subbasin. The GSA's member agencies and their history of groundwater management provide a reasonable level of confidence that the GSA has the legal authority and financial resources necessary to implement the Plan. (23 CCR § 355.4(b)(9).)

10. Through review of the Plan and consideration of public comments, the Department determines that the GSA adequately responded to comments that raised credible technical or policy issues with the Plan, sufficient to warrant approval of the Plan at this time. The Department also notes that the recommended corrective actions included in the Staff Report are

important to addressing certain technical or policy issues that were raised and, if not addressed before future, subsequent plan evaluations, may preclude approval of the Plan in those future evaluations. (23 CCR § 355.4(b)(10).)

E. In addition to the grounds listed above, DWR also finds that:

1. The Department developed its GSP Regulations consistent with and intending to further the State's human right to water policy through implementation of SGMA and the Regulations, primarily by achieving sustainable groundwater management in a basin. By ensuring substantial compliance with the GSP Regulations, the Department has considered the state policy regarding the human right to water in its evaluation of the Plan. (Water Code § 106.3; 23 CCR § 350.4(g).)

2. The Plan acknowledges and identifies interconnected surface waters within the Subbasin. The GSA proposes initial sustainable management criteria to manage this sustainability indicator and measures to improve understanding and management of interconnected surface water. The GSA acknowledges, and the Department agrees, many data gaps related to interconnected surface water exist. The GSA should continue filling data gaps, collecting additional monitoring data, and coordinating with resources agencies and interested parties to understand beneficial uses and users that may be impacted by depletions of interconnected surface water caused by groundwater pumping. Future periodic evaluations of the Plan and amendments to the Plan should aim to improve the initial sustainable management criteria as more information and improved methodology becomes available.

3. The basin is not currently in a state of long-term overdraft and projections of future basin extractions are likely to stay within current and historic ranges, at least until the next periodic evaluation by the GSA and the Department. Basin groundwater levels and other SGMA sustainability indicators are unlikely to deteriorate while the GSA implements the Department's recommended corrective actions. State intervention is not necessary at this time to ensure that local agencies manage groundwater in a sustainable manner. (Wat. Code § 10720.1(h).)

4. The California Environmental Quality Act (Public Resources Code § 21000 *et seq*.) does not apply to the Department's evaluation and assessment of the Plan.

Accordingly, the GSP submitted by the Agency for the Upper Santa Ana Valley – Yucaipa Subbasin is hereby **APPROVED.** The recommended corrective actions identified in the Staff Report will assist the Department's future review of the Plan's implementation for consistency with SGMA and the Department therefore recommends the Agency address them by the time of the Department's periodic review, which is set to begin on January 27, 2027, as required by Water Code § 10733.8. Failure to address the Department's recommended corrective actions before future, subsequent plan evaluations, may lead to a Plan being determined incomplete or inadequate.

Signed:

Karla Nemeth

Karla Nemeth, Director
Date: January 18, 2024

Exhibit A: Groundwater Sustainability Plan Assessment Staff Report – Upper Santa Ana Valley – Yucaipa Subbasin

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

Groundwater Basin Name:	Upper Santa Ana Valley – Yucaipa Subbasin (No. 8-002.07)
Submitting Agency:	Yucaipa Basin Groundwater Sustainability Agency
Submittal Type:	Initial GSP Submission
Submittal Date:	January 27, 2022
Recommendation:	Approved
Date:	January 18, 2024

The Yucaipa Basin Groundwater Sustainability Agency (GSA or Agency) submitted the Yucaipa Subbasin Groundwater Sustainability Plan (GSP or Plan) for the Upper Santa Ana Valley – Yucaipa Subbasin (Subbasin) to the Department of Water Resources (Department) for evaluation and assessment as required by the Sustainable Groundwater Management Act (SGMA)[1] and GSP Regulations.[2] The GSP covers the entire Subbasin for the implementation of SGMA.

After evaluation and assessment, Department staff conclude that the Plan includes the required components of a GSP, demonstrates a thorough understanding of the Subbasin based on what appears to be the best available science and information, sets well explained, supported, and reasonable sustainable management criteria to prevent undesirable results as defined in the Plan, and proposes a set of projects and management actions that will likely achieve the sustainability goal defined for the Subbasin.[3] Department staff will continue to monitor and evaluate the Subbasin's progress toward achieving the sustainability goal through annual reporting and future periodic evaluations of the GSP and its implementation.

- ***Based on the current evaluation of the Plan, Department staff recommend the GSP be approved with the recommended corrective actions described herein.***

This assessment includes five sections:

- **Section 1 – Summary:** Provides an overview of Department staff's assessment and recommendations.

[1] Water Code § 10720 *et seq*.
[2] 23 CCR § 350 *et seq*.
[3] 23 CCR § 350 *et seq*.

- **Section 2 – Evaluation Criteria:** Describes the legislative requirements and the Department's evaluation criteria.
- **Section 3 – Required Conditions:** Describes the submission requirements, Plan completeness, and basin coverage required for a GSP to be evaluated by the Department.
- **Section 4 – Plan Evaluation:** Provides an assessment of the contents included in the GSP organized by each Subarticle outlined in the GSP Regulations.
- **Section 5 – Staff Recommendation:** Includes the staff recommendation for the Plan and any recommended or required corrective actions, as applicable.

1 SUMMARY

Department staff recommend approval of the Yucaipa Subbasin GSP. The GSA has identified areas for improvement of its Plan, such as inadequate data to evaluate the historical conditions of interconnected surface water with groundwater and impacts of historical chronic lowering of groundwater levels on environmental groundwater users. The Agency proposes to utilize recently installed shallow observation wells near San Timoteo Creek to monitor the fluctuations in the shallow groundwater table to further evaluate the hydraulic interconnection of surface water and groundwater. The GSP acknowledges the lack of adequate data and plans to fill the data gaps by identifying and monitoring sites that are representative of environmental groundwater users such as Groundwater Dependent Ecosystems (GDE). Department staff concur that those items are important and recommend the GSA address them as soon as possible. Department staff have also identified additional recommended corrective actions within this assessment that the GSA should consider addressing by the first periodic evaluation of the Plan. The recommended corrective actions generally focus on the following:

(1) Continue to fill data gaps and collect additional monitoring data to refine the understanding of the physical properties of the principal aquifer,
(2) Provide the historical, current, and projected surface water budget,
(3) Establish sustainable management criteria for constituents of concern for degradation of water quality and land subsidence throughout the Subbasin,
(4) Investigate potential impacts on the beneficial uses and users of groundwater that may occur or are occurring from undesirable results for each sustainability indicator,
(5) Revise the definition of undesirable results for each sustainability indicator,
(6) Provide information and criteria relied upon to establish and justify the minimum thresholds for each sustainability indicator, the impacts to beneficial uses and users as well as other sustainability indicators with groundwater levels at minimum thresholds, and
(7) Continue to fill data gaps, collect additional monitoring data, coordinate with resources agencies and interested parties to understand beneficial uses and users that may be impacted by depletions of interconnected surface water caused by groundwater pumping, and refine sustainable management criteria by

improving the methodology to estimate the location, quantity, and timing of depletions of interconnected surface waters as required by the GSP regulations.

Addressing the recommended corrective actions identified in Section 5 of this assessment will be important to demonstrate, on an ongoing basis, that implementation of the Plan is likely to achieve the sustainability goal.

2 EVALUATION CRITERIA

The GSA submitted a single GSP to the Department to evaluate whether the Plan conforms to specified SGMA requirements[4] and is likely to achieve the sustainability goal for the Yucaipa Subbasin.[5] To achieve the sustainability goal for the Subbasin, the GSP must demonstrate that implementation of the Plan 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.[6] Undesirable results must be defined quantitatively by the GSAs.[7] The Department is also required to evaluate whether the GSP will adversely affect the ability of an adjacent basin to implement its GSP or achieve its sustainability goal.[8]

For the GSP to be evaluated by the Department, it must first be determined that the Plan was submitted by the statutory deadline,[9] and that it is complete and covers the entire Subbasin.[10] If these conditions are satisfied, the Department evaluates the Plan to determine whether it complies with specific SGMA requirements and substantially complies with the GSP Regulations.[11] Substantial 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.[12]

When evaluating whether the Plan is likely to achieve the sustainability goal for the Subbasin, Department staff reviewed the information provided and relied upon in the GSP for sufficiency, credibility, and consistency with scientific and engineering professional standards of practice.[13] The Department's review considers whether there is a reasonable relationship between the information provided and the assumptions and conclusions made by the GSA, 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.[14]

[4] Water Code §§ 10727.2, 10727.4.
[5] Water Code § 10733(a).
[6] Water Code § 10721(v).
[7] 23 CCR § 354.26 *et seq.*
[8] Water Code § 10733(c).
[9] 23 CCR § 355.4(a)(1).
[10] 23 CCR §§ 355.4(a)(2), 355.4(a)(3).
[11] 23 CCR § 350 *et seq.*
[12] 23 CCR § 355.4(b).
[13] 23 CCR § 351(h).
[14] 23 CCR §§ 355.4(b)(1), (3), (4), and (5).

The Department also considers whether the GSA has the legal authority and financial resources necessary to implement the Plan.[15]

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 the overdraft.[16] The Department also considers whether the Plan provides reasonable measures and schedules to eliminate identified data gaps.[17] Lastly, the Department's review considers the comments submitted on the Plan and evaluates whether the GSA adequately responded to the comments that raise credible technical or policy issues with the Plan.[18]

The Department is required to evaluate the Plan within two years of its submittal date and issue a written assessment of the Plan.[19] The assessment is required to include a determination of the Plan's status.[20] The GSP Regulations define the three options for determining the status of a Plan: Approved,[21] Incomplete,[22] or Inadequate.[23]

Even when review indicates that the GSP satisfies the requirements of SGMA and is in substantial compliance with the GSP Regulations, the Department may recommend corrective actions.[24] 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 the Plan adversely affects adjacent basins. While the issues addressed by the recommended corrective actions do not, at this time, preclude approval of the Plan, 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 sustainability goal within the basin.[25] Unless otherwise noted, the Department proposes that recommended corrective actions be addressed by the submission date for the first periodic assessment.[26]

The staff assessment of the GSP involves the review of information presented by the GSA, including models and assumptions, and an evaluation of that information based on scientific reasonableness, including standard or accepted professional and scientific methods and practices. The assessment does not require Department staff to recalculate or reevaluate technical information provided in the Plan or to perform its own geologic or

[15] 23 CCR § 355.4(b)(9).
[16] 23 CCR § 355.4(b)(6).
[17] 23 CCR § 355.4(b)(2).
[18] 23 CCR § 355.4(b)(10).
[19] Water Code § 10733.4(d); 23 CCR § 355.2(e).
[20] Water Code § 10733.4(d); 23 CCR § 355.2(e).
[21] 23 CCR § 355.2(e)(1).
[22] 23 CCR § 355.2(e)(2).
[23] 23 CCR § 355.2(e)(3).
[24] Water Code § 10733.4(d).
[25] Water Code § 10733.8.
[26] 23 CCR § 356.4 *et seq*.

engineering analysis of that information. The staff recommendation to approve a Plan does not signify that Department staff, were they to exercise the professional judgment required to develop a GSP 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 GSA are supported by adequate, credible evidence, and are scientifically reasonable.

Lastly, the Department's review and approval of the 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.[27] Also, GSAs have an ongoing duty to provide reports to the Department, periodically reassess their plans, and, when necessary, update or amend their plans.[28] 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 progress toward achieving the sustainability goal for the basin and whether Plan implementation adversely affects the ability of adjacent basins to achieve their sustainability goals.

3 REQUIRED CONDITIONS

A GSP, to be evaluated by the Department, must be submitted within the applicable statutory deadline. The GSP must also be complete and must, either on its own or in coordination with other GSPs, cover the entire basin.

3.1 SUBMISSION DEADLINE

SGMA required basins categorized as high- or medium-priority and not subject to critical conditions of overdraft to submit a GSP no later than January 31, 2022.[29]

The GSA submitted its Plan on January 27, 2022.

3.2 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.[30]

The GSA submitted an adopted GSP for the entire Subbasin. After an initial, preliminary review, Department staff found the GSP to be complete and appearing to include the

[27] Water Code § 10733.8; 23 CCR § 355.6.
[28] Water Code §§ 10728 *et seq.*, 10728.2.
[29] Water Code § 10720.7(a)(2).
[30] 23 CCR § 355.4(a)(2).

required information, sufficient to warrant a thorough evaluation by the Department.[31] The Department posted the GSP to its website on February 07, 2022.[32]

3.3 Basin Coverage

A GSP, either on its own or in coordination with other GSPs, must cover the entire basin.[33] A GSP that is intended 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 Yucaipa Subbasin and the jurisdictional boundary of the submitting GSA fully contains the Subbasin.[34]

4 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. The Department staff's evaluation of the likelihood of the Plan to attain the sustainability goal for the Subbasin is provided below.

4.1 Administrative Information

The GSP Regulations require each Plan to include administrative information identifying the submitting Agency, its decision-making process, and its legal authority;[35] a description of the Plan area and identification of beneficial uses and users in the Plan area;[36] and a description of the ability of the submitting Agency to develop and implement a Plan for that area.[37]

The GSP provides information about its legal authority. The South Mesa Water Company, the South Mountain Water Company, the Western Heights Water Company, the Yucaipa Valley Water District, the City of Redlands, the City of Yucaipa, the San Bernardino Valley

[31] The Department undertakes a preliminary completeness review of a submitted Plan under section 355.4(a) of the GSP Regulations to determine whether the elements of a Plan required by SGMA and the Regulations have been provided, which is different from a determination, upon review, that a Plan is "incomplete" for purposes of section 355.2(e)(2) of the Regulations.
[32] https://sgma.water.ca.gov/portal/gsp/preview/104.
[33] Water Code § 10727(b); 23 CCR § 355.4(a)(3).
[34] Yucaipa GSP, Section 1.3.1, p. 45.
[35] 23 CCR § 354.6 *et seq*.
[36] 23 CCR § 354.8 *et seq*.
[37] 23 CCR § 354.6(e).

Water District, and the San Gorgonio Pass Water Agency signed a memorandum of agreement[38] to form the Yucaipa GSA. The Yucaipa GSA is the sole Groundwater Sustainability Agency for the entire Subbasin and submitted the GSP. The GSP demonstrates that the Yucaipa GSA has the legal authority to implement the Plan and set forth the duties, powers, and responsibilities of the Agency, stating "[t]he Yucaipa GSA has statutory authorities essential to groundwater management as well as SGMA compliance."[39]

The GSP includes a description of the Plan Area. The Plan area covers the entire 25,300 acres (about 40 square miles) of the Yucaipa Subbasin. The Yucaipa Subbasin is within the Upper Santa Ana Valley groundwater basin and is bounded by San Andreas Fault zone and San Bernardino Mountains on the north, San Timoteo Badlands on the south, Crafton Hills on the west and Yucaipa Hills on the east. The GSP describes the Yucaipa Subbasin is hydraulically connected with the adjacent San Timoteo Subbasin to the south.[40] The Subbasin boundary and its location are shown below in Figure 1.

[38] Yucaipa GSP, Appendix 1-B, pp.621-641.
[39] Yucaipa GSP, Section 1.2.4.1, pp.39-40.
[40] Yucaipa GSP, Section 1.3.1, p.45.

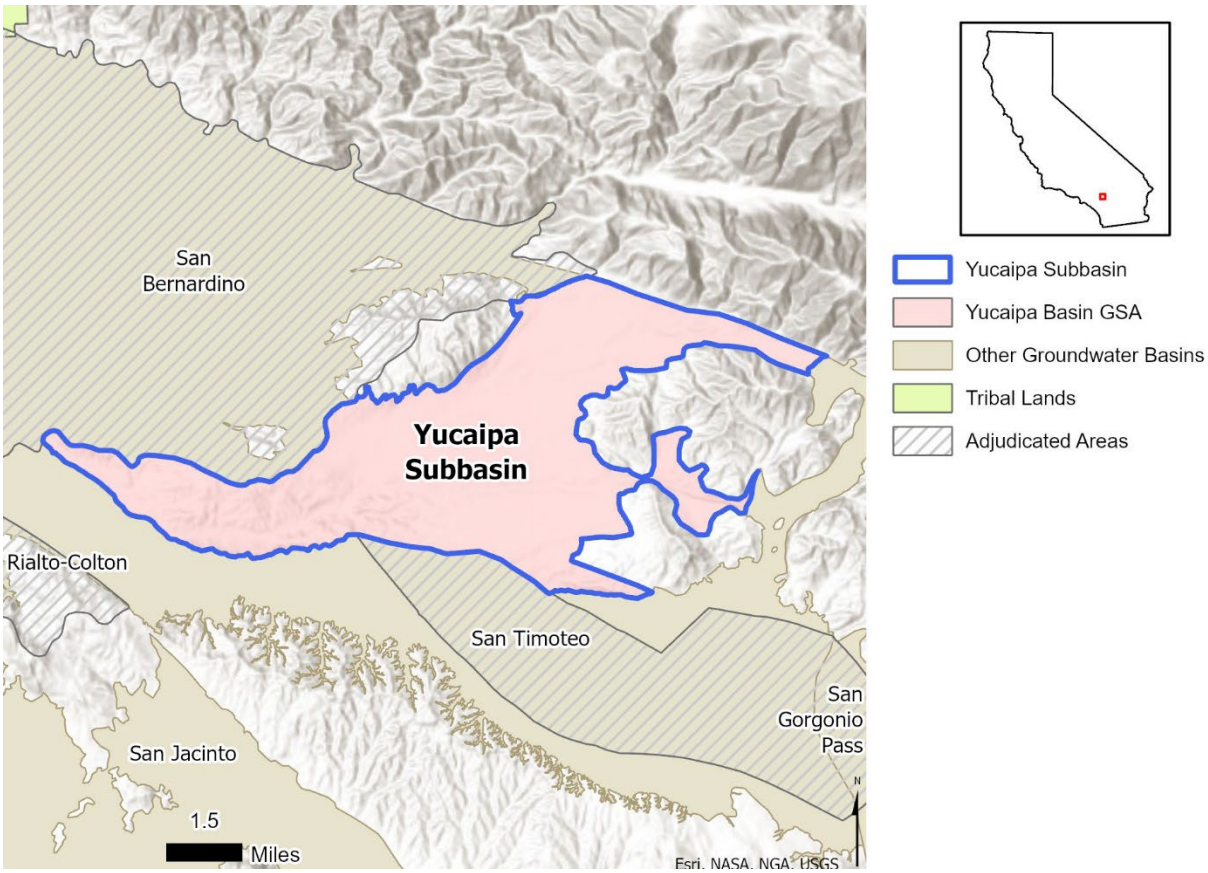

Figure 1: Yucaipa Subbasin Location Map.

The GSA has subdivided the Subbasin into management areas. Management areas are separated into four management areas based on the geologic structures, distribution of water supply wells, and identification and location of Groundwater Dependent Ecosystems (GDEs).[41] The GSP establishes different minimum thresholds and measurable objectives to define sustainability within each management area.[42] The boundaries of these four management areas are shown below in Figure 2, and they are called as:

- North Bench Management Area
- Calimesa Management Area
- Western Heights Management Area
- San Timoteo Management Area

[41] Yucaipa GSP, Section 1.3.1, p.45.
[42] Yucaipa GSP, Section 2.9, p.195.

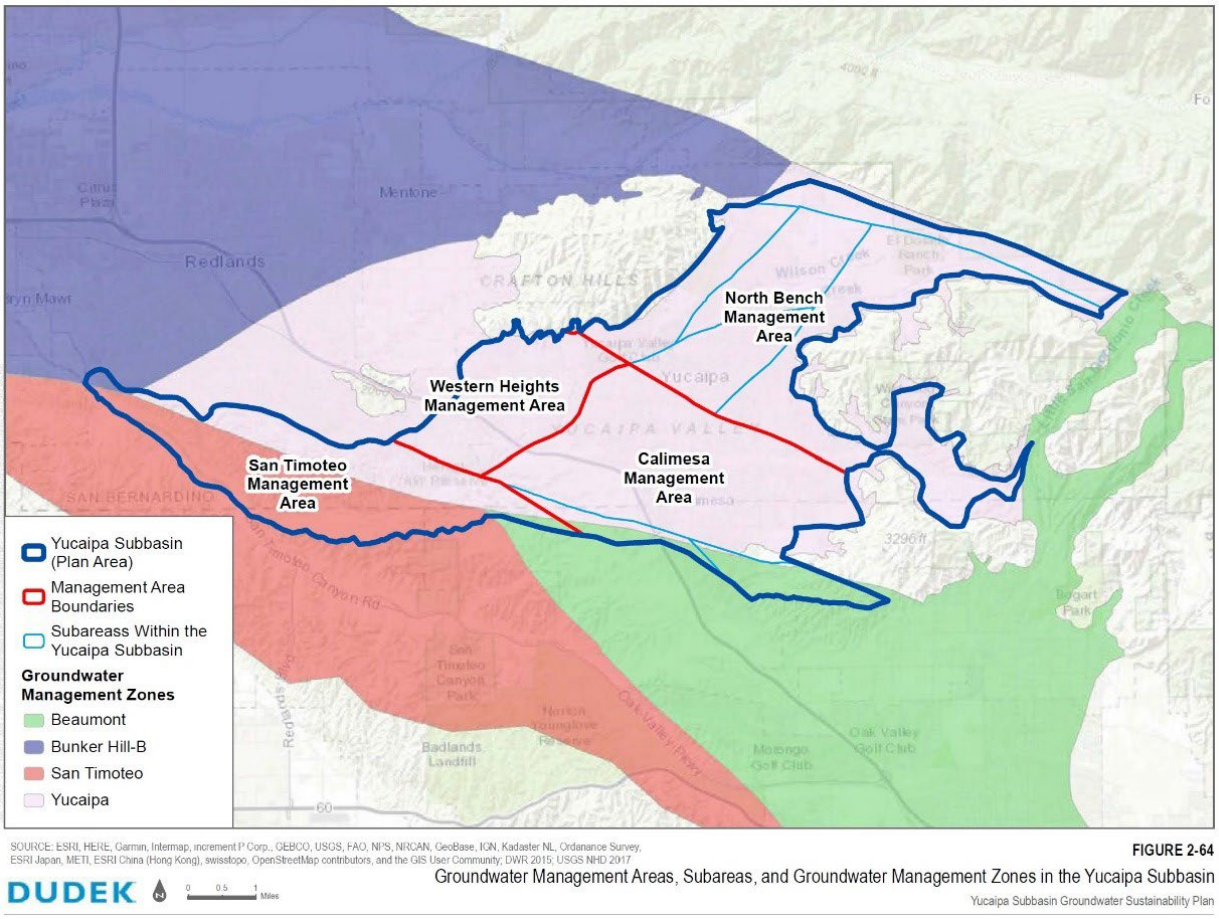

Figure 2: Management Areas of the Yucaipa Subbasin.

The GSP describes the types of use of groundwater in the Subbasin. Groundwater in the Yucaipa Subbasin is extracted primarily for domestic potable water supply, municipal, and irrigation purposes. The GSP identifies Groundwater Dependent Ecosystems (GDEs) for 37 unique vegetation community indicators which are either groundwater dependent, potentially groundwater dependent, or not groundwater dependent.[43]

The GSP describes that groundwater, surface water from the creeks within the Subbasin, and State Water Project (SWP) water are the primary sources of water within the Yucaipa Subbasin. The Yucaipa Valley Water District diverts stream flow, processes at filtration plant, and then adds to its water distribution system. The GSP identifies beneficial uses and users of groundwater and surface water as municipal water agencies, private domestic pumpers, disadvantaged communities, agricultural users, industrial users, and the groundwater dependent ecosystems.[44] The most common land uses in the Subbasin are suburban residential (52%), open space (35%), rural residential (6%), and agricultural

[43] Yucaipa GSP, Section 2.7.8.2.7, p.168.
[44] Yucaipa GSP, Section 1.8, p.77.

land (7%).[45] The GSP reports that there are no tribal trust lands[46] and no federal or state lands within the Plan Area.[47]

The GSP provides descriptions and summaries of the costs and assumptions of the main GSP components for the initial five years of Plan implementation; the estimated average yearly expenses for the initial five years are $189,703.[48] The GSP explains that the GSA operation costs are funded through contributions of GSA member agencies, which are funded through existing customer fees and/or fees assessed to new development customers to connect to existing water services.[49]

Department staff conclude that the administrative information included in the Plan substantially complies with the requirements outlined in the GSP Regulations.

4.2 Basin Setting

GSP Regulations require information about the physical setting and characteristics of the basin and current conditions of the basin, including a hydrogeologic conceptual model; a description of historical and current groundwater conditions; and a water budget accounting for total annual volume of groundwater and surface water entering and leaving the basin, including historical, current, and projected water budget conditions.[50]

4.2.1 Hydrogeologic Conceptual Model

The hydrogeologic conceptual model is a non-numerical model of the physical setting, characteristics, and processes that govern groundwater occurrence within a basin, and represents a local agency's understanding of the geology and hydrology of the basin that support the geologic assumptions used in developing mathematical models, such as those that allow for quantification of the water budget.[51] The GSP Regulations require a descriptive hydrogeologic conceptual model that includes a written description of geologic conditions, supported by cross sections and maps,[52] and includes a description of basin boundaries and the bottom of the basin,[53] principal aquifers and aquitards,[54] and data gaps.[55]

[45] Yucaipa GSP, Figure 1-11, p.105.
[46] Yucaipa GSP, Section 1.4.1.5, p.49.
[47] Yucaipa GSP, Figure 1-6 to 1-11, pp.95-105.
[48] Yucaipa GSP, Table 1-2, p.44.
[49] Yucaipa GSP, Section 1.2.6.3, p.44.
[50] 23 CCR § 354.12.
[51] DWR Best Management Practices for the Sustainable Management of Groundwater: Hydrogeologic Conceptual Model, December 2016: https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Sustainable-Groundwater-Management/Best-Management-Practices-and-Guidance-Documents/Files/BMP-3-Hydrogeologic-Conceptual-Model_ay_19.pdf.
[52] 23 CCR §§ 354.14 (a), 354.14 (c).
[53] 23 CCR §§ 354.14 (b)(2-3).
[54] 23 CCR § 354.14 (b)(4) *et seq.*
[55] 23 CCR § 354.14 (b)(5).

The GSP provides a comprehensive description of the hydrogeologic conceptual model in the Yucaipa Subbasin. The Subbasin lies in a tectonically active zone between the San Andreas and San Jacinto Fault Zones. The strike-slip fault lateral movement between the fault zones created five northeast-to-southwest trending normal faults.[56] The normal or downward displacements of blocks of San Gabriel Mountain-type bedrock created the drop-down geologic structure of the Subbasin, which later became filled with Quaternary sediment deposits from the surrounding San Bernardino Mountains, Crafton Hills, and Yucaipa Hills.[57] The Plan states the Subbasin is bounded by the San Andreas Fault Zone and San Bernardino Mountains to the north and northeast, the Yucaipa Hills to the east, the San Timoteo Wash and the San Timoteo Badlands to the south, and the Crafton Hills and the San Bernardino Basin Area to the west.[58]

The GSP defines the bottom of the basin based on a 2009 USGS study using inferred depth-to-bedrock gravity anomaly survey profiles and 51 drillers' well logs to prepare detailed cross-sections of the Subbasin.[59] The hydrogeologic conceptual model defines the bottom of the Subbasin as the geologic contact between Holocene to Plio-Pleistocene sediments and "the Peninsular Range-type bedrock south of the Banning Fault, and the San Gabriel Mountains-type bedrock between the Banning Fault and the San Andreas Fault."[60] The geologic cross-sections in the GSP depict faults, depths and locations of wells, and estimated depths to San Gabriel Mountains-type and Peninsular Ranges-type bedrock.[61]

The GSP describes that the Subbasin consists of a single principal aquifer comprised of the Plio-Pleistocene San Timoteo Formation, Pleistocene Sedimentary deposits of Live Oak Canyon, and Quaternary surficial alluvial deposits.[62] The San Timoteo Formation is the least transmissive unit within the principal aquifer, whereas the overlying unconsolidated Sedimentary deposits of Live Oak Canyon are more permeable and transmissive.[63] The GSP refers to a perched zone or aquifer system in the Western Heights and Crafton subareas[64] resulting from a confining layer that limits downward movement of shallow groundwater of lower quality into the principal aquifer.[65] In other subareas of the Subbasin, unsaturated alluvial deposits are above the regional water table and produce no groundwater.[66] The Plan provides principal aquifer thicknesses and

[56] Yucaipa GSP, Section 2.4.1.1, p. 122.
[57] Yucaipa GSP, Section 2.4.1, pp. 121-122.
[58] Yucaipa GSP, Section 2.1, p. 111.
[59] Yucaipa GSP, Section 2.4.1, pp. 128-129.
[60] Yucaipa GSP, Section 2.1, p. 111.
[61] Yucaipa GSP, Section 2.6.1, pp. 141-142.
[62] Yucaipa GSP, Section 2.4.1.2, p. 122.
[63] Yucaipa GSP, Section 2.4.1.2.4, p. 124.
[64] Yucaipa GSP, Section 2.9.3, p. 198.
[65] Yucaipa GSP, Section 2.7.4.2.2, pp. 153-154.
[66] Yucaipa GSP, Section 2.4.1.2.6, p. 125.

extents, locations of drilled wells, and depths to water in addition to a map of the plan view of the principal aquifer.

The GSP identifies data gaps in the Subbasin's hydrogeologic conceptual model and data collection and monitoring tasks[67] to be evaluated by the GSA within the first five years GSP adoption.[68] Principal aquifer properties for hydraulic conductivity and storativity are limited throughout the Subbasin and are acknowledged as a primary data gap. Department staff agree additional aquifer tests will provide data for the Yucaipa Integrated Hydrological Model to improve the understanding of groundwater conditions in the Subbasin.[69] Department staff recommend the GSA work to continue to fill data gaps and collect additional monitoring data to refine the understanding of the physical properties of the principal aquifer and evaluate potential impacts to adjacent basins (see Recommended Corrective Action 1).

Department staff appreciate the clarity of figures and text used to explain the Basin's geology, and the information provided that comprises the hydrogeologic conceptual model section, and conclude this section substantially complies with the requirements outlined in the GSP Regulations.

4.2.2 Groundwater Conditions

The GSP Regulations require a written description of historical and current groundwater conditions for each of the applicable sustainability indicators and groundwater dependent ecosystems that includes the following: groundwater elevation contour maps and hydrographs,[70] a graph depicting change in groundwater storage,[71] maps and cross-sections of the seawater intrusion front,[72] maps of groundwater contamination sites and plumes,[73] maps depicting total subsidence,[74] identification of interconnected surface water systems and an estimate of the quantity and timing of depletions of those systems,[75] and identification of groundwater dependent ecosystems.[76]

The GSP describes groundwater levels conditions in the Subbasin. Hydrographs representing groundwater conditions in the principal aquifer indicate generally stable or increased groundwater levels throughout the Subbasin. The Plan states that instances of groundwater level decline have occurred in the Subbasin, particularly between the late 1960s to 2008, 1988 to 2007, and 1999 to 2007 in the Western Heights, Calimesa, and

[67] Yucaipa GSP, Section 2.6.3, pp. 142-143.
[68] Yucaipa GSP, Section 5.1, pp. 595-597
[69] Yucaipa GSP, Section 2.6.3, p. 142.
[70] 23 CCR §§ 354.16 (a)(1-2).
[71] 23 CCR § 354.16 (b).
[72] 23 CCR § 354.16 (c).
[73] 23 CCR § 354.16 (d).
[74] 23 CCR § 354.16 (e).
[75] 23 CCR § 354.16 (f).
[76] 23 CCR § 354.16 (g).

North Bench Management Areas, respectively.[77] The GSP associates these declines with increased municipal groundwater pumping attributed to population growth after 1985 and during a drought in 1984-1990.[78] Groundwater levels recovered to 1960s and 1970s levels in the late 2000s as Yucaipa Valley Water District significantly increased its State Water Project deliveries to the Yucaipa Subbasin.[79] In the principal aquifer, historical low groundwater levels generally occurred in the fall of 2007, with historical highs in the spring of 1998. Historical highs in the principal aquifer are identified due to monthly and seasonal variance in their depths-to-groundwater hydrographs; however, principal aquifer hydrographs in the management areas with the most variance display historical highs around 2018 and historical lows around 2008.

The GSP includes a description of the change in groundwater storage and graphs depicting the change in storage demonstrating the annual and cumulative change in volume of groundwater storage.[80] The GSP states that a total estimated average annual groundwater storage gain of approximately 2,500 acre-feet per year and cumulative change in storage gain of approximately 10,000 acre-feet was calculated using the current period from water year 2015 through 2018. An average annual groundwater storage loss of 370 acre-feet per year and a cumulative change in storage loss of 18,300 acre-feet was calculated for the historical period from water year 1965 through 2014.[81]

The GSP includes a description of current and historical groundwater quality issues including maps and has identified general minerals, major-ions, total dissolved solids (TDS), specific conductance, nitrate, and volatile organic compounds as the water quality constituents of interest from previous studies in the Subbasin.[82] The GSP depicts Subbasin sampling results of water quality data since 1994 to 2020 for nitrate[83] and from 1993 to 2018 for TDS.[84] Figure 2-53 provides a map of the location of three active remediation cleanup sites identified in the SWRCB GeoTracker and DTSC EnviroStor databases.[85] The GSP states, “There are no TDS or nitrate water quality issues that may affect the long-term supply and beneficial uses of groundwater produced from the principal aquifer.”[86] The GSP further states that the limited contamination at the three cleanup sites has not affected the water quality of the hydraulically connected principal aquifer.[87] However, Department staff noted that TDS and nitrate concentrations shown on graphs and maps indicate increasing trends in these two constituents[88] and are very

[77] Yucaipa GSP, Section 3.3.1, p. 357.
[78] Yucaipa GSP, Section 2.5.3, p. 137.
[79] Yucaipa GSP, Section 1.5.3, p. 64.
[80] Yucaipa GSP, Figures 2-60 - 2-61, pp. 325-327.
[81] Yucaipa GSP, Table 2-C2, p. 781.
[82] Yucaipa GSP, Figures 2-53 through 2-54, pp. 311-313.
[83] Yucaipa GSP, Figures 2-45 through 2-51, pp. 295-307.
[84] Yucaipa GSP, Figures 2-39 through 2-44, pp. 283-293.
[85] Yucaipa GSP, Figure 2-53, p. 311; Table 3-1, p. 363.
[86] Yucaipa GSP, Executive Summary, p. 25.
[87] Yucaipa GSP, Section 2.7.5.2, pp. 154-155; Section 3.3, p. 356.
[88] Yucaipa GSP, Figures 2-39 through 2-51, pp. 283-307.

close to the maximum contaminant levels and presents a potential concern for degradation of water quality in some areas within the Subbasin.

The GSP includes a description and map of recent land subsidence and explains that Interferometric Synthetic Aperture Radar (InSAR) data collected between June 2015 to October 1, 2018, was used to conclude that measurable subsidence was insignificant and not attributed to declining groundwater levels.[89] The maps of current land subsidence cover the extent and cumulative total of subsidence in the Subbasin. The GSP states that current and historical subsidence monitoring data collected in the Subbasin suggest that groundwater extraction-induced inelastic subsidence has not occurred.[90]

GSP regulations require identification of interconnected surface water systems within the Subbasin, and an estimate of the quantity and timing of depletions of those systems.[91]The GSP identifies possible interconnected surface water systems in the Subbasin, but does not provide the depletions of surface water. Surface water is conveyed through the Yucaipa Subbasin to San Timoteo Creek, which is the primary drainage feature in the Subbasin and a tributary to the Santa Ana River.[92]Surface water flows in the upstream reaches of Wilson Creek and Oak Glen are ephemeral and measurements also indicate that surface water and groundwater along the stretches of Oak Glen Creek may experience of periods interconnectedness.[93] The GSP acknowledges that "This area includes possible interconnected surface water and is recognized as a data gap."[94] Surface water flows in Yucaipa Creek near Wildwood Canyon are also ephemeral. The GSP identifies that San Timoteo Creek is locally connected to groundwater along the western portion. [95] The GSP identifies data gaps associated with the identification of interconnected surface water systems but did not identify quantifying depletions as a data gap. Department staff recommend the GSA fill data gaps and prepare estimates of depletions of surface water as part of the periodic update.

The GSP includes a description of groundwater dependent ecosystems (GDEs) in the Subbasin along with a map.[96] The GSP characterizes three GDEs,[97] two potential GDEs,[98] and six GDEs that are not groundwater dependent[99] from identification of 37 vegetation communities that consist of common phreatophytes mapped in the Natural Communities Commonly Associated with Groundwater (NCCAG) dataset.[100] The GDE assessments cross referenced groundwater elevations, lithological data, aerial

[89] Yucaipa GSP, Section 2.7.7, pp. 156-157.
[90] Yucaipa GSP, Executive Summary, pp. 25-26.
[91] 23 CCR § 354.16 (e).
[92] Yucaipa GSP, Section 2.7.8.1, p.158.
[93] Yucaipa GSP, Section 2.7.8.1, p.158.
[94] Yucaipa GSP, Section 2.7.8.1, p.158.
[95] Yucaipa GSP, Section 2.7.8.1, p.158.
[96] Yucaipa GSP, Section 2.7.8.2, pp. 159-169; Figure 2-57, p. 319.
[97] Yucaipa GSP, Section 2.7.8.2.4, p. 161.
[98] Yucaipa GSP, Section 2.7.8.2.5, p. 164.
[99] Yucaipa GSP, Section 2.7.8.2.6, p. 164.
[100] Yucaipa GSP, Table 2-9, p. 159; Section 3.3.4, p. 360.

photographs, Normalized Derived Vegetation Index (NDVI) and Normalized Derived Moisture Index (NDMI) indicators analyzed from Landsat data by The Nature Conservancy (TNC), and average root depths from the USDA Fire Effects Information System database.[101] The GSP acknowledges that two potential GDEs should be verified for groundwater emerging from aquifers or occurring shallower than 30 feet below ground surface through additional field work.[102]

Department staff appreciate the detail and volume of information and the clarity of figures provided in the GSP's Groundwater Conditions section, and conclude this section substantially complies with the requirements outlined in the GSP Regulations.

4.2.3 Water Budget

GSP Regulations require a water budget for the basin that provides an accounting and assessment of the total annual volume of groundwater and surface water entering and leaving the basin, including historical; current; and projected water budget conditions,[103] and the sustainable yield.[104]

The Yucaipa Integrated Hydrological Model (YIHM) was used by the GSA to support GSP development. The YIHM was used to estimate historical, current, and projected water budgets.

The GSP includes a historical water budget. The GSP identifies the historical period from 1965 to 2014. The groundwater inflow components are primarily inflows from precipitation, return flow, subsurface flows, surface water spreading, and streams.[105] Subsurface inflows occur along the southern, northern, western, and eastern boundaries of the Subbasin and are estimated by the model. The largest subsurface inflow comes from the San Timoteo Subbasin (southern boundary), followed by subsurface flows from the San Bernardino Mountains (northern boundary) and Yucaipa Hill (eastern boundary).[106] The GSP states that stream flow leakage to the groundwater system and precipitation recharge to the groundwater are calculated by the model.[107] Other inflows include return flows and imported water spreading for aquifer recharge. Groundwater outflows consist of groundwater pumping, subsurface outflows, evapotranspiration, surface water diversions, groundwater discharge to surface and natural discharge to creeks.[108]

[101] Yucaipa GSP, Section 2.7.8.2.2, pp. 160-161.
[102] Yucaipa GSP, Section 2.7.8.2.5, p. 164.
[103] 23 CCR §§ 354.18 (a), 354.18 (c) *et seq*.
[104] 23 CCR § 354.18 (b)(7).
[105] Yucaipa GSP, Table 2-C2, p. 781.
[106] Yucaipa GSP, Section 2.8.2.3, pp.176-177.
[107] Yucaipa GSP, Section 2.8.2.1, pp.173.
[108] Yucaipa GSP, Table 2-C2, p. 781.

The total groundwater outflow from the Subbasin is about 35,200 acre-feet per year for the historical period, which is approximately 370 acre-feet per year less than the total groundwater inflow.

The GSP presents historical surface water availability in the Yucaipa Subbasin from 2001 water year through 2014 water year. The GSP notes that data for surface water diversions were not available prior to 2001.[109] Historical surface water supplies include (1) State Water Project (SWP) water, and (2) surface water diversions from Oak Glen Creek and Birch Creek. SWP water imports to the Subbasin are historically highest during dry water years. The majority of SWP water imported to the Subbasin by Yucaipa Valley Water District is used to supplement annual municipal supplies after treatment at the Yucaipa Valley Regional Water Filtration Facility and add to the water distribution system. Surplus imported water is discharged to the Wilson Creek and Oak Glen spreading basins to artificially recharge the Subbasin.[110]

The GSP defines its current water budget as the years from 2015 to 2018. The current water budget provides the annual groundwater inflows and outflows, and the change in groundwater storage associated with the water year type.[111] Groundwater inflow and outflow components for the current water budget are the same as in the historical period. The YIHM estimates that groundwater in storage increases by a cumulative amount of approximately 10,000 acre-feet for the current period between 2015 and 2018, or an average increase rate of approximately 2,500 per year for the current period.[112] The GSP explains that the shift from an overall negative change of groundwater storage in the historical period to an overall positive change of groundwater storage in the current period is due to increased surface water spreading (recharge with SWP water) and reduced groundwater pumping in the current period as a result of imported surface water starting in 2003.[113] Though the surface water budget components are discussed in the GSP, surface water budget for the current period is not provided in the GSP. (See Recommended Corrective Action 2)

The YIHM projected groundwater budget spans the years 2019 to 2069 and is calibrated from data across the historical period 1963 to 2013.[114] The GSP presents YIHM projected water budgets for three future scenarios. Other than the precipitation component, all other factors, including groundwater extraction rates, imported surface water supplies available for recharge, and land use of 2014, are held constant for estimating water budgets under all three future scenarios. Department staff notes that reliability and uncertainty of future imported water was not considered in preparing the projected water budget, which could

[109] Yucaipa GSP, Section 2.8.7.1.2, p.185.
[110] Yucaipa GSP, Section 2.8.7.1.1, p.184.
[111] Yucaipa GSP, Table 2-C11, p. 791.
[112] Yucaipa GSP, Table 2-C11, p. 792.
[113] Yucaipa GSP, Table 2-C14, p. 797.
[114] Yucaipa GSP, Section 2.8.7.3, pp.188-189.

make implementation of proposed management actions crucial to achieve sustainability goals.

Total inflows are about 41,500 acre-feet per year, while total outflows are about 40,700 acre-feet per year. Groundwater pumping is projected to be 10,600 acre-feet per year and is assumed to be 746 acre-feet less than the historical pumping rate (11,346 acre-feet per year) based on the scenario that the Yucaipa GSA will reduce pumping by using more imported surface water. Staff note that this assumption is reasonable if the storage capacity (water spreading basins) is available or will be constructed over the planning horizon. The GSP estimates that groundwater storage would increase by approximately 800 acre-feet per year, for a total cumulative increase of approximately 42,300 acre-feet over the 51-year simulation results under the Future Baseline conditions.[115]

Based on the average of total groundwater inflows and the average of total groundwater outflows for the historical water budget period (1965-2014), the GSP estimates the sustainable yield to be approximately 10,980 acre-feet per year. The GSP states that "The estimated sustainable yield of 10,980 acre-feet per year avoids undesirable results associated with chronic lowering of groundwater levels and reduction of groundwater in storage by ensuring that long-term operations within the Subbasin results in no net-change of groundwater in storage." [116] The GSP states that this sustainable yield estimate is in general agreement with previous estimates of safe yield for the Subbasin.[117] The current and projected water budget (10,600 acre-feet per year) pumping volume remains slightly below the projected sustainable yield (10,980 acre-feet per year). Department staff appreciate the robust demonstration of the GSA's evaluation of sustainable yield, including charts of change in storage with water year types and an indicator for sustainable yield for each management area.[118]

Based on a review of the water budget section and related appendices, staff conclude that the discussion and presentation of information on the projected water budget substantially covers the items listed in the regulations in an understandable format using appropriate data.

4.2.4 Management Areas

The GSP Regulations provide the option for one or more management areas to be defined within a basin if the GSA has determined that the creation of the management areas will facilitate implementation of the Plan. Management areas may define different minimum thresholds and be operated to different measurable objectives, provided that undesirable results are defined consistently throughout the basin.[119]

[115] Yucaipa GSP, Section 2.8.7.3.2, p.190.
[116] Yucaipa GSP, Section 2.8.6, p.183.
[117] Yucaipa GSP, Section 2.8.6, p.183.
[118] Yucaipa GSP, Figures 2-34, 2-36, 2-37, 2-38, pp. 273, 277, 279, 281.
[119] 23 CCR § 354.20.

The GSP states the Plan Area is divided into four management areas based on the geologic structures, distribution of water supply wells, and identification and location of Groundwater Dependent Ecosystems (GDEs) to sustainably manage the groundwater resources within the Subbasin.[120]

The four management areas are:

- North Bench Management Area – This area includes the Yucaipa Valley Water District, features groundwater production under 'the direct influence of surface water from Oak Glen Creek' and is bounded to the south by a fault that restricts groundwater flow.[121]
- Calimesa Management Area - This area is bounded by faults to the southweast and north, and by the Yucaipa hills, a geographic high, to the west.[122]
- Western Heights Management Area – This area includes the Western Heights Water Company and is bounded by faults that restrict groundwater flow to the east and south, and geographic highs to the north and west.[123]
- San Timoteo Management Area - This area experiences shallow groundwater conditions along Timoteo Creek and is planned to be managed with consideration of groundwater dependent ecosystems.[124]

A map of the four management areas with geologic and topographic features used to define the areas is provided in the GSP.[125] The GSP states the boundaries of the management areas were based on the geologic structures such as faults and hydraulic barriers that influence groundwater flow, the distribution of water supply wells by different water suppliers, and the presence of groundwater dependent ecosystems in the Subbasin.[126] Different minimum thresholds and measurable objectives for each management area was established based on historic data and Yucaipa Integrated Hydrologic Model simulated data for all management areas except San Timoteo management area. Department staff conclude that the management areas selected by the GSA are sufficiently described and justified in the GSP and are likely to facilitate sustainable groundwater management in the Subbasin.

4.3 Sustainable Management Criteria

GSP Regulations require each Plan to include a sustainability goal for the basin and to characterize and establish undesirable results, minimum thresholds, and measurable objectives for each applicable sustainability indicator, as appropriate. The GSP

[120] Yucaipa GSP, Section 2.9, p. 195.
[121] Yucaipa GSP, Section 2.9.1, p. 196.
[122] Yucaipa GSP, Section 2.9.2, p. 197.
[123] Yucaipa GSP, Section 2.0.3, p. 198.
[124] Yucaipa GSP, Section 2.9.4, p. 200.
[125] Yucaipa GSP, Figure 2-63, p. 331.
[126] Yucaipa GSP, Section 2.9, p. 195.

Regulations require each Plan to define conditions that constitute sustainable groundwater management for the basin including the process by which the GSA characterizes undesirable results and establishes minimum thresholds and measurable objectives for each applicable sustainability indicator.[127]

4.3.1 Sustainability Goal

GSP Regulations require that GSAs establish a sustainability goal for the basin. The sustainability goal should be based on information provided in the GSP's basin setting and should include an explanation of how the sustainability goal is likely to be achieved within 20 years of Plan implementation.[128]

Consistent with the Groundwater Sustainability Plan Regulations, the GSP defines the sustainability goal for the Subbasin as "to manage groundwater resources in a way that facilitates long-term sustainable use of groundwater within Yucaipa Subbasin. Long-term sustainable management includes the following:

- Maintaining sufficient groundwater in storage to allow for ongoing groundwater production that meets the operational demands of South Mesa, South Mountain, Western Heights Water Company, Yucaipa Valley Water District, and private well uses, and the regulatory commitments established in the Plan Area.
- Ensuring that groundwater production does not result in significant and unreasonable loss of groundwater dependent ecosystems".[129]

The GSP describes that the adjustment of groundwater production from all wells including private wells and importation of State Water Project (SWP) water are ways to ensure long-term sustainable management of the groundwater resources within Agency's jurisdiction. The GSP discusses the immediate and planned measures that the GSA would take to ensure that the basin is operated within its sustainable yield.

Historical data indicates that there was a decline in groundwater levels from 1997 to 2007 within the Subbasin. An increase in groundwater in storage over the last 10 years as a result of the importation of State Water Project water into the Yucaipa Subbasin starting in 2003 was observed. The GSP states that the use of State Water Project water as a supplemental source of water since 2008 has led to a reduction in groundwater production. As a result, the groundwater levels and the groundwater in storage have improved significantly in Calimesa Management Area and North Bench Management Area.[130]

Department staff conclude that the GSP's sustainability goal sufficiently meets the GSP Regulations.

[127] 23 CCR § 354.22 *et seq*.
[128] 23 CCR § 354.24.
[129] Yucaipa GSP, Section 3.2, p.355.
[130] Yucaipa GSP, Section 3.2, p.355.

4.3.2 Undesirable Results

The GSP describes management in the Subbasin using four management areas: North Bench, Calimesa, Western Heights, and San Timoteo. The GSP establishes a single undesirable result criterion for all sustainability indicators and uses different criteria for minimum thresholds and measurable objectives in each management area.

The GSP defines undesirable results by a single undesirable result criterion that applies to all the management areas and sustainability indicators.[131] The GSP states: "An undesirable result is characterized when groundwater elevations at 50% or more of the Representative Monitoring Points in a management area for two consecutive years decline below their associated minimum threshold levels."[132]

GSP regulations require GSAs to describe potential effects on the beneficial uses and users of groundwater, land uses and property interests, and other potential effects that may occur when a basin experiences undesirable results.[133] The GSP does not describe the actual impacts or effects of undesirable results on all beneficial uses and users of water for the chronic lowering of groundwater levels, which provided only a broad overview of potential effects,[134] nor for reduction of groundwater storage,[135] nor land subsidence,[136] degraded groundwater quality,[137] nor interconnected surface water.[138] GSAs need to describe the conditions and impacts that the GSA intends to manage to avoid to demonstrate informed decision making, a consideration of all relevant factors, full disclosure to interested parties, and to facilitate Department's ongoing and future review of Plan implementation to ensure that the negative effects of undesirable results are, in fact, being avoided by the GSA's management. Here, the GSP does not describe these conditions in sufficient detail, which makes it difficult for the Department and interested parties to monitor and evaluate whether management under the Plan is achieving sustainability goals, and impedes the ability of the GSA to consider and avoid undesirable conditions that should be part of establishing minimum thresholds. (See Recommended Corrective Action 4)

Because the GSP does not describe the conditions that the GSA is managing the Subbasin to avoid, the GSP's definition of undesirable results, defined as "when groundwater elevations at 50% or more of the RMPs in a management area for two consecutive years decline below their associated minimum threshold levels"[139] for the five applicable sustainability indicators is not sufficient. Department staff note that minimum thresholds should be set to avoid undesirable results, and since the GSA has not defined

[131] Yucaipa GSP, Section 3.3.7, p. 362.
[132] Yucaipa GSP, Section 3.3.7, p. 362.
[133] 23 CCR § 354.26 (b)(3).
[134] Yucaipa GSP, Section 3.3.1, pp. 357-358.
[135] Yucaipa GSP, Section 3.3.2, pp.358-359.
[136] Yucaipa GSP, Section 3.3.3, p. 359.
[137] Yucaipa GSP, Section 3.3.5, pp. 360-361.
[138] Yucaipa GSP, Section 3.3.4, p. 359-360.
[139] Yucaipa GSP, Section 3.3.7, p. 362.

what undesirable results are in the Subbasin, the GSA could not have considered what undesirable conditions it seeks to avoid by establishing minimum thresholds. Each sustainability indicator must have clearly described undesirable result conditions so that the GSA may establish minimum thresholds that identify which conditions are undesirable. Staff recommend the GSA clearly define how it will detect an undesirable result condition for each sustainability indicator, with consideration of how minimum thresholds reflect conditions and prevent negative effects on beneficial uses and users in the Subbasin. (See Recommended Corrective Action 5)

4.3.3 Sustainability Indicators

Sustainability indicators are defined as any of the effects caused by groundwater conditions occurring throughout the basin that, when significant and unreasonable, cause undesirable results.[140] Sustainability indicators thus correspond with the six undesirable results – chronic lowering of groundwater levels indicating a significant and unreasonable depletion of supply if continued over the planning and implementation horizon, significant and unreasonable reduction of groundwater storage, significant and unreasonable seawater intrusion, significant and unreasonable degraded water quality, including the migration of contaminant plumes that impair water supplies, land subsidence that substantially interferes with surface land uses, and depletions of interconnected surface water that have significant and unreasonable adverse impacts on beneficial uses of the surface water[141] – but refer to groundwater conditions that are not, in and of themselves, significant and unreasonable. Rather, sustainability indicators refer to the effects caused by changing groundwater conditions that are monitored, and for which criteria in the form of minimum thresholds are established by the agency to define when the effect becomes significant and unreasonable, producing an undesirable result.

GSP Regulations require that GSAs provide descriptions of undesirable results including defining what are significant and unreasonable potential effects to beneficial uses and users for each sustainability indicator.[142] GSP Regulations also require GSPs provide the criteria used to define when and where the effects of the groundwater conditions cause undesirable results for each applicable sustainability indicator. The criteria shall be based on a quantitative description of the combination of minimum threshold exceedances that cause significant and unreasonable effects in the basin.[143]

GSP Regulations require that the description of minimum thresholds include the information and criteria relied upon to establish and justify the minimum threshold for each sustainability indicator.[144] GSAs are required to describe how conditions at minimum thresholds may affect beneficial uses and users,[145] and the relationship between the minimum thresholds for each sustainability indicator, including an explanation for how the GSA has determined conditions at each minimum threshold will avoid causing undesirable results for other sustainability indicators.[146]

GSP Regulations require that GSPs include a description of the criteria used to select measurable objectives, including interim milestones, to achieve the sustainability goal within 20 years.[147] GSP Regulations also require that the measurable objectives be

[140] 23 CCR § 351(ah).
[141] Water Code § 10721(x).
[142] 23 CCR §§ 354.26 (a), 354.26 (b)(c).
[143] 23 CCR § 354.26 (b)(2).
[144] 23 CCR § 354.28 (b)(1).
[145] 23 CCR § 354.28 (b)(4).
[146] 23 CCR § 354.28 (b)(2).
[147] 23 CCR § 354.30 (a).

established based on the same metrics and monitoring sites as those used to define minimum thresholds.[148]

The following subsections thus consolidate three facets of sustainable management criteria: undesirable results, minimum thresholds, and measurable objectives. Information, as presented in the Plan, pertaining to the processes and criteria relied upon to define undesirable results applicable to the Subbasin, as quantified through the establishment of minimum thresholds, are addressed for each applicable sustainability indicator. A submitting agency is not required to establish criteria for undesirable results that the agency can demonstrate are not present and are not likely to occur in a basin.[149]

4.3.3.1 Chronic Lowering of Groundwater Levels

In addition to components identified in 23 CCR §§ 354.28 (a-b), for the chronic lowering of groundwater, the GSP Regulations require the minimum threshold for chronic lowering of groundwater levels to be the groundwater elevation indicating a depletion of supply at a given location that may lead to undesirable results that is supported by information about groundwater elevation conditions and potential effects on other sustainability indicators.[150]The GSP manages the Subbasin by using four management areas, North Bench, Calimesa, Western Heights, and San Timoteo. The minimum thresholds and measurable objectives for the chronic lowering of groundwater levels are reviewed by management area.

North Bench Management Area Minimum Thresholds and Measurable Objectives

The GSP describes the criteria and justification used to develop minimum thresholds for the chronic lowering of groundwater levels in the North Bench Management Area. The GSP identifies the minimum threshold as the historical low for groundwater in storage at 220,000 acre-feet of storage that occurred in 1965.[151] The GSP uses the Yucaipa Integrated Hydraulic Model (YIHM) to estimate conditions in 1965 at each representative monitoring point (RMP) to estimate the groundwater elevation used for the minimum threshold at each RMP, however the GSP reports that the model overestimated groundwater elevations by an 'average of 48 feet'.[152] Department staff note that errors between the YIHM estimates and measured conditions range from 21 feet to 120 feet. The GSA did not provide figures or data supporting this interpretation of model results, and Department staff are unable to review the analysis used by the GSA to establish minimum thresholds. The GSA must provide a full description of the criteria and justifications used to establish minimum thresholds and should show each step of its analysis clearly in the GSP. (See Recommended Corrective Action 6a)

[148] 23 CCR § 354.30 (b).
[149] 23 CCR § 354.26 (d).
[150] 23 CCR § 354.28(c)(1) *et seq*.
[151] Yucaipa GSP, Section 3.4.1, p. 368.
[152] Yucaipa GSP, Section 3.4.1, p. 369.

GSP regulations require GSAs to describe how conditions at minimum thresholds may affect beneficial uses and users of groundwater or land uses and property interests.[153] The GSP does not evaluate the potential negative effects to production or domestic wells in its description of minimum thresholds. Department staff considers the lack of adequate information of private and domestic wells identified in the Subbasin a data gap and recommends that the GSA develop a private and domestic well inventory so that it may better understand impacts to beneficial uses and users. GSAs are required to evaluate the effects of conditions at minimum thresholds on beneficial uses and users (See Recommended Corrective Action 6b)

GSP regulations require GSAs to describe the relationship between the minimum thresholds for each sustainability indicator, including an explanation of how the Agency has determined that basin conditions at each minimum threshold will avoid undesirable results for each of the sustainability indicators.[154] The GSP does not provide any discussion of how conditions in one sustainability indicator may affect another. (See Recommended Corrective Action 6c)

The GSP describes the process it used to establish measurable objectives. The GSA estimated the decline in storage from 1984 to 1992 using the YIHM to establish a drought buffer of 10,000 acre-feet of storage for this management area.[155] The GSP uses the estimated drought buffer by adding it to the storage at minimum thresholds and uses the YIHM to estimate conditions at representative monitoring points with this additional storage to establish the measurable objective at each RMP. Department staff appreciate the identification of a volume of storage to identify the margin of operational flexibility[156] used to establish measurable objectives.

Calimesa Management Area Minimum Thresholds and Measurable Objectives

The GSP identifies the minimum threshold as “26,000 acre feet of storage below the historical low volume of storage of 772,700 acre-feet that occurred in 2016.”[157] The GSP uses the Yucaipa Integrated Hydraulic Model (YIHM) to estimate groundwater levels to represent conditions that are 26,000 acre feet of storage below the historical low amount of storage[158] at each representative monitoring point (RMP), however the GSP reports that the model misestimated groundwater elevations by an ‘average of 19 feet’.[159] Department staff note that errors between the YIHM estimates and measured conditions range from -15 feet to 65 feet.[160] The GSA did not provide figures or data supporting this interpretation of model results, and Department staff are unable to review the analysis

[153] 23 CCR § 354.28 (b)(4).
[154] 23 CCR § 354.28 (b)(2).
[155] Yucaipa GSP, Section 3.4.1, p. 368.
[156] 23 CCR § 3540.30 (c).
[157] Yucaipa GSP, Section 3.4.2, p. 374.
[158] Yucaipa GSP, Figure 3-20, p. 447.
[159] Yucaipa GSP, Section 3.4.2, p. 374.
[160] Yucaipa GSP, Section 3.5.2, p. 374.

used by the GSA to establish minimum thresholds. The GSA must provide a full description of the criteria and justifications used to establish minimum thresholds and should show each step of its analysis clearly in the GSP (See Recommended Corrective Action 6a)

GSP regulations require GSAs to describe how conditions at minimum thresholds may affect beneficial uses and users of groundwater or land uses and property interests.[161] The GSP does not evaluate the potential negative effects to private or domestic wells in its description of minimum thresholds. Department staff considers the lack of adequate information of private and domestic wells identified in the Subbasin a data gap and recommends the GSA develop a private and domestic well inventory so that it may better understand impacts to beneficial uses and users. GSAs are required to evaluate the effects of conditions at minimum thresholds on beneficial uses and users(See Recommended Corrective Action 6b)

GSP regulations require GSAs to describe he relationship between the minimum thresholds for each sustainability indicator, including an explanation of how the Agency has determined that basin conditions at each minimum threshold will avoid undesirable results for each of the sustainability indicators.[162] The GSP does not provide any discussion of how conditions in one sustainability indicator may affect another. (See Recommended Corrective Action 6c)

The GSP describes the process it used to establish measurable objectives. The GSA estimated the decline in storage from 1995 to 2004 using the YIHM to establish a drought buffer of 26,000 acre-feet of storage for this management area.[163] The GSP uses the estimated drought buffer by adding it to the storage at minimum thresholds and uses the YIHM to estimate conditions at representative monitoring points with this additional storage to establish the measurable objective at each RMP. Department staff appreciate the identification of a volume of storage to identify the margin of operational flexibility[164] used to establish measurable objectives.

Western Heights Management Area Minimum Threshold and Measurable Objectives

The GSP identifies the minimum threshold as “10,000 acre feet of storage below the historical low volume of storage of 408,000 acre-feet occurred in 2015.”[165] The GSP uses the Yucaipa Integrated Hydraulic Model (YIHM) to estimate groundwater levels to represent conditions that are 10,000 acre feet of storage below the historical low amount of storage[166] at each Representative Monitoring Point (RMP), however the GSP reports

[161] 23 CCR § 354.28 (b)(4).
[162] 23 CCR § 354.28 (b)(2).
[163] Yucaipa GSP, Section 3.4.2, p. 374.
[164] 23 CCR § 3540.30 (c).
[165] Yucaipa GSP, Section 3.4.3, p. 380.
[166] Yucaipa GSP, Section 3.4.3.1 p. 381.

that the model misestimated groundwater elevations by an 'average of -5.3 feet', that was then applied at each RMP.[167] The GSA did not provide figures or data supporting this interpretation of model results, and Department staff are unable to review the analysis used by the GSA to establish minimum thresholds. The GSA must provide a full description of the criteria and justifications used to establish minimum thresholds and should show each step of its analysis clearly in the GSP. (See Recommended Corrective Action 6a)

GSP regulations require GSAs to describe how conditions at minimum thresholds may affect beneficial uses and users of groundwater or land uses and property interests.[168] The GSP does not evaluate the potential negative effects to groundwater wells in its description of minimum thresholds. Department staff considers the lack of adequate information of private and domestic wells identified in the Subbasin as a data gap and recommends the GSA develop a private and domestic well inventory so that it may better understand impacts to beneficial uses and users. GSAs are required to evaluate the effects of conditions at minimum thresholds on beneficial uses and users in the Subbasin (See Recommended Corrective Action 6b)

GSP regulations require GSAs to describe the relationship between the minimum thresholds for each sustainability indicator, including an explanation of how the Agency has determined that basin conditions at each minimum threshold will avoid undesirable results for each of the sustainability indicators.[169] The GSP does not provide any discussion of how conditions for one sustainability indicator may affect another. (See Recommended Corrective Action 6c)

The GSP describes the process it used to establish measurable objectives. The GSA estimated the decline in storage from 1995 to 2004 using the YIHM to establish a drought buffer of 26,000 acre-feet of storage for this management area.[170] The GSP uses the estimated drought buffer by adding it to the storage at minimum thresholds, and uses the YIHM to estimate conditions at representative monitoring points with this additional storage to establish the measurable objective at each RMP. Department staff appreciate the identification of a volume of storage to identify the margin of operational flexibility[171] used to establish measurable objectives.

San Timoteo Management Area Minimum Threshold and Measurable Objectives

The GSP states there are no municipal water supply wells and two private agricultural supply wells identified in this management area. Yucaipa Valley Water District installed shallow groundwater observation wells to monitor fluctuations in the shallow groundwater

[167] Yucaipa GSP, Section 3.4.3.1 p. 381.
[168] 23 CCR § 354.28 (b)(4).
[169] 23 CCR § 354.28 (b)(2).
[170] Yucaipa GSP, Figure 3-38, p. 483.
[171] 23 CCR § 3540.30 (c).

table near San Timoteo Creek.[172] No minimum thresholds are established for chronic lowering of groundwater levels, reduction of groundwater in storage, land subsidence, and degradation of water quality for this management area because there are no existing municipal supply wells within the management area, and historical groundwater elevations indicate that private well use did not cause long-term declines in shallow groundwater levels.[173] The GSP defines the undesirable result for San Timoteo area as when the shallow groundwater table sustaining the Groundwater Dependent Ecosystems(GDEs) falls 30 feet below ground surface as a result of groundwater production from the principal aquifer.[174] The GSP identifies GDEs and potential GDEs along the reach of San Timoteo Creek and Yucaipa Creek within this management area.

Department staff note the groundwater dependent ecosystems present in the San Timoteo area are beneficial uses or users of groundwater that must be monitored and considered by the GSA, and that the GSP has identified the need for sustainable management criteria to protect groundwater dependent ecosystems in this management area by identifying in its undesirable result a 30-feet below ground surface protective elevation. This 30-foot below ground surface value in the GSP indicates the need for minimum thresholds in this management area to protect beneficial uses and users in this area. Staff understands the lack of adequate information to evaluate current or potential impacts to GDEs from private wells in this management area as a data gap and recommend the GSA establish sustainable management criteria following GSP regulations for the chronic lowering of groundwater in the San Timoteo Management Area (See Recommended Corrective Action 7)

4.3.3.2 Reduction of Groundwater Storage

In addition to components identified in 23 CCR §§ 354.28 (a-b), for the reduction of groundwater storage, the GSP Regulations require the minimum threshold for the reduction of groundwater storage to be a total volume of groundwater that can be withdrawn from the basin without causing conditions that may lead to undesirable results. Minimum thresholds for reduction of groundwater storage shall be supported by the sustainable yield of the basin, calculated based on historical trends, water year type, and projected water use in the basin.[175]

The GSP states that significant and unreasonable reduction of groundwater in storage would impact beneficial uses and users of groundwater in the Plan Area by limiting the volume of groundwater available for municipal, private, and agricultural uses.[176] The GSP identifies the primary cause for a reduction of groundwater in storage is groundwater production more than natural and artificial recharge during a period.

[172] Yucaipa GSP, Section 3.4.4, p.383.
[173] Yucaipa GSP, Section 3.5.4, p.393.
[174] Yucaipa GSP, Section 3.4.4.1, p.387.
[175] 23 CCR § 354.28(c)(2).
[176] Yucaipa GSP, Section 3.3.2, p.358.

North Bench, Calimesa, and Western Heights Management Areas Minimum Threshold and Measurable Objectives

The GSA established identical thresholds for reduction of groundwater in storage as for the chronic lowering of groundwater elevations for the North Bench, Calimesa, and Western Heights Management Areas. Minimum thresholds were established for reduction of groundwater in storage to be:

- **North Bench Area –** the minimum threshold is established at 220,000 acre-feet (historic value from 1965[177]) and the measurable objective is set at 230,000 acre-feet by adding 10,000 acre-feet to the minimum threshold value.[178]
- **Calimesa Area –** the minimum threshold is established at 772,700 acre-feet and the measurable objective is set at 798,700 acre-feet which is the historical low in storage for the Calimesa Area, and minimum threshold is established at 772,700 acre-feet by subtracting calculated drought buffer 27,000 acre-feet from the historical low in storage.[179]
- **Western Heights Area –** the minimum threshold is established at 398,800 acre-feet and the measurable objective is set at 409,500 acre-feet which is the historical low in storage for the Western Heights Area, and minimum threshold is established at 398,800 acre-feet by subtracting calculated drought buffer 10,500 acre-feet from the historical low in storage.[180]

The GSP indicates that the GSA is using identical sustainable management criteria for the chronic lowering of groundwater and reduction in storage and does not provide additional information explaining the analysis. The GSP states that the groundwater elevations that drop below historical low water levels may be required to ensure ongoing beneficial use of groundwater for municipal supplies. The GSP further states that sustainability criteria established in this GSP allow for groundwater levels (and corresponding reduction of groundwater in storage) to fall below the historical low water levels observed in the four management areas within the Subbasin and under such conditions, the Agency will implement management actions to reduce the net loss of groundwater by reducing groundwater extractions, supplementing the groundwater supply with other sources of water or a combination of both.[181]

Department staff conclude that the chronic lowering of groundwater levels recommended corrective actions should also apply to reduction of groundwater in storage for the North Bench, Calimesa, and Western Heights management areas (See Recommended Corrective Action 6a, 6b, and 6c)

[177] Yucaipa GSP, Figure 3-2, p.411.
[178] Yucaipa GSP, Section 3.4.1, p.368.
[179] Yucaipa GSP, Section 3.4.2.2, p.375.
[180] Yucaipa GSP, Section 3.4.3.2, p.381.
[181] Yucaipa GSP, Section 3.3.1, p.358.

San Timoteo Management Area Minimum Threshold and Measurable Objectives

Because there are no municipal wells in this management area, the GSP did not establish sustainable management criteria for reductions of groundwater in storage and other sustainability indicators for the San Timoteo management area. The GSP identifies two private agricultural supply wells in this management area. The GSP describes changes in elevation measured in the area (depth to water ranging from 29 to 38 feet in one of the agricultural supply wells). Staff considers the lack of adequate information to evaluate current or potential impacts to GDEs from private wells in this management area to be a data gap and recommend the GSA establish sufficient monitoring and sustainable management criteria following GSP regulations for the reduction of groundwater in storage in the San Timoteo Management Area. (See Recommended Corrective Action 7)

4.3.3.3 Seawater Intrusion

In addition to components identified *in 23 CCR §§ 354.28 (a-b), for seawater intrusion, the GSP Regulations require the minimum threshold for seawater intrusion to be defined by a chloride concentration isocontour for each principal aquifer where seawater intrusion may lead to undesirable results.*[182]

The GSP states that seawater intrusion is not an applicable sustainability indicator for the Basin.[183] Based on the geographic information provided in the basin setting of the GSP and the information on the Department's basin prioritization website, the Department staff concurs with the Agency's determination.

4.3.3.4 Degraded Water Quality

In addition to components identified *in 23 CCR §§ 354.28 (a-b), for degraded water quality, the GSP Regulations require the minimum threshold for degraded water quality to be 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 Agency that may lead to undesirable results. The minimum threshold shall be based on the number of supply wells, a volume of water, or a location of an isocontour that exceeds concentrations of constituents determined by the Agency to be of concern for the basin. In setting minimum thresholds for degraded water quality, the Agency shall consider local, state, and federal water quality standards applicable to the basin.*[184]

GSP regulations require that GSAs establish sustainable management criteria for each sustainability indicator, except when an agency is able to demonstrate that undesirable results related to a sustainability indicator are not present and are not likely to occur in a basin.[185] The GSP asserts that degradation of groundwater quality is not an applicable sustainable indicator in the Subbasin.[186] The GSP states that changes in the Subbasin's

[182] 23 CCR § 354.28(c)(3).
[183] Yucaipa GSP, Section 3.3, p.356.
[184] 23 CCR § 354.28(c)(4).
[185] 23 CCR 354.26 (d).
[186] Yucaipa GSP, Section 3.3, p.356.

water uses have limited degradation of water quality to perched groundwater.[187] These changes include a reduction in agricultural water use from approximately 4,000 acre-feet per year in 1940s to only 400 acre-feet per year in 2000s (7% of the total land use), conversion from septic systems to sanitary sewer systems, probable de minimus contamination at some active remediation sites, reverse osmosis and denitrification processes at wastewater treatment facilities, and no operations at the former Landfill.[188]

Department staff note that the GSP includes information that indicates the potential for further degradation of water quality. The graphs provided in the GSP for total dissolved solids concentration over time includes locations with increasing trends in total dissolved solids. [189] Staff additionally note that the graphs provided for depicting nitrate concentration over time include generally increasing concentrations of nitrate over time,[190] and that wells YVWD 02, YVWD 12, and SMCW 16 (shown in Figure 2-51) reveal increasing trends of nitrate approaching the maximum contaminant level (MCL) for nitrate. [191] Department staff are concerned about increasing concentrations of constituents in the Subbasin leading to potential undesirable results that may impact beneficial uses and users. The GSP states that Yucaipa Valley Water District implements a comprehensive monitoring program that collects data including groundwater and surface water quality to comply with the Santa Ana River Basin Plan requirements set by Regional Water Quality Control Board. The GSP further states that monitoring data collected will be incorporated into the dataset collected for the GSP.[192] Staff conclude that although groundwater quality is monitored to comply with other agency requirements, the GSA has not sufficiently shown that degradation of water quality is not likely to occur and therefore recommend that the GSA establish sustainable management criteria for constituents of concern in the Subbasin, in accordance with the GSP regulations (See Recommended Corrective Action 3).

4.3.3.5 Land Subsidence

In addition to components identified in 23 CCR §§ 354.28 (a-b), the GSP Regulations require the minimum threshold for land subsidence to be the rate and extent of subsidence that substantially interferes with surface land uses and may lead to undesirable results.[193] Minimum thresholds for land subsidence shall be supported by identification of land uses and property interests that have been affected or are likely to be affected by land subsidence in the basin, including an explanation of how the Agency has determined and considered those uses and interests, and the Agency's rationale for establishing minimum thresholds in light of those effects and maps and graphs showing

[187] Yucaipa GSP, Section 3.3, p.356.
[188] Yucaipa GSP, Section 3.3, p.356.
[189] Yucaipa GSP, Figure 2-39, p. 283.
[190] Yucaipa GSP, Figure 2-45, p. 295.
[191] Yucaipa GSP, Figure 2-51, p. 307.
[192] Yucaipa GSP, Section 1.5.1.1, p.51.
[193] 23 CCR § 354.28(c)(5).

the extent and rate of land subsidence in the basin that defines the minimum thresholds and measurable objectives.[194]

The GSP states that subsidence is unlikely to occur in the Subbasin. The GSP explains that the historical records and land subsidence data obtained from the SGMA data portal did not indicate a significant and unreasonable vertical displacement of land surface that substantially interferes with surface land uses and may lead to undesirable results.[195] The GSP reports a range of subsidence for the Plan Area from 0 feet to 0.054 feet from June 2015 to October 2018 as obtained from DWR's land subsidence InSAR dataset.

Because minimum thresholds for chronic lowering of groundwater levels as well as reduction of groundwater in storage are established below the historical low water levels, the GSA recognizes the potential for land subsidence when the groundwater levels fall below the historical low water levels over a long period. The GSP states that the minimum thresholds established for chronic lowering of groundwater levels will be used as a proxy for monitoring land subsidence and when groundwater levels fall below minimum thresholds for more than 12 months, the Agency will refer to the InSAR dataset for comparison with the baseline dataset compiled from June 2015 to October 2018.[196]

GSP regulations state that a GSA may establish a representative minimum threshold for groundwater elevation to serve as the value for other sustainability indicators, where the Agency can demonstrate that the representative value is a reasonable proxy for multiple individual minimum thresholds as supported by adequate evidence.[197] The GSP includes the establishment of minimum thresholds for groundwater levels that are below historical lows.[198] Department staff note that the relationship between lowering groundwater levels and subsidence in portions of the aquifer that have not previously been dewatered is less understood, and thus may be susceptible to subsidence. Therefore, the GSA must establish monitoring and sustainable management criteria for subsidence for all management areas in the Subbasin, following the GSP regulations (See Recommended Corrective Action 8)

4.3.3.6 Depletions of Interconnected Surface Water

SGMA defines undesirable results for the depletion of interconnected surface water as those that have significant and unreasonable adverse impacts on beneficial uses of surface water and are caused by groundwater conditions occurring throughout the basin.[199] The GSP Regulations require that a Plan identify the presence of interconnected surface water systems in the basin and estimate the quantity and timing of depletions of those systems.[200] The GSP Regulations further require that minimum thresholds be set

[194] 23 CCR §§ 354.28(c)(5)(A-B).
[195] Yucaipa GSP, Section 3.3.3, p.359.
[196] Yucaipa GSP, Section 3.3.3, p.359.
[197] 23 CCR § 354.28 (d).
[198] Yucaipa GSP, Section 3.4.2.3, p. 376.
[199] Water Code § 10721(x)(6).
[200] 23 CCR § 354.16 (f).

based on the rate or volume of surface water depletions caused by groundwater use, supported by information including the location, quantity, and timing of depletions, that adversely impact beneficial uses of the surface water and may lead to undesirable results.[201]

The GSP does not quantify the rate or volume of surface water depletions due to groundwater pumping as the sustainable management criteria as required by the GSP Regulations.[202] Instead, the GSP proposes to manage depletions of interconnected surface water by managing groundwater levels for GDEs. The GSP states the significant and unreasonable depletion of interconnected surface water occurs when the groundwater levels fall 30 feet below ground surface for 2 consecutive years at the RMPs designated for monitoring shallow groundwater levels.

The GSP states depletion of interconnected surface water is an undesirable result if groundwater level declines result in a significant and unreasonable reduction in the volume of surface water caused by groundwater production or the loss of GDEs or both.[203]

North Bench Management Area Minimum Threshold and Measurable Objectives

The GSP identifies two Representative Monitoring Points (RMPs) of monitoring shallow groundwater levels to observe the impacts of groundwater levels on the mapped GDEs of this management area.

When the groundwater levels fall 30 feet below ground surface at the RMPs for two consecutive years, an analysis of the groundwater dependent ecosystems trends over those two years will be conducted to confirm the correlation between the lowered groundwater levels and the groundwater dependent ecosystems. The GSP states if the studies show a correlation, then net groundwater removal from the area would be reduced until the groundwater levels recover above the minimum threshold for two consecutive years.[204]

GSP regulations require that GSA's establish minimum thresholds for depletions of surface water, including the rate or volume of surface water depletions caused by groundwater use,[205] and that the GSA did not consider depletions of surface water as part of establishing thresholds by proxy for groundwater dependent ecosystems. Additionally, staff note that the GSP does not include the location, quantity, or timing of depletions of interconnected surface water,[206] and that the GSA has not established sustainable management criteria for depletions of interconnected surface water that sufficiently considers depletions of surface water as a part of its criteria. Staff recommend

[201] 23 CCR § 354.28 (c)(6).
[202] 23 CCR § 354.28 (c)(6).
[203] Yucaipa GSP, Section 3.3.4, p.360.
[204] Yucaipa GSP, Section 3.4.1.4.1, p.372.
[205] 23 CCR § 354.28 (c)(6).
[206] 23 CCR § 354.28 (c)(6)(A).

the GSA establish sustainable management criteria for interconnected surface water that considers depletions of surface water, as required by GSP regulations (See Recommended Corrective Action 9a)

Calimesa Management Area Minimum Threshold and Measurable Objectives

The GSP provides inconsistent discussion of GDEs in the Calimesa management area. The GSP states there are no groundwater dependent ecosystems (GDEs).or interconnected surface water bodies identified in Calimesa management area,[207] but indicates they are present in the area as a 'possible' GDE.[208] The GSP identifies the potential GDE within Calimesa management area but states that it's monitoring network does not cover that portion of the basin. The GSP states if future groundwater extractions planned in this portion of the CMA are expected to exceed the historical extractions, additional field work including installation of one or more shallow groundwater observation wells would be proposed.

Department staff are concerned that the GSA has identified potential GDEs that are not monitored by the GSA nor protected by sustainable management criteria in this management area. The GSA should establish monitoring and sustainable management criteria that detects changes in conditions of beneficial uses and users, specifically GDEs in this management area. (See Recommended Corrective Action 9b) Staff note that the GSP does not discuss depletions of surface water caused by groundwater use in this management area, as required by GSP regulations.

GSP regulations require that GSA's establish minimum thresholds for depletions of surface water, including the rate or volume of surface water depletions caused by groundwater use,[209] and that the GSA did not consider depletions of surface water as part of establishing thresholds by proxy for groundwater dependent ecosystems. Additionally, staff note that the GSP does not include the location, quantity, or timing of depletions of interconnected surface water,[210] and that the GSA has not established sustainable management criteria for depletions of interconnected surface water that sufficiently considers depletions of surface water as a part of its criteria. Staff recommend the GSA establish sustainable management criteria for interconnected surface water that considers depletions of surface water, as required by GSP regulations (See Recommended Corrective Action 9a).

Western Heights Management Area Minimum Threshold and Measurable Objectives

[207] Yucaipa GSP, Section 3.4.2.4, p.379.
[208] Yucaipa GSP, Figure 2-56, p. 317.
[209] 23 CCR § 354.28 (c)(6).
[210] 23 CCR § 354.28 (c)(6)(A).

The GSP states there are no groundwater dependent ecosystems (GDEs) or potential GDEs or interconnected surface water bodies identified in WHMA.[211] Department Staff note that Wilson Creek flows through the Western Heights management area,[212] and while the GSP has not identified GDEs in this area, Wilson Creek is potentially affected by depletions of interconnected surface water along this reach, and the GSA must evaluate depletions of interconnected surface water as part of establishing sustainable management criteria for interconnected surface water in this management area. (See Recommended Corrective Action 9a)

San Timoteo Management Area Minimum Threshold and Measurable Objectives

The GSP identifies four RMPs of monitoring shallow groundwater levels to observe the impacts of groundwater levels on the mapped groundwater ecosystems of this management area. The GSP provides a map of the locations of GDEs and nearby monitoring sites.[213] The GSP identifies that the GSA does not have enough monitoring in this area to confirm whether some GDEs are dependent on shallow groundwater.[214] The GSP identifies this as a data gap that may be filled in the future if extraction conditions change in the region.[215]

The GSP states groundwater extractions from wells in the area showed no adverse impacts to the mapped groundwater dependent ecosystems analyzed from 2001 to 2013.[216] When the groundwater levels fall 30 feet below ground surface at the RMPs for two consecutive years, an analysis of the groundwater dependent ecosystems trends over those two years will be conducted to confirm the correlation between the lowered groundwater levels and the groundwater dependent ecosystems. The GSP states if the studies show a correlation, then net groundwater removal from the area would be reduced until the groundwater levels recover above the minimum threshold for two consecutive years.[217]

GSP regulations require that GSA's establish minimum thresholds for depletions of surface water, including the rate or volume of surface water depletions caused by groundwater use,[218] and that the GSA did not consider depletions of surface water as part of establishing thresholds by proxy for groundwater dependent ecosystems. Additionally, staff note that the GSP does not include the location, quantity, or timing of depletions of interconnected surface water,[219] and that the GSA has not established sustainable management criteria for depletions of interconnected surface water that

[211] Yucaipa GSP, Section 3.4.3.4, p.382.
[212] Yucaipa GSP, Figure 2-56, p. 317.
[213] Yucaipa GSP, Figure 2-56, p. 317.
[214] Yucaipa GSP, Section 3.4.4.4, p. 387.
[215] Yucaipa GSP, Section 3.4.4.4, p 387.
[216] Yucaipa GSP, Section 3.4.1.4, pp.371-373.
[217] Yucaipa GSP, Section 3.4.1.4.1, p.372.
[218] 23 CCR § 354.28 (c)(6).
[219] 23 CCR § 354.28 (c)(6)(A).

sufficiently considers depletions of surface water as a part of its criteria. Staff recommend the GSA establish sustainable management criteria for interconnected surface water that considers depletions of surface water, as required by GSP regulations. (See Recommended Corrective Action 9a)

North Bench, Calimesa, Western Heights, and San Timoteo Management Areas

Department staff understand that quantifying depletions of surface water from groundwater extractions is a complex task that likely requires developing new, specialized tools, models, and methods to understand local hydrogeologic conditions, interactions, and responses. During the initial review of GSPs, Department staff have observed that most GSAs have struggled with this new requirement of SGMA. However, staff believe that most GSAs will more fully comply with regulatory requirements after several years of Plan implementation that includes projects and management actions to address the data gaps and other issues necessary to understand, quantify, and manage depletions of interconnected surface waters. Accordingly, Department staff believes that affording GSAs adequate time to refine their Plans to address interconnected surface waters is appropriate and remains consistent with SGMA's timelines and local control preferences.

The Department will continue to support GSAs in this regard by providing, as appropriate and available, financial and technical assistance to GSAs, including the development of guidance describing appropriate methods and approaches to evaluate the rate, timing, and volume of depletions of interconnected surface water caused by groundwater extractions. Once the Department's guidance related to depletions of interconnected surface water is publicly available, the GSA, where applicable, should consider incorporating appropriate guidance approaches into their future periodic updates to the GSP (See Recommended Corrective Action 9c). GSAs should consider availing themselves of the Department's financial (if grants are available) or technical assistance, but in any event must continue to fill data gaps, collect additional monitoring data, and implement strategies to better understand and manage depletions of interconnected surface water caused by groundwater extractions and define segments of interconnectivity and timing within their jurisdictional area (See Recommended Corrective Action 9d). Furthermore, GSAs should coordinate with local, state, and federal resources agencies as well as interested parties to better understand the full suite of beneficial uses and users that may be impacted by pumping induced surface water depletion. (See Recommended Corrective Action 9e)

4.4 Monitoring Network

The GSP Regulations describe the monitoring network that must be developed for each sustainability indicator including monitoring objectives, monitoring protocols, and data reporting requirements. Collecting monitoring data of a sufficient quality and quantity is necessary for the successful implementation of a groundwater sustainability plan. The GSP Regulations require a monitoring network of sufficient quality, frequency, and

distribution to characterize groundwater and related surface water conditions in the basin and evaluate changing conditions that occur through implementation of the Plan.[220] Specifically, a monitoring network must be able to monitor impacts to beneficial uses and users,[221] monitor changes in groundwater conditions relative to measurable objectives and minimum thresholds,[222] capture seasonal low and high conditions,[223] include required information such as location and well construction and include maps and tables clearly showing the monitoring site type, location, and frequency.[224] Department staff encourage GSAs to collect monitoring data as specified in the GSP, follow SGMA data and reporting standards,[225] fill data gaps identified in the GSP prior to the first periodic evaluation,[226] update monitoring network information as needed, follow monitoring best management practices,[227] and submit all monitoring data to the Department's Monitoring Network Module immediately after collection including any additional groundwater monitoring data that is collected within the Plan area that is used for groundwater management decisions. Department staff note that if GSAs do not fill their identified data gaps, the GSA's basin understanding may not represent the best available science for use to monitor basin conditions.

The GSP presents a monitoring network of seventy-three (73) monitoring wells for chronic lowering of groundwater levels, reduction of groundwater in storage, land subsidence, and depletions of interconnected surface water. The GSP uses the groundwater level monitoring network as a proxy for the reduction of groundwater in storage, land subsidence, and depletions of interconnected surface water sustainability indicators. Four of the 73 monitoring well network are wells to monitor the groundwater levels outside the Subbasin.

The GSP has identified 36 representative monitoring sites (RMS) out of the 69 total wells within the Subbasin for the chronic lowering of groundwater levels monitoring network; 30 wells are screened in the North Bench management area; 24 wells are screened in the Calimesa management area; 12 wells are screened in the Western Heights management area; and seven wells are screened in the San Timoteo management area.[228] The proposed monitoring frequency in the Plan is variable with municipal wells monitored monthly, and remaining wells are monitored semi-annually.[229] The proposed density of groundwater level monitoring wells meets or exceeds the range (0.2 – 10 wells per 100 square miles) recommended by the Department's Best Management Practices. Department staff note that the Department's Monitoring Network Module displays a total

[220] 23 CCR § 354.32.
[221] 23 CCR § 354.34(b)(2).
[222] 23 CCR § 354.34(b)(3).
[223] 23 CCR § 354.34(c)(1)(B).
[224] 23 CCR §§ 354.34(g-h).
[225] 23 CCR § 352.4 *et seq*.
[226] 23 CCR § 354.38(d).
[227] Department of Water Resources, 2016, Best Management Practices and Guidance Documents.
[228] Yucaipa GSP, Table 3-1, pp. 363-365.
[229] Yucaipa GSP, Section 3.6.1.1, p. 396.

of 69 wells in the groundwater level monitoring network with 36 of those wells being listed as RMS for the chronic lowering of groundwater levels sustainability indicator.

The GSP proposes to use the groundwater level monitoring network as a proxy for the groundwater storage monitoring network because changes in groundwater storage are directly dependent on changes in groundwater levels.[230] Department staff consider this use of levels as a proxy sufficient for monitoring storage.

The GSP did not establish sustainable management criteria for degraded water quality.[231] However, the GSP indicates that the GSA is collecting water quality data that is collected at 40 wells in the monitoring network, with municipal supply wells analyzed for Title 22 requirements and monitoring wells analyzed for nitrogen and total dissolved solids per the maximum benefits monitoring program quarterly to annually.[232] The groundwater quality network well locations are shown on a map, along with the management areas, well owners, and well type.[233]

GSP regulations require monitoring networks for degraded groundwater quality to collect sufficient spatial and temporal data from each principal aquifer so that the GSA may determine groundwater quality trends.[234] The GSP does not provide the frequency of monitoring at each representative monitoring site for each constituent.[235] Department staff cannot evaluate the sufficiency of this monitoring network without understanding the frequency and timing that the GSA plans to measure each constituent. Staff recommend the GSA provide detailed monitoring schedules for groundwater quality. (See Recommended Corrective Action 3)

GSP regulations allow the use of a representative minimum threshold for groundwater elevation to serve as the threshold for other sustainability indicators, where the Agency can demonstrate that the representative value is a reasonable proxy for the sustainability indicator being monitored.[236] The GSP proposes to use groundwater levels as a proxy for land subsidence and explains that tectonic forces can induce changes in ground elevation that are not related to groundwater extraction.[237] The GSP states that the minimum threshold established for groundwater elevations results in the potential for land subsidence to occur if groundwater elevations are at historically low elevations for more than 12 months. In this event, the GSA will obtain land subsidence data to compare with the 2015-2018 baseline DWR's dataset.[238] Department staff note that the GSP proposes groundwater level thresholds that are below historic low measurements in the Subbasin,

[230] Yucaipa GSP, Section 3.6.2.2, p. 400; Section 3.6.5.1, p. 405.
[231] Yucaipa GSP, Sections 3.4.1.5, 3.4.2.5, 3.4.3.5, 3.4.4.5, p. 373, 379, 382, 387.
[232] Yucaipa GSP, Section 3.6.1.1.3, pp. 397-398.
[233] Yucaipa GSP, Figure 3-55, p. 517, Table 3-11, p. 398.
[234] 23 CCR 354.24 (c)(3).
[235] Yucaipa GSP, Figure 3-55, p. 517, Table 3-11, p. 398, Section 3.6.1.1.3, pp 397-398.
[236] 23 CCR § 354.28 (d).
[237] Yucaipa GSP, Section 3.6.5.1, p. 405.
[238] Yucaipa GSP, Executive Summary, pp. 25-26.

and because of this, the GSA cannot demonstrate that its representative level values are reasonable proxies for subsidence, as the subsidence due to depletion of groundwater levels has not observed. Staff additionally note that the GSA partially recognizes this and proposes using DWR's InSAR dataset to address this issue. Staff conclude that the GSA should monitor for subsidence using subsidence monitoring, since the GSA cannot demonstrate the relationship between new historic lows in groundwater elevation and subsidence. (See Recommended Corrective Action 8)

The GSP proposes to use the groundwater level monitoring network as a proxy for the depletions of interconnected surface water monitoring network because groundwater level declines caused by groundwater production could lead to a significant and unreasonable reduction in the flowrate or volume of surface water and lead to the loss of groundwater dependent ecosystems.[239] The GSP proposes to establish a dedicated network to monitor depletions of interconnected surface water using five streamflow gages and, by proxy, using groundwater levels in shallow monitoring wells completed in San Timoteo Canyon and two wells near confirmed groundwater dependent ecosystems in the North Bench management area.[240]

The monitoring wells in relation to each management area are shown in various maps.[241] The density of monitoring sites in each management area exceeds the range (0.2 – 10 wells per 100 square miles) recommended by the Department's Best Management Practices. However, the GSP acknowledges a spatial data gap in the eastern portion of the Calimesa management area.[242] Department staff note that the San Timoteo management area shows that most of the area does not contain monitoring wells; the GSP explains that San Timoteo management area does not have municipal water supply wells and only has two irrigation wells that the GSA will try to incorporate into the monitoring network as representative monitoring sites.[243]

The GSP's discussion of the density, site selection, and frequency of the monitoring networks is comprehensive and includes adequate support, justification, and information to understand the GSA's process, analysis, and rationale. The GSP includes maps that depict the monitoring network sites and tables that list the monitoring site type, frequency of measurements, and monitoring site purpose. Staff conclude that the GSP adequately explains how and why the GSA performed the analyses and arrived at the conclusions it did, and that the proposed monitoring effort is within the range of acceptable professional practices under the circumstances.

[239] Yucaipa GSP, Section 3.3.4, p. 359.
[240] Yucaipa GSP, Executive Summary, p. 30; Section 2.3, pp. 118-121; Section 3.6.1.2, p. 398; Section 3.6.2.4, pp. 400-401.
[241] Yucaipa GSP, Figure 3-5, p. 417; Figure 3-52, p. 511; Figure 3-53, p. 513.
[242] Yucaipa GSP, Section 2.6.3, p. 143; Section 3.6.6.4, pp. 406-407.
[243] Yucaipa GSP, Executive Summary, p. 29; Table 3-10, p. 397; Section 3.6.1.1.2, p. 397.

4.5 PROJECTS AND MANAGEMENT ACTIONS

The GSP Regulations require a description of the projects and management actions the submitting Agency has determined will achieve the sustainability goal for the basin, including projects and management actions to respond to changing conditions in the basin.[244] Each Plan's description of projects and management actions must include details such as: how projects and management actions in the GSP will achieve sustainability, the implementation process and expected benefits, and prioritization and criteria used to initiate projects and management actions.[245]

The GSP states the Subbasin is currently managed sustainably and describes that, with the addition of State Water Project (SWP) water to the Subbasin, groundwater extraction was reduced, resulting in recovery of groundwater levels since 2007. The GSP shows that groundwater levels increased during the 2007-2018 period in each management area.[246] Additionally, The GSP compares average annual groundwater extraction from 2014 to 2018 with future groundwater extractions based on estimated sustainable yield and concludes that the Yucaipa Subbasin will not experience undesirable results over the 50-year planning and implementation period.[247] The GSP states no new projects are necessary to achieve groundwater sustainability in the Subbasin during the 50-year planning and implementation period, as the Subbasin is currently being managed sustainably.[248]

The GSP proposes four management actions that the Agency will undertake during implementation. The GSP states that these proposed management actions are not currently necessary to achieve groundwater sustainability in the Subbasin.[249] The proposed management actions are:

1. **Reduce Net Use of Groundwater When Groundwater Levels Decline Below Measurable Objectives** - This management action will be implemented when levels fall below measurable objectives in 50% of representative monitoring sites for two consecutive years.[250] The GSP describes, for each management area, the amount of pumping reduction or recharge that will occur during implementation.[251]
2. **Sustainable Yield Pumping Allocations and Groundwater Replenishment –** This management action is being implemented and the GSA provides a pumping allocation to municipal and private pumpers. If allocations are exceeded, this

[244] 23 CCR § 354.44 (a).
[245] 23 CCR § 354.44 (b) *et seq.*
[246] Yucaipa GSP, Figures 2-34, 2-36, 2-37, 2-38, pp. 273, 277, 279, 281
[247] Yucaipa GSP, Section 4.1, p.519.
[248] Yucaipa GSP, Section 4.1, p.519.
[249] Yucaipa GSP, Section 4.1, p.519.
[250] Yucaipa GSP, Section 4.2.1.4.4, p. 533.
[251] Yucaipa GSP, Section 4.2.1.1, p. 521

management action details what will be implemented when pumping by a purveyor or private user exceeds their respective sustainable yield pumping allocation.[252]

3. **Surplus Supplemental Water Spreading** – This management action will be implemented when a water purveyor purchases surplus supplemental water and wishes to directly recharge the subbasin and is in use by the Yucaipa Valley Water District since 2009.[253]

4. **Under-construction and proposed projects** – The under-construction projects include stormwater catchment basins to enhance recharge to the Subbasin and the GSA is also evaluating potential sites to construct and operate spreading basins to enhance recharge in Calimesa Management area to prevent decline in groundwater levels as predicted by Yucaipa Integrated Hydraulic Model under climate change scenario II (extreme dry conditions).[254]

The GSP states the Agency will continue to obtain, when available, surplus supplemental water to artificially recharge the Subbasin to help maintain groundwater in storage above historical lows.[255] Supplemental water spreading provides the Agency with an accounting methodology to purchase surplus supplemental water and directly recharge the Subbasin. This supplemental water will be accessible to the water purveyor that purchased the water and directed it to a spreading basin.

The GSP presents the Agency identified proposed projects that have been designed, permitted, and are undergoing development or will in the near future. The estimated average annual recharge is approximately 1500 acre-feet. The Agency is evaluating potential sites to construct and operate spreading basins to enhance recharge in Calimesa management area to prevent decline in groundwater levels as predicted by Yucaipa Integrated Hydraulic Model (YIHM) under climate change scenario II. The GSP states new stormwater catchment basins that are under development but not fully described in the GSP will be included in the YIHM in the Plan's 5-year evaluation.[256]

All the management actions and projects proposed in the GSP intend to purchase supplemental water, when available, from the State Water Project contractors to artificially recharge the Subbasin utilizing the existing spreading basins and if needed reduce the net groundwater usage by limiting groundwater extractions within the Plan Area.

For all the management actions described above, the GSP states that the Public Noticing is not required, no additional legal authority is required to import surface water, and no

[252] Yucaipa GSP, Section 4.2.2.1.3, p. 536.
[253] Yucaipa GSP, Section 4.2.3.3, p. 542.
[254] Yucaipa GSP, Section 4.3, p.544.
[255] Yucaipa GSP, Section 4.2.3, p.541.
[256] Yucaipa GSP, Section 4.3, p.544.

additional permitting or regulatory oversight is necessary to implement the proposed management actions.[257]

Department staff note that the information included in the GSP related to projects and management actions is adequately described. The goal of all the proposed management actions is to either halt declines or to improve groundwater levels within the Plan Area. The costs associated with the implementation of these management actions have not yet been estimated. Staff note that while all of the details of the individual management actions and projects may not be developed due to varying stages of readiness, the suite of management actions and projects presented in the GSP provides a reasonable path for the GSA to implement as they work towards achieving sustainability in the Basin and there remains almost 20 years of Plan implementation to achieve sustainable groundwater management. Staff therefore conclude the projects and management actions section of this GSP substantially complies with the GSP regulations at this time. Staff will monitor Plan implementation through reviews of annual reports and periodic evaluations.

4.6 Consideration of Adjacent Basins/Subbasins

SGMA requires the Department to "…evaluate whether a groundwater sustainability plan adversely affects the ability of an adjacent basin to implement their groundwater sustainability plan or impedes achievement of sustainability goals in an adjacent basin."[258] *Furthermore, the GSP Regulations state that minimum thresholds defined in each GSP be designed to avoid causing undesirable results in adjacent basins or affecting the ability of adjacent basins to achieve sustainability goals.*[259]

The Yucaipa Subbasin is within the Upper Santa Ana Valley groundwater basin. The Yucaipa Subbasin is bounded by both the adjudicated (Beaumont Watermaster) and non-adjudicated portions of San Timoteo Subbasin to the southeast and by the adjudicated San Bernardino Subbasin to the northwest. Due to the hydraulic connection between the Yucaipa Subbasin and the neighboring subbasins, the subsurface flow exchange (inflows/outflows) has been included in the historical, current, and future water budgets presented in the GSP.[260]

Because the neighboring adjudicated and non-adjudicated San Timoteo Subbasin, and adjudicated San Bernardino Subbasin are either exempt from the SGMA or are very low-priority subbasins that are not required to develop a groundwater sustainability plan, the Yucaipa GSP states that an analysis of potential impacts to adjacent basins is not applicable.[261]

[257] Yucaipa GSP, Section 4.2, pp.521-542.
[258] Water Code § 10733(c).
[259] 23 CCR § 354.28(b)(3).
[260] Yucaipa GSP, Appendix 2C, pp.781-800.
[261] Yucaipa GSP, Section 3.6.7, p.408.

GSP regulations require the GSA's monitoring network be able to monitor Impacts to beneficial uses and users and adjacent basins that could affect the ability of that basin to meet the sustainability goal.[262] Department staff recognizes the GSA did not have adequate data to perform an analysis of potential impacts to adjacent basins from the established sustainable management criteria of the Yucaipa Subbasin, and recommend the GSA coordinate with neighboring subbasins to ensure the sustainable management criteria established for the Yucaipa Subbasin do not prevent neighboring subbasins from meeting their adjudication requirements, and to understand whether assumptions in the GSP regarding inter-basin flow remain valid during plan implementation. Department staff will monitor the inter-basin flow both into and out of the Yucaipa Subbasin during plan implementation to evaluate whether the implementation of the GSP is negatively impacting the ability of an adjacent basins to meet their adjudication requirements.

4.7 Consideration of Climate Change and Future Conditions

The GSP Regulations require a GSA to consider future conditions and project how future water use may change due to multiple factors including climate change.[263]

Since the GSP was adopted and submitted, climate change conditions have advanced faster and more dramatically. It is anticipated that the hotter, drier conditions will result in a loss of 10% of California's water supply. As California adapts to a hotter, drier climate, GSAs should be preparing for these changing conditions as they work to sustainably manage groundwater within their jurisdictional areas. Specifically, the Department encourages GSAs to:

1. Explore how their proposed groundwater level thresholds have been established in consideration of groundwater level conditions in the basin based on current and future drought conditions.
2. Explore how groundwater level data from the existing monitoring network will be used to make progress towards sustainable management of the basin given increasing aridification and effects of climate change, such as prolonged drought.
3. Take into consideration changes to surface water reliability and that impact on groundwater conditions.
4. Evaluate updated watershed studies that may modify assumed *frequency and magnitude of recharge projects, if applicable, and*
5. Continually coordinate with the appropriate groundwater users, including but not limited to domestic well owners and state small water systems, and the appropriate overlying county jurisdictions developing drought plans and establishing local drought task forces to evaluate how their Plan's groundwater

[262] 23 CCR § 354.34 (f)(3)
[263] 23 CCR § 354.18.

management strategy aligns with drought planning, response, and mitigation efforts within the basin.

5 STAFF RECOMMENDATION

Department staff recommend approval of the GSP with the recommended corrective actions listed below. The Yucaipa Subbasin GSP conforms with Water Code Sections 10727.2 and 10727.4 of SGMA, substantially complies with the GSP Regulations, and at this time appears likely to achieve sustainability in the Subbasin if timely and appropriately implemented. Implementation of the GSP will likely achieve the sustainability goal for the Yucaipa Subbasin. The GSA has identified several areas for improvement of its Plan and Department staff concur that those items are important and should be addressed as soon as possible. Department staff have also identified additional recommended corrective actions that should be considered by the GSA for the first periodic assessment of its GSP. Addressing these recommended corrective actions will be important to demonstrate that implementation of the Plan is likely to achieve the sustainability goal.

The recommended corrective actions include:

RECOMMENDED CORRECTIVE ACTION 1

The GSA should continue to fill data gaps and collect additional monitoring data to refine the understanding of the physical properties of the principal aquifer and evaluate potential impacts to adjacent basins.[264]

RECOMMENDED CORRECTIVE ACTION 2

The GSA should provide the historical, current, and projected surface water budget, as required by GSP regulations.[265]

RECOMMENDED CORRECTIVE ACTION 3

The GSA should establish monitoring and sustainable management criteria for the degradation of water quality, following GSP regulations.[266] Department Staff recommend the GSA identify suitable constituents of concern to manage and monitor for degradation of water quality throughout the Subbasin, evaluate their presence in the Subbasin in comparison to maximum contaminant levels and suggested maximum contaminant levels, and establish monitoring networks and sustainable management criteria for constituents of concern that may affect beneficial uses and users in the Subbasin.

RECOMMENDED CORRECTIVE ACTION 4

The GSA should describe the potential effects on the beneficial uses and users of groundwater, on land uses and property interests, and other potential effects that may

[264] 23 CCR § 354.14 (b)(5).
[265] 23 CCR § 354.18 (b) *et seq*.
[266] 23 CCR § 354.26 *et seq*, 354.28 *et seq*, 354.30 *e*.

occur or are occurring from undesirable results for each sustainability indicator.[267] Department staff recommend that the GSA describe and when applicable quantify, for each sustainability indicator, the conditions that the GSA deems to be significant and unreasonable such that if they were to occur they would constitute undesirable results for the various sustainability indicators.

RECOMMENDED CORRECTIVE ACTION 5

The GSA should revise its definition of undesirable results to clearly identify the combination of minimum threshold exceedances for each sustainability indicator that the GSA believes would indicate that undesirable results are likely in the Subbasin.[268] The GSA should select this combination of minimum threshold exceedances by choosing a combination of minimum thresholds that represent conditions that may be reached without causing significant and unreasonable negative effects on beneficial uses and users in the Subbasin.

RECOMMENDED CORRECTIVE ACTION 6

For the North Bench, Calimesa, and Western Heights Management Areas:

a. The GSA should provide the information and criteria relied upon to establish and justify the minimum thresholds for each sustainability indicator.[269] Department staff recommend that the GSA show all steps in the analysis with supporting figures, tables, and text, and provide supporting data used for the analysis. Staff recommend clearly showing each step of development of the criteria used, including supporting data used in the analysis, and encourage the GSA to carefully explain its approach to convert a volume of storage into groundwater surface elevation values for minimum thresholds.

b. The GSA should evaluate how conditions at minimum thresholds may affect the interests of beneficial uses and users of groundwater or land uses and property interests.[270] Department Staff recommend the GSA compare well depths in the basin with the GSA's proposed minimum thresholds at each representative monitoring point and evaluate potential for depletions of supply,[271] including dewatered wells, increased pump lifts or decreased well production, and impacts to groundwater dependent ecosystems that may occur at minimum threshold levels.

c. The GSA should demonstrate the relationship between groundwater levels and other sustainability indicators, including the minimum thresholds for each sustainability indicator, and including an explanation of how the Agency has

[267] 23 CCR § 354.26 (b)(3).
[268] 23 CCR § 354.26 (b)(2).
[269] 23 CCR § 354.28 (b)(1).
[270] 23 CCR § 354,28 (b)(4).
[271] 23 CCR § 354.28 (c)(1).

determined that basin conditions at each minimum threshold will avoid undesirable results for each of the sustainability indicators.[272] Department staff recommend the GSA use the best available science to quantitatively evaluate the interaction of conditions between sustainability indicators at minimum thresholds.

RECOMMENDED CORRECTIVE ACTION 7

For the San Timoteo management area, the GSA must establish sustainable management criteria for the chronic lowering of groundwater levels, reduction in storage, degraded water quality, land subsidence, and interconnected surface water, following GSP regulations.[273]

RECOMMENDED CORRECTIVE ACTION 8

The GSA should establish sustainable management criteria and a suitable monitoring program for subsidence following GSP regulations.[274] Department staff recommend the GSA consider using InSAR subsidence monitoring provided by the Department.

RECOMMENDED CORRECTIVE ACTION 9

Department staff understand that estimating the location, quantity, and timing of stream depletion due to ongoing, subbasinwide pumping is a complex task and that developing suitable tools may take additional time; however, it is critical for the Department's ongoing and future evaluations of whether GSP implementation is on track to achieve sustainable groundwater management. The Department plans to provide guidance on methods and approaches to evaluate the rate, timing, and volume of depletions of interconnected surface water and support for establishing specific sustainable management criteria in the near future to assist GSAs to sustainably manage depletions of interconnected surface water.

In addition, the GSA should work to address the following items by the first periodic update:

a) Establish sustainable management criteria based on the depletions of interconnected surface water in addition to sustainable management criteria that fully consider impacts to GDEs.

b) Establish monitoring and sustainable management criteria for GDEs and interconnected surface water depletions in the Calimesa management area.

[272] 23 CCR § 354.28 (b)(3)

[273] 23 CCR § 354.28 *et seq,* § 354.30 *et seq.*
[274] 23 CCR § 354.28 *et seq.*

c) Consider utilizing the interconnected surface water guidance, as appropriate, when issued by the Department to establish quantifiable minimum thresholds, measurable objectives, and management actions.

d) Continue to fill data gaps, collect additional monitoring data, and implement the current strategy to manage depletions of interconnected surface water and define segments of interconnectivity and timing.

e) Prioritize collaborating and coordinating with local, state, and federal regulatory agencies as well as interested parties to better understand the full suite of beneficial uses and users that may be impacted by pumping induced surface water depletion within the GSA's jurisdictional area.