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CALIFORNIA DEPARTMENT OF WATER RESOURCES
SUSTAINABLE GROUNDWATER MANAGEMENT OFFICE
901 P Street, Room 313-B | Sacramento, CA 95814 | P.O. Box 942836 | Sacramento, CA 94236-0001

November 18, 2021

Kimball Loeb, Plan Manager
Fox Canyon Groundwater Management Agency
800 South Victoria Avenue
Ventura, CA 93003
kim.loeb@ventura.org

RE: Pleasant Valley Basin – 2020 Groundwater Sustainability Plan

Dear Kimball Loeb,

The Department of Water Resources (Department) has evaluated the groundwater sustainability plan (GSP) submitted for the Pleasant Valley Basin 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 Pleasant Valley Basin 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's 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 five-year review of the Pleasant Valley Basin GSP no later than January 13, 2025.

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

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Thank You,

Paul Gosselin

Paul Gosselin
Deputy Director for Sustainable Groundwater Management

Attachment:

1. Statement of Findings Regarding the Approval of the Pleasant Valley Basin Groundwater Sustainability Plan

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STATE OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES

STATEMENT OF FINDINGS REGARDING THE APPROVAL OF THE PLEASANT VALLEY BASIN GROUNDWATER SUSTAINABILITY PLAN

The Department of Water Resources (Department) is required to evaluate whether a submitted groundwater sustainability plan (GSP or Plan) conforms to specific requirements of the Sustainable Groundwater Management Act (SGMA or Act), is likely to achieve the sustainability goal for the basin covered by the Plan, and whether the Plan adversely affects the ability of an adjacent basin to implement their 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 Pleasant Valley Basin (Basin No. 4-006)

Department management 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. Based on its review of the Staff Report, Department management is satisfied that staff have conducted a thorough evaluation and assessment of the Plan and concurs with staff's recommendation and all the recommended corrective actions. The Department thus approves the Plan based on the Staff Report and the findings contained herein.

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 to the Department on January 13, 2020, and thus within the statutory deadline of January 31, 2020. (Water Code § 10720.7(a)(1); 23 CCR § 355.4(a)(1).)

    2. The Plan is complete, meaning it includes the information required by the Act and the GSP Regulations sufficient to warrant a thorough evaluation by the Department. (23 CCR § 355.4(a)(2).)

    3. The Plan covers the entire Basin. (23 CCR § 355.4(a)(3).)

B. The Plan conforms with Water Code §§ 10727.2 and 10727.4 in the Act and substantially complies with the GSP Regulations. It is likely to achieve the sustainability goal for the Basin. In making this determination, the Department considered the following:

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1. The Plan's goal to maintain groundwater levels above 2015 levels to improve the condition of declining groundwater storage, avoid land subsidence that substantially interferes with surface land uses, limit degradation of groundwater quality, and to not worsen depletions of interconnected surface waters is reasonable and consistent with SGMA and the GSP Regulations. The Plan relies on credible information and science to sufficiently detail the hydrogeologic conceptual model, groundwater conditions, and water budget for the Basin, which provides a reasonable assessment of overdraft and serves as the sufficient basis for defining and assessing reasonable sustainable management criteria and projects and management actions.

2. The Plan recognizes and identifies data gaps and describes reasonable measures to eliminate those data gaps. The Department recommends the agencies investigate further the hydraulic connectivity of surface water bodies to the shallow aquifers and principal aquifers to improve the understanding of potential migration of impaired water, the reliance of the potential GDEs on the shallow aquifer(s), and depletion of interconnected surface water bodies. Notwithstanding this recommendation, the Department finds that, at this time, the GSP contains a sufficient understanding of the groundwater conditions in the Basin and that implementation of the Plan during the collection and evaluation of additional information is not likely to cause serious or irreparable harm.

3. The proposed project and management action designed to bring the Basin within its sustainable yield by reducing groundwater production, if implemented in a reasonable and timely manner, will likely achieve the sustainability goal defined for the Basin.

4. The Plan provides a detailed explanation of how the varied interests of groundwater uses and users in the Basin were considered in developing the sustainable management criteria and how those interests would be impacted by the chosen minimum thresholds.

5. The Pleasant Valley GSP will not adversely impact the ability of the adjacent basins to be managed sustainably and will not impede the adjacent basins' ability to achieve their respective sustainability goals. Fox Canyon Groundwater Management Agency (Agency) took a regional approach to determine the combined sustainable yield of the Basin and the adjacent Oxnard and Las Posas Subbasins—all basins that Agency manages as a GSA—and then determined the sustainable yield for each groundwater Basin. The Agency established minimum thresholds for each

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respective groundwater sustainability plan with consideration of the sustainability goals of the adjacent basins and the ability to operate each groundwater basin within its sustainable yield.

6. The Agency, along with other local agencies have implemented numerous projects and management actions to address groundwater conditions in the Basin. The Agency's legal authority and history of managing groundwater provides a reasonable level of confidence that the Agency, Camrosa Water District, and County of Ventura GSA (collectively, the GSAs) have the legal authority and financial resources necessary to implement the Plan.

7. Through review of the Plan and public comments, the Department determines that the GSAs 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.

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

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

2. The Plan defines the undesirable result associated with depletion of interconnected surface water in the Pleasant Valley Basin as a loss of groundwater dependent ecosystem (GDE) habitat. According to the Plan, the depth of groundwater in the shallow alluvial aquifer, low groundwater production in the shallow alluvial aquifer, and the ephemeral flow of streams have maintained GDEs in the past; therefore, the goal of maintaining groundwater levels at or above historical lows is expected to protect against the undesirable result of depletion of interconnected surface water. The Department determines that in attempting to avoid the

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further loss of GDE habitat beyond any historic losses, the GSAs considered public trust resources in development of the Plan.

3. The California Environmental Quality Act (CEQA) does not apply to the Department's evaluation and assessment of the Plan.

Based on the above, the GSP submitted by the Agency for the Pleasant Valley Basin is approved as being found to satisfy the requirements of SGMA and to be in substantial compliance with the GSP Regulations. Recommended corrective actions identified in the Staff Report will assist the Department's review of the Plan's implementation for consistency with SGMA and are thus recommended to be addressed in the GSP by the time of the Department's five-year review, which is set to begin on January 13, 2025, as required by Water Code § 10733.8.

Signed:

Karla Nemeth

Karla Nemeth, Director

Date: November 18, 2021

Exhibit A: Groundwater Sustainability Plan Assessment Staff Report – Pleasant Valley Basin

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

Groundwater Basin Name:	Pleasant Valley Basin (Basin No. 4-006)
Submitting Agency:	Fox Canyon Groundwater Management Agency, Camrosa Water District, County of Ventura
Recommendation:	Approve
Date:	November 18, 2021

Fox Canyon Groundwater Management Agency (FCGMA or Agency) Groundwater Sustainability Agency (GSA), Camrosa Water District (CWD) GSA, and County of Ventura GSA (collectively, the GSAs) submitted the Pleasant Valley Groundwater Basin Groundwater Sustainability Plan (GSP or Plan) to the Department of Water Resources (Department) for evaluation and assessment as required by the Sustainable Groundwater Management Act (SGMA).[1] The GSP covers the entire Basin for the implementation of SGMA.

After evaluation and assessment, Department staff find the Pleasant Valley Basin GSP includes the required components of a GSP, demonstrates a thorough understanding of the basin based on the best available science and information, sets 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 Basin, as required by SGMA and the GSP Regulations.[2] Department staff will continue to monitor and evaluate the Basin's progress toward achieving the sustainability goal through annual reporting and future periodic GSP evaluation. Based on the current evaluation of the Plan, Department staff recommend approval of the Plan with recommended corrective actions described herein.

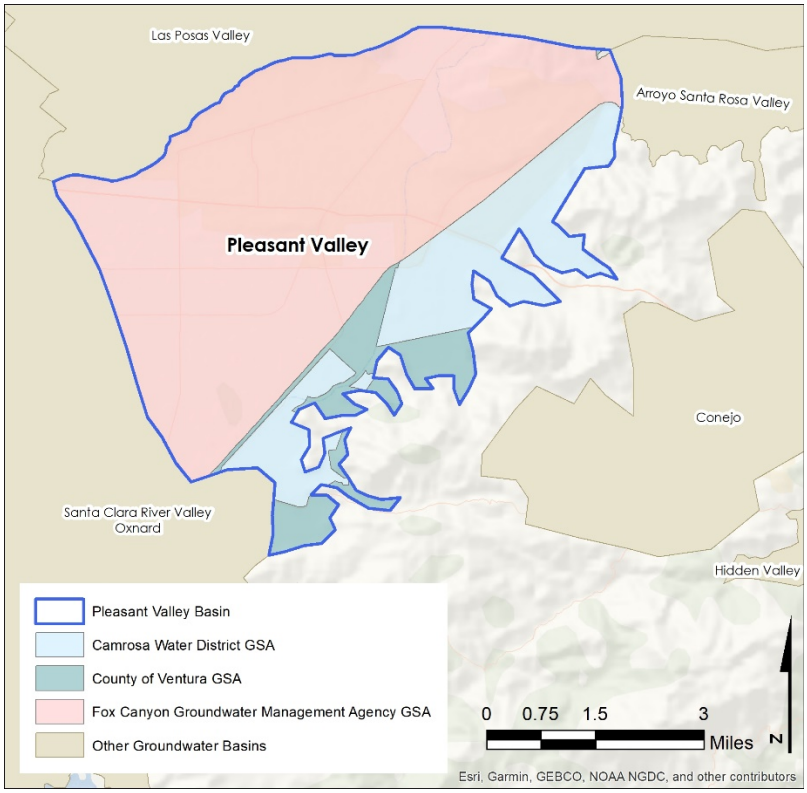
This assessment includes five sections:

[1] Water Code § 10720 *et seq*.
[2] 23 CCR § 350 *et seq*.
[3] The Department recognizes that litigation, including a comprehensive adjudication of the Basin under Code of Civil Procedure section 830 et seq., has been filed. The filing of litigation does not alter or affect the Department's mandate to issue its assessment of the Agency's groundwater sustainability plan (GSP or Plan) for the basin within two years of its submission. (Water Code §10733.4(d).) The Department's assessment consists of a technical review of the submitted Plan, as required by SGMA and the GSP Regulations, and the filing of the adjudication or other litigation did not in any way influence or affect the Department's evaluation of the Plan. The Department expresses no opinion on the claims of the parties in the pending litigation involving the GSP or the groundwater basin. The role of a GSP in the adjudication process is addressed in Chapter 12 of SGMA (Water Code § 10737 et seq.).

- **Section 1 – Summary:** Provides an overview of the basin setting, GSP contents, and overview of the Department's assessment and recommendations.
- **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 a detailed 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

A GSP covering the entire Pleasant Valley Basin (Basin) was submitted to the Department by three GSAs on January 13, 2020. FCGMA is the lead GSA covering the majority of the Basin. A smaller portion of the Basin is covered by Camrosa Water District GSA, with remaining outlying areas covered by County of Ventura GSA. The Pleasant Valley Basin is in Ventura County within the South Coast Hydrologic Region. The Basin is bounded by the Camarillo and Las Posas Hills to the north and by the Santa Monica Mountains to the south. The Pleasant Valley Basin is bounded to the east by the Arroyo Santa Rosa Basin (4-007) and to the west by Oxnard Subbasin (4-004.02). The GSP of the critically overdrafted Oxnard Subbasin was submitted by its statutory deadline in 2020. The Arroyo Santa Rosa is a very low-priority groundwater basin, which is not subject to groundwater management under SGMA, and is therefore not required to develop a GSP. A vicinity map showing the Pleasant Valley Basin, GSA boundaries, and adjacent basins is provided as Figure 1.



According to the GSP, the Basin's main land uses are urban (56 percent) and agricultural (37 percent). A small percentage of land use is designated as open space or water. Water use in the Basin is met by four sources: surface water, groundwater, recycled/reclaimed

water, and imported water. The agricultural sector is the largest user of groundwater and accounts for 88 percent of the Basin's annual groundwater use.

The Pleasant Valley Basin is under the jurisdiction of multiple local, state, and federal agencies. As stated in the GSP, due to the overlapping jurisdictions of agencies that manage groundwater resources across basin boundaries, there are already many existing groundwater resource management programs in the Basin which also benefit nearby groundwater basins.

Fox Canyon Groundwater Management Agency has been implementing groundwater management actions since it was formed by the California Legislature in 1982 to manage and protect groundwater. Over the years, the Agency has enacted ordinances and instituted programs that require groundwater extraction reporting and extraction fees. Additionally, the Agency has implemented a groundwater storage credit program. The Agency also approved a resolution through which recycled water discharged to Conejo Creek is delivered in lieu of groundwater pumping. Local agencies, the United Water Conservation District (UWCD), and Calleguas Municipal Water District (CMWD) have also implemented water supply projects that contributed to new water sources for municipal, industrial, and agriculture use. The GSP states that various conjunctive use programs are operational due to the history of FCGMA's collaboration with other agencies. The Agency intends to implement the GSP along with existing and planned conjunctive use programs in the Basin.

The GSP describes the existing surface water and groundwater monitoring programs in the Basin that are administered by agencies such as the United States Geological Survey, Ventura County Watershed Protection District, UWCD, cities, mutual water districts, and stakeholders. The existing programs include groundwater level and quality monitoring, which are conducted by multiple state and local agencies for various management programs. The data provided by these monitoring programs and other investigations have been used by the GSAs to understand the groundwater conditions in the Basin and develop sustainable management criteria for the GSP. FCGMA intends to rely on groundwater elevation data collected by the abovementioned agencies to assess the groundwater conditions for GSP annual reports and the 5-year GSP evaluations.

The GSP states that groundwater levels in the principal aquifer have declined and recovered in the past. However, the GSP states that the groundwater level decline that started in 2011 has not recovered by 2015. Change in groundwater storage follows the same trend as groundwater levels, exhibiting a sharp decline in storage from 2011 to 2015. Furthermore, the Basin experienced a substantial decline in storage in the calendar year 2015. The historical water budget provided in the GSP portrays that the Basin had an average annual increase in groundwater storage during 1985 to 2015.

According to the GSP, the Pleasant Valley Basin is not experiencing seawater intrusion and, based on the model simulations, seawater intrusion is not likely to occur during the GSP implementation horizon. However, the Basin is hydraulically connected to the

adjacent Oxnard Subbasin, which is currently experiencing seawater intrusion. Therefore, groundwater pumping in the Pleasant Valley Basin has the potential to exacerbate seawater intrusion in the Oxnard Subbasin. The Agency recognizes seawater intrusion in the Oxnard Subbasin is one of the sources of water quality problems in the Pleasant Valley Basin caused by brine migration along the Bailey Fault, that has resulted in elevated concentrations of Total Dissolved Solids (TDS) and chloride.

The sustainability goal for the Basin is "to maintain a sufficient volume of groundwater in storage in the older alluvium and the Lower Aquifer System so that there is no net decline in groundwater elevation or storage over wet and dry climatic cycles." Sustainable management criteria were established based on data collected and information developed over several decades and input from beneficial users of groundwater in the Basin. The GSPs of the neighboring Oxnard Subbasin and Las Posas Basin were also developed by FCGMA. Based on the information provided in the GSP, Department staff conclude that because a regional groundwater management approach was taken by the Agency to define the sustainability goals and to sustainably manage the basins, implementation of the Pleasant Valley GSP is unlikely to adversely impact the sustainability of the adjacent groundwater basins.

The GSP identifies chronic lowering of groundwater levels, reduction in groundwater storage, and degraded water quality as the adverse groundwater conditions occurring in the Basin. The minimum thresholds for chronic lowering of groundwater levels are established at elevations that improve the groundwater levels in the Pleasant Valley Basin and limit seawater intrusion in the adjacent Oxnard Subbasin. The GSP proposes to use groundwater level as a proxy for all applicable sustainability indicators. The Agency's objective for degraded water quality is to limit the expansion of the degraded water quality area that limits beneficial uses of groundwater. Department staff find that the GSP's goals to significantly improve groundwater levels and to not worsen conditions related to groundwater quality are reasonable and consistent with SGMA and the GSP Regulations.

The Plan considers improving groundwater conditions by implementing a project and management action that are both associated with reducing groundwater production. In regard to the project, the Plan proposes to temporarily fallow agricultural land in targeted areas which are more likely to contribute to seawater intrusion in the adjacent Oxnard Subbasin. The proposed management action is to reduce groundwater production in the Basin. Department staff believe the groundwater management strategies described in the GSP to mitigate adverse conditions are reasonable at this time, and if the proposed project and management action are implemented, the GSP is likely to achieve the sustainability goals of the Basin.

Because the GSP's projects and management actions are an integral component for achieving the sustainability goal for the Basin, Department staff will monitor the progress and performance of these actions through annual reporting and five-year GSP updates (at a minimum). Failure to implement these projects and management actions, or modifications to those proposed or implemented projects and management actions, may

affect the Department's conclusions regarding the adequacy of the GSP or its implementation in future evaluations.

FCGMA began collecting a groundwater extraction fee and a sustainability fee prior to the enactment of SGMA. FCGMA intends to increase the sustainability fee after GSP adoption to fund Plan implementation. The GSP acknowledges that the revenue generated from pumpers subject to these fees in the Basin would not be sufficient to entirely fund the project and management actions, therefore the Agency intends to also impose replenishment fees to cover these costs.

After reviewing the GSP, Department staff conclude that, at this time, the best available science and information were relied on to analyze and describe the Plan elements, including the hydrogeological conceptual model (HCM), groundwater conditions, and water budgets. The Agency effectively identifies multiple data gaps in the GSP. One particular data gap is the limited understanding of the degree and locations of hydraulic connectivity between surface water bodies and the shallow alluvial aquifer. Department staff agree that further investigation of the hydraulic connectivity between surface water bodies and groundwater will improve the understanding of the impact(s) of groundwater production on the related sustainability indicators.

For the reasons outlined above, Department staff recommend approval of the Pleasant Valley GSP. The GSP identifies several areas for improvements to its Plan (e.g., HCM, interconnected surface water, and monitoring networks), and Department staff agree that those data gaps should be addressed. Department staff have also identified recommended corrective actions that should be considered by the GSAs for the first periodic evaluation of its GSP (see Section 5). Addressing these recommended corrective actions will be critical for the GSAs to demonstrate, on an ongoing basis, that implementation of the GSP is progressing toward achieving the sustainability goal.

2 EVALUATION CRITERIA

The GSAs submitted a single GSP to the Department to evaluate whether the Plan conforms to SGMA's requirements[4] and is likely to achieve the sustainability goal for the Pleasant Valley Basin.[5] To achieve the sustainability goal for the Basin, 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 are defined quantitatively by the GSA(s).[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 Basin.[10] If these conditions are satisfied, the Department evaluates the Plan to determine whether it complies with SGMA 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 Basin, 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(s), 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(s) 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(s) 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 provide 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 five-year assessment.[26]

The staff assessment of the GSP involves the review of information presented by the GSA(s), including models and assumptions, and an evaluation of that information based on scientific reasonableness. The assessment does not require Department staff to recalculate or reevaluate technical information provided in the Plan or to perform its own geologic or engineering analysis of that information. The staff recommendation to approve a Plan does not signify that Department staff, were they to exercise the professional

[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*.

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(s) 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 reassess their plans, provide reports to the Department, 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.

[27] Water Code § 10733.8, 23 CCR § 355.6 *et seq*.
[28] Water Code §§ 10728 *et seq.*, 10728.2.

3 REQUIRED CONDITIONS

A GSP, to be evaluated by the Department, must be submitted within the applicable statutory deadline. The Plan must also be complete and must, either on its own or in coordination with other Plans, cover the entire basin. If corrective actions have been identified by the Department, in the context of an Incomplete assessment, the GSA(s) must also have sufficiently addressed those corrective actions within the period of time provided.

3.1 SUBMISSION DEADLINE

SGMA required basins categorized as high- or medium-priority as of January 1, 2017 and that were subject to critical conditions of overdraft to submit a GSP no later than January 31, 2020.[29]

The GSAs submitted their GSP on January 13, 2020, in compliance with the statutory deadline.

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 GSAs submitted an adopted GSP for the Basin. Department staff found the GSP to be complete and including the required information, sufficient to warrant an evaluation by the Department. The Department posted the GSP to its website on January 31, 2020.

3.3 BASIN COVERAGE

A GSP, either on its own or in coordination with other GSPs, must cover the entire basin.[31] A GSP that intends to cover the entire basin may be presumed to do so if the basin is fully contained within the jurisdictional boundaries of the submitting GSA(s).

The GSP intends to manage the entire Basin and the jurisdictional boundaries of the three submitting GSAs cover the entire Pleasant Valley Basin.[32]

[29] Water Code § 10720.7(a)(1).
[30] 23 CCR § 355.4(a)(2).
[31] Water Code § 10727(b), 23 CCR § 355.4(a)(3).
[32] Pleasant Valley GSP, Section 1.1, p. 25.

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 staff's evaluation of the likelihood of the Plan to attain the sustainability goal for the Basin is provided below.

4.1 ADMINISTRATIVE INFORMATION

The GSP Regulations require each Plan to include administrative information identifying the submitting agency, describing the plan area, and demonstrating the legal authority and ability of the submitting agency to develop and implement a plan for that area.[33]

4.1.1 Evaluation Summary

The detailed administrative information included in the GSP substantially complies with the requirements outlined in the GSP Regulations. The Plan adequately describes the Basin coverage by the three GSAs and the legal authority of the GSAs to manage groundwater within the Basin. The GSP provides detailed information on various water resource management programs, monitoring programs, conjunctive-use programs, regulatory programs, urban water management plans, general plans, and additional plan elements that are relevant to sustainable groundwater management. The Plan also details information on FCGMA's past and current groundwater management activities in the Basin. Based on the information provided, Department staff conclude that the Agency's past and ongoing collaboration with local agencies to implement various water resource management programs demonstrate that the FCGMA will likely continue to manage groundwater in the Basin to meet the requirements of SGMA.

The GSP describes historical, current, and projected land use, sources of water, and how the interests of beneficial uses and users of groundwater were included during development of the GSP.[34] The Plan was drafted through the participation of collaborating agencies and beneficial users, whose feedback was incorporated into finalizing the Plan.

4.1.2 Agency Information

Three GSAs worked together to prepare and submit a single GSP. Fox Canyon Groundwater Management Agency is the lead GSA which covers the majority (73 percent) of the Basin's geographical area. The CWD GSA and County of Ventura GSA cover the area of the Basin outside the jurisdiction of FCGMA. The agency information, organization, and management structure of FCGMA is provided in the GSP.[35]

FCGMA as a special district formed in 1982 for the purposes of managing and protecting groundwater, FCGMA has been collaboratively managing groundwater in the Basin for

[33] 23 CCR § 354.2 *et seq*.
[34] Pleasant Valley GSP, Section 1.3.2.3, p. 40-41, Section 2.4.4, p. 130- 138, Section 1.8.2, p. 61-63.
[35] Pleasant Valley GSP, Section 1.2, p. 26-28.

over three decades in coordination with other agencies with water supply responsibilities. The Agency's past and current groundwater management activities include oversight of groundwater extraction reporting, extraction limitations, extraction surcharges, and municipal, industrial, and agriculture allocation programs.[36]

The Plan describes the Agency's funding plans and three types of costs associated with GSP implementation, consisting of basic operation costs, implementation costs, and project costs.[37] The GSP states that the Agency collects a groundwater extraction fee to fund its basic operations and collects a sustainability fee, which is expected to generate additional revenue to cover the implementation costs and a portion of the project costs. The GSP estimates that it will cost $4,332,772 per year to cover the project and water supply costs for the first five years of GSP implementation. Because FCGMA is also the lead GSA for developing and implementing GSPs for the Oxnard Subbasin, Pleasant Valley Basin, and the Las Posas Basin, the GSP combines the Agency's implementation cost for all three groundwater basins, which is estimated to be $79,302,272 for the period of 2020 through 2040. Given FCGMA's legal authority and history of groundwater management, the Department staff are reasonably confident that the Agency has the means to generate financial resources to implement the GSP.

4.1.3 Description of Plan Area

The GSP shows three main types of land use in the Basin, which are urban (56 percent), agricultural (37 percent), and open space or water (6 percent). The City of Camarillo covers 52.5 percent of the Basin area, whereas 45 percent of the area outside the City of Camarillo is under Ventura County jurisdiction. The GSP identifies the beneficial users of the groundwater in the Basin as agricultural, municipal & industrial, urban, and environmental users. The Plan states that approximately 88 percent of the groundwater is used by the agricultural sector and the remaining 12 percent is used by other sectors. The GSP states that the environmental uses of groundwater are not well characterized in the Basin.[38]

The Basin has a complex network of water supply, water management, and delivery projects. Such projects include Santa Clara River and Conejo Creek diversions projects, imported water from State Water Project and Metropolitan Water District, and recycled and reclaimed water treatment programs.

The main sources of water in the Basin are surface water, groundwater, recycled/reclaimed water, and imported water. The surface water is diverted from the Santa Clara River and Conejo Creek, and the source of water to Conejo Creek is mostly treated wastewater produced by two wastewater treatment plants.[39] The recycled water

[36] Pleasant Valley GSP, Table 1-10 and Table 1-11, p. 77-81.
[37] Pleasant Valley GSP, Section 1.2.6, p. 28-34, Sections 5.2-5.3, p. 358-360.
[38] Pleasant Valley GSP, Section 1.8.2, p. 62.
[39] Pleasant Valley GSP, Section 2.4.1, p. 130-131, Section 2.2.4, p. 111.

used in the Basin is produced by the Camrosa Water Reclamation Facility and the Camarillo Sanitary District Water Reclamation Plant.[40] The sources of imported water are State Water Project deliveries and groundwater pumped from the Oxnard, Arroyo Santa Rosa, and Tierra Rejada groundwater basins.[41]

The GSP describes existing groundwater and surface water monitoring and management programs that have been occurring in the Basin for decades.[42] Many of the existing monitoring programs, such as groundwater level and groundwater quality monitoring, surface water quality monitoring, stormwater quality monitoring, precipitation monitoring, and streamflow monitoring, are administered by other agencies.[43] Few of the existing monitoring programs are overseen by FCGMA, who collects and analyzes data for annual groundwater extraction and analyze water quality data to track the progress toward meeting Basin Management Objectives.[44] The GSP states that these monitoring programs are anticipated to continue, and the data from these programs will continue to be used to assess groundwater conditions in the Basin. The Plan lists existing groundwater management programs that operate in the Basin,[45] such as surface water diversion projects, allocation programs, water conservation programs, groundwater storage and injection credit programs, prohibition of groundwater export, extraction limitation and surcharge programs, extraction fee and reporting programs, a water credit transfer program, salinity management program and imported water program.

The GSP discusses multiple conjunctive use programs and identifies three conjunctive use programs as the most important conjunctive use programs, each of which are described in detail. These conjunctive use programs are the 1. United Water Conservation District's Freeman Diversion Project, 2. Conejo Creek Diversion Project, and 3. Fox Canyon Groundwater Management Agency Programs.

The GSP discusses three urban water management plans (UWMP) in detail and states that water suppliers that operate groundwater wells in the Basin will update groundwater supply projections in accordance with the allocation of groundwater production in their next update of UWMP.[46] The GSP discusses two additional plan summaries which are the Calleguas Creek Watershed Management Plan and Metropolitan Water District (MWD) UWMP.[47] The GSP states that removing water quality impairment to restore beneficial uses of surface water and groundwater is one of the priority actions

[40] Pleasant Valley GSP, Section 2.4.1, p. 131, Section 2.4.1.3, 135.
[41] Pleasant Valley GSP, Table 2-8, p. 177, Section 2.4.1.4, 133-134.
[42] Pleasant Valley GSP, Section 1.4, p. 42-45.
[43] Pleasant Valley GSP, Table 1-10 - Table 1-11, p. 77-81.
[44] LARWQCB. 2013. "Chapter 3: Water Quality Objectives." In Water Quality Control Plan: Los Angeles Region Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties.
[45] Pleasant Valley GSP, Table 1-11, p. 79-81.
[46] Pleasant Valley GSP, Section 1.6.2, p. 51-58.
[47] Pleasant Valley GSP, Section 1.6.3, p. 58.

recommended in the Calleguas Creek Watershed Management Plan. The GSP states the MWD does not directly pump groundwater in the Pleasant Valley Basin which means its UWMP does not interface with SGMA or affect the Basin's sustainability.

The GSP discusses two general plans, Ventura County General Plan and the City of Camarillo General Plan, that are applicable in the Pleasant Valley Basin.[48] The Agency is planning to coordinate with Ventura County on the next update of the general plan to ensure that the GSP and the general plan update are mutually consistent.[49] Based on the provision included in the City of Camarillo General Plan regarding consultation with other agencies on water policy, the Agency implies that the water supply allocation will be incorporated into the City's planning document.

4.1.4 Notice and Communication

The GSP sufficiently describes the notification and communication effort made by the Agency during GSP development and includes a Public Outreach and Engagement Plan.[50] The beneficial users who would be potentially affected by the use of groundwater in the Basin are listed in the GSP as 1. Surface water suppliers: UWCD and CWD, 2. Municipal well operators and water purveyors: UWCD and CMWD 3. Environmental users, 4. Local land-use planning agencies: County of Ventura and City of Camarillo, 5. Disadvantaged Communities (DAC).

Based on the Agency governance structure provided in the GSP, most of these parties, along with the agricultural group, have direct representation on the FCGMA Board.[51] The decision-making process within the Agency is board adoption of the ordinances, which requires a public hearing and a majority vote of the board. The GSP states that although environmental users and the DAC do not have representation on the Agency board, they had various opportunities to participate in the GSP development process. For example, environmental users' interests were represented through the appointment of an environmental representative on the Technical Advisory Group (TAG). The DAC's interests were represented by the City of Camarillo and by representatives from the DAC that participated in the Agency's public meetings. The DAC representatives are on the list of interested parties who receive electronic newsletters regarding the status and development of the GSP.

Based on the information provided in the GSP, over 100 public meetings and five public workshops were held to discuss the GSP between March 2015 to November 2019. The GSP also states that a special TAG meeting was held, which focused on potential groundwater dependent ecosystems (GDEs). Additional means of outreach include a survey for input on sustainability indicators, a public call for project ideas for incorporation in the GSP, circulating electronic newsletters and regularly posting updates on the

[48] Pleasant Valley GSP, Sections 1.6.1, p. 47-51.
[49] Pleasant Valley GSP, Sections 1.6.1, p. 47.
[50] Pleasant Valley GSP, Appendix A-5, p.395-589, Section 1.2.3, p. 27, Section 1.8, p. 60-65.
[51] Pleasant Valley GSP, Section 1.2.3, p. 27.

Agency website. As the Agency moves forward with Plan implementation, it intends to use the same tools of communication that were used during GSP development.

During GSP development several written comment letters were received by FCGMA.[52] The GSP describes that, in consideration of some comments, the Agency completed an independent peer review of the numerical groundwater models, completed additional analysis for the water quality approach, and extended the timeline for completion of the GSP. Department staff find that the GSP complies with all elements of the *Notice and Communication* section of 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.[53]

4.2.1 Evaluation Summary

The GSP's description of the basin setting substantially complies with the requirements outlined in the GSP Regulations. The GSP includes a detailed discussion of the hydrogeological setting, groundwater conditions, and water budget for the Basin, which appear to be based on the best information and best available science at the time the GSP was prepared. The Agency's understanding of the basin setting is explained sufficiently in the GSP and appears adequate to sustainably manage groundwater in the Basin.

The Agency's understanding of hydrogeologic conditions is based on its HCM and previous studies. The HCM and the numerical model appear to incorporate all the applicable hydrologic and hydrogeological processes in the entire Basin. The GSP recognizes that there are data gaps in the HCM which cause uncertainty in understanding the impact of water level changes on change in storage in the aquifer.[54] The data gaps in the HCM include the lack of groundwater level and groundwater quality data from wells screened solely in a single aquifer, the source of high TDS in some aquifers, and the effect of faulting on groundwater flow.[55] The GSP discusses techniques that would help reduce uncertainly associated with these data gaps.

The GSP includes historical, current, and projected water budget estimates for the Basin which were developed using a numerical model. The Agency used the water budgets to determine the historical and projected sustainable yield and overdraft. Department staff

[52] Pleasant Valley GSP, Appendix A-5, p. 395-589.
[53] 23 CCR § 354.12 *et seq.*
[54] Pleasant Valley GSP, Section 2.2.5, p. 114.
[55] Pleasant Valley GSP, Section 2.2.5, p. 114.

believe that the water budget components provided in the GSP were developed using the best available tools and information available at the time the GSP was prepared and substantially comply with the requirements outlined in the GSP Regulations. Department staff find that the basin setting demonstrates the Agency's satisfactory understanding of the hydrogeology and groundwater conditions of the Basin and substantially complies with the GSP Regulations.

4.2.2 Hydrogeologic Conceptual Model

The Agency's understanding of the geographic setting, geologic setting, structural setting, and other physical attributes of the Basin, including its aquifers and aquitards, are described in the HCM. The GSP describes the conceptual model graphically, with multiple cross sections,[56] and through written descriptions of the physical and structural properties of the Basin, including the lateral boundaries and the bottom of the Basin. The Plan identifies five hydrostratigraphic units in the Basin–shallow alluvial aquifer, older alluvium, Upper San Pedro Formation, Fox Canyon aquifer, and Grimes Canyon aquifer. The GSP refers to a semi-perched aquifer as the uppermost unit of older alluvium and states that the shallow alluvial and older alluvium aquifers are not considered primary aquifers because of the presence of low permeability materials and limited groundwater production. The GSP states that the older alluvium composes the Upper Aquifer System [57] and uses the hydrostratigraphic unit name "older alluvium" interchangeably with "Upper Aquifer System" throughout the GSP. However, the GSP also refers to "Upper Aquifer System" as "shallow alluvial aquifer" occasionally without clearly describing which hydrostratigraphic units are in Upper Aquifer System. Department staff recommend that the Agency clearly describe which hydrostratigraphic units are included in the Upper Aquifer System of Pleasant Valley Basin. The Upper San Pedro Formation is identified as a leaky aquitard and is not an aquifer. The Fox Canyon aquifer and the Grimes Canyon aquifer are considered primary aquifers in the Basin. The GSP states that Lower Aquifer System comprises the Hueneme, Fox Canyon, and Grimes Canyon aquifers, and the Fox Canyon, and Grimes Canyon aquifers are continuous in the Pleasant Valley Basin. [58] Since Hueneme aquifer is not continuous in the Pleasant Valley Basin, it appears that the Fox Canyon, and Grimes Canyon aquifers compose the Lower Aquifer System in the Pleasant Valley Basin. Department staff recommend that the Agency describe the correlation between hydrostratigraphic units and the aquifer systems discussed in the GSP. The GSP states Fox Canyon aquifer is in hydraulic connectivity with the overlying shallow alluvial aquifer, the underlying Grimes Canyon aquifer, and the adjacent Oxnard Subbasin.[59]

[56] Pleasant Valley GSP, Figure 2-3 - 2-5, p. 187-191.
[57] Pleasant Valley GSP, Executive Summary, p. 15.
[58] Pleasant Valley GSP, Executive Summary, p. 15, Section 2.2.4, p. 111-114.
[59] Pleasant Valley GSP, Section 2.2.4, p. 113.

Streamflow in Conejo Creek and Arroyo Las Posas recharge the semi-perched aquifer and the shallow alluvial aquifer, and Calleguas Creek recharges the semi-perched aquifer.[60] The GSP provides a map showing the potential recharge areas, based on saturated hydraulic conductivity of soil.[61]

The GSP used a numerical model to calculate the annual change in storage based on groundwater elevation data and to simulate the effects of proposed projects and operating scenarios on groundwater conditions. The HCM described in the GSP is generally consistent with the Department's understanding of the Basin and with previous studies done in the area. Department staff find that the Agency demonstrates a sufficient understanding of the Basin setting, including the geology and groundwater conditions of the Basin. However, as identified in the GSP, there are uncertainties associated with the model regarding aquifer properties, groundwater quality, and the effects of faults on groundwater flow. The GSP states that this uncertainty is due to the lack of wells screened solely in a single aquifer.[62] Despite the uncertainties caused by limited data availability, Department staff find the Agency utilized the best available information to provide a thorough written description of the HCM. Additionally, the GSP includes various cross-sections and maps, such as surficial geology, rivers and drainages, impaired surface water bodies, water conveyance, treatment infrastructure, recharge basins, and stream gauges as the supporting information for defining and assessing reasonable sustainable management criteria and projects and management actions.[63]

4.2.3 Groundwater Conditions

As discussed in the HCM, there are two principal aquifers in the Basin, and aquifer-specific groundwater elevation data are only available for the Fox Canyon aquifer.[64] The GSP states that aquifer-specific groundwater elevation data are limited because most of the wells in the Basin are screened across multiple aquifers. Groundwater elevation data specific to the Grimes Canyon aquifer are not available because there are no wells screened solely within the Grimes Canyon aquifer. Department staff believe the lack of aquifer-specific groundwater elevation data for the Grimes Canyon aquifer prevents a full understanding of the groundwater conditions [65] and the physical and structural properties of the aquifer.[66] Department staff recommend incorporating new or existing monitoring locations into the monitoring network to monitor the groundwater condition of the Grimes Canyon aquifer (see Recommended Corrective Action 1).

[60] Pleasant Valley GSP, Section 2.4.1.1, p. 133.
[61] Pleasant Valley GSP, Figure 2-35, p. 251.
[62] Pleasant Valley GSP, Section 2.2.5, p. 114.
[63] Pleasant Valley GSP, Figure 2-2 - 2-36, p. 185-253.
[64] Pleasant Valley GSP, Section 2.3.1.3 - 2.3.1.4, p. 118-119.
[65] 23 CCR § 354.16(a).
[66] 23 CCR § 354.14(b)(4).

The GSP states that the historical trends in groundwater elevation in the Fox Canyon aquifer are similar throughout the Basin and that they follow the trends of cumulative departure from mean precipitation. Groundwater elevations in the northeastern portion of the Basin were influenced by the inflow of water along the Arroyo Las Posas, and groundwater elevations in the south and western portions of the Basin were influenced by in-lieu water deliveries.[67]

The hydrographs provided in the GSP for the Fox Canyon aquifer show groundwater level trends from the 1980s to 2015.[68] In particular, the GSP characterizes the groundwater elevation trend in the Fox Canyon aquifer based on a single well that exhibits a similar trend as other wells and has the longest period of record.[69] Groundwater elevation in this well declined between 1985 and 1991 due to below-average precipitation and recovered from 1991 to 2006 as a result of wet climatic conditions and recharge of non-native surface water along Arroyo Las Posas.[70] Groundwater elevations were relatively stable between 2006 and 2011, then with the onset of drought, elevations started to decline again in 2011.[71] The hydrograph shows a continued decline of groundwater level past 2011. Despite the drought and declining groundwater elevations, the GSP states that groundwater elevations in 2015 were still 50 feet higher than the lowest groundwater elevation recorded in the Fox Canyon aquifer in 1991 as a result of the additional recharge of surface water along Arroyo Las Posas.[72]

In addition to the hydrographs, groundwater elevation contour maps for the Fox Canyon aquifer show the prominent flow direction to the southwest and a regional cone of depression.[73] The GSP states that the vertical gradient of the older alluvium was downward to the underlying Fox Canyon aquifer.[74]

The GSP used a numerical groundwater flow model prepared by UWCD to estimate the annual and cumulative change in groundwater in storage from water year 1986 to 2015.[75] The annual change in storage ranges from a maximum increase of approximately 21,850 acre-feet in water year 1998 to a maximum decrease of approximately 15,370 acre-feet in water year 2014.[76] The average change in storage for the Pleasant Valley Basin during the modeling period was an increase of approximately 2,280 acre-feet per year, with an increase in storage in all systems: approximately 515 acre-feet per year in the semi-perched aquifer; approximately 1,320 acre-feet per year in the Upper Aquifer System;

[67] Pleasant Valley GSP, Section 2.3.1.3, p. 119.
[68] Pleasant Valley GSP, Figure 2-16, p. 213.
[69] Pleasant Valley GSP, Section 2.3.1.3, p. 119.
[70] Pleasant Valley GSP, Section 2.3.1.3, p. 119, Figure 2-16, p. 213.
[71] Pleasant Valley GSP, Section 2.3.1.3, p. 119, Figure 2-16, p. 213.
[72] Pleasant Valley GSP, Section 2.3.1.3, p. 119.
[73] Pleasant Valley GSP, Figure 2-14 – 2-15, p. 209-211.
[74] Pleasant Valley GSP, Section 2.3.1.2 - 2.3.1.3, p. 117.
[75] Pleasant Valley GSP, Appendix D, p. 701-1054.
[76] Pleasant Valley GSP, Section 2.3.2, p. 120.

and approximately 445 acre-feet per year in the Lower Aquifer System.[77] The cumulative change in storage for water years 1986 through 2015 was an increase of approximately 68,400 acre-feet of groundwater in storage.[78]

The GSP states seawater intrusion has not been observed in the aquifers in the Basin. However, because the principal aquifers in the Pleasant Valley Basin are hydraulically connected to the aquifers in the Oxnard Subbasin where seawater intrusion is currently occurring, pumping in the principal aquifers in Pleasant Valley Basin has the potential to induce seawater intrusion in the Oxnard Subbasin.[79]

The GSP discusses the elevated concentration of TDS, chloride, nitrate, sulfate, and boron in groundwater and states that the increase in the concentrations of TDS and chloride have impaired municipal use of groundwater in the northern part of the Basin.[80] The primary water quality concerns of the Basin are associated with discharges from wastewater treatment plants, dewatering wells, and saline intrusion from brine migration along the Bailey fault.[81] Two oil fields are partially within the Basin boundary. Petroleum extraction occurs below the deepest freshwater aquifer,[82] and according to the GSP, there is no evidence of impacts of oil field operations on beneficial users of groundwater.

The Agency has been routinely conducting groundwater quality monitoring and reporting to the Los Angeles Regional Water Quality Control Board (LARWQCB). The GSP includes a series of water quality concentration maps showing that water quality wells are limited in spatial distribution to the northern area of the Basin and near the boundary of the Oxnard Subbasin.[83] The GSP discusses 2011 to 2015 water quality conditions in terms of Upper Aquifer System and Lower Aquifer System and includes over 100 groundwater quality hydrographs that show current and historical water quality data going back to the 1930s. The hydrographs compare the five water quality constituents with the Basin Plan Water Quality Objectives or Maximum Contaminant Levels.[84]

The GSP identifies three possible causes of land subsidence as groundwater pumping, petroleum reservoir compaction, and tectonic activity, and acknowledges groundwater pumping as the major cause of land subsidence in the Basin. The GSP provides limited information on the historical and current extent and rate of subsidence. The Plan recognizes that the subsidence measured at a monument located in the foothills outside the southern Basin boundary reflects tectonic activity rather than the impact of groundwater pumping and concludes that the monument shows no net subsidence since

[77] Pleasant Valley GSP, Section 2.3.2, p. 120.
[78] Pleasant Valley GSP, Section 2.3.2, p. 120.
[79] Pleasant Valley GSP, Section 2.3.3, p. 121-122.
[80] Pleasant Valley GSP, Section 2.3.4, p. 121, Section 3.3.4.1, p. 283.
[81] Pleasant Valley GSP, Section 2.3.4, p. 121.
[82] Pleasant Valley GSP, Section 2.3.4.6, p. 124.
[83] Pleasant Valley GSP, Figure 2-19 – 2-28, p. 219-237.
[84] Pleasant Valley GSP, Appendix G, p. 1055-1177.

its installation in 2000.[85] The most recent subsidence data provided in the GSP is from a study (Farr et al. 2017) that analyzed Interferometric Synthetic Aperture Radar (InSAR) data and showed less than one foot of subsidence occurred in the Basin from 2015 to 2016.[86] Using information from a 2003 USGS modeling study, the GSP predicts that areas within the Basin may experience an additional 0.1 to 1 foot of subsidence by 2040, depending on whether future water levels decline below previous maximum declines and remain there for a considerable amount of time.[87] Department staff find the GSP's discussion of the current rate of subsidence, based on observed data, to be reasonable.

The Plan states that all surface water bodies in the Basin may have a connection to the underlying aquifers. These surface water bodies include the Arroyo Las Posas, Conejo Creek, and Calleguas Creek. The Plan states that information about gaining and losing reaches within the Basin is limited due to a lack of monitoring sites near surface water bodies.[88] The numerical model simulates the leakage from major surface water bodies using data from stream gauges and estimated aquifer properties. The model shows that all three surface water bodies exhibited recharge to groundwater in all modeled years.

Department staff agree with the GSP's acknowledgement of a data gap regarding aspects of the connection between groundwater and surface water bodies. Department staff believe that the understanding of the type of connection, quantity, and the timing of depletion is necessary to successfully manage depletions of interconnected surface water in the Basin, as required by the GSP Regulations[89] (see Recommended Corrective Action 2).

The GSP states that three surface water bodies in the Basin were identified as potential GDEs by The Nature Conservancy, an environmental non-profit organization.[90] The potential GDEs include Calleguas Creek, Conejo Creek, and the lower reach of Arroyo Las Posas, which drain watersheds that extend beyond the boundaries of the Basin. Surface water flow in Arroyo Las Posas is from both native and non-native sources. The primary sources of flow in Conejo Creek and Calleguas Creek are from non-native sources. The GSP provides detailed descriptions of the types of ecosystems near the surface water bodies and the habitat supported by the ecosystems. The location and the extent of GDEs are shown in maps based on data made available by the Department and other sources.[91] The GSP states that the surface water bodies cannot be conclusively determined to be GDEs until the reliance of vegetation on groundwater is known and the connection between potential GDEs and groundwater is established.

[85] Pleasant Valley GSP, Section 2.3.5, p. 126.
[86] Pleasant Valley GSP, Section 2.3.5, p. 126.
[87] Pleasant Valley GSP, Section 2.3.5, p. 126.
[88] Pleasant Valley GSP, Section 2.3.6, p. 127.
[89] 23 CCR § 354.16(f).
[90] Pleasant Valley GSP, Section 2.3.7, p. 128.
[91] Pleasant Valley GSP, Figure 2-32 – 2-34, p. 245-249.

4.2.4 Water Budgets

The GSP used the Ventura Regional Groundwater Flow Model to develop the water budgets for the Basin. The Regional Groundwater Flow Model is based on USGS's numerical groundwater flow model (MODFLOW) that was originally created by the UWCD for the Pleasant Valley Basin, Oxnard Subbasin, Mound Subbasin, and western part of the Las Posas Valley Basin.[92] The GSP states that the UWCD model was revised, peer reviewed, and finalized in June 2018 for the Pleasant Valley Basin GSP [93] and was used to estimate historical, current, and projected water budgets and the sustainable yield.

The GSP provides detailed descriptions of the sources of inflows, outflows, change in groundwater in storage, and the use of imported water and recycled water in the Basin. The Plan refers to the period of 1985-2015 as the historical water budget, with the year 2015 representing the current water budget.[94] The GSP includes historical water budgets for each of the systems: the semi-perched, Upper Aquifer System, and Lower Aquifer System.[95] Additional data pertaining to the water budget components, such as a summary of water deliveries, detailed accounting of recharge by source types, and groundwater use by beneficial uses for each aquifer system are provided in the GSP.

The GSP quantified overdraft in the Basin using the water years during which water supply conditions approximated average conditions. This calculation method excluded wet, dry, and critically dry water years. The GSP states that for the average water supply conditions, the Pleasant Valley Basin was not in overdraft; on the contrary, the average change in storage during the period from 1986 to 2015 was an increase in storage of about 2,618 acre-feet per year. Based on the historical water supply conditions, the GSP states that diversions from the Santa Clara River are the most variable source of water supply, and the loss of this water during drought conditions can directly lead to an increase in groundwater pumping. The GSP discusses the current water budget for calendar year 2015 and states that the Basin had greater outflows than inflows, resulting in a storage loss of about 13,657 acre-feet.[96]

The Agency developed eight model scenarios to assess the projected water budget and future sustainable yield.[97] The scenarios incorporated existing projects, variable amounts of reduced groundwater production, various climate and precipitation projections, and the 2030 and 2070 DWR climate-change factors. The GSP states that none of the modeled scenarios successfully eliminated seawater intrusion in the Oxnard Subbasin, and, therefore, none of the direct model scenarios were used to determine the sustainable yield of the Pleasant Valley Basin.[98] Instead, the findings from six model scenarios were plotted graphically and a statistical method of linear regression was used to calculate the

[92] Pleasant Valley GSP, Appendix D, p. 701-1054.
[93] Pleasant Valley GSP, Appendix I, p. 1255-1331.
[94] Pleasant Valley GSP, Section 2.4.3.2, p. 140-142.
[95] Pleasant Valley GSP, Table 2.6, p. 170-173.
[96] Pleasant Valley GSP, Section 2.4.3.3, p. 142.
[97] Pleasant Valley GSP, Section 2.4.5, p. 147-156.
[98] Pleasant Valley GSP, Section 2.4.5.9, p. 158.

future sustainable yield that would result in zero seawater intrusion.[99] This groundwater production volume with no seawater intrusion in the Oxnard Subbasin is provided in the Pleasant Valley Basin GSP as the future sustainable yield. The sustainable yield of the Upper Aquifer System is estimated to be 4,400 acre-feet per year, whereas the Lower Aquifer System is estimated to be 7,200 acre-feet per year.[100] Therefore, the combined future sustainable yield of Upper Aquifer System and Lower Aquifer System would be 11,600 acre-feet per year. The future sustainable yield or the future groundwater production rate of 11,600 acre-feet per year is lower than the groundwater production in 2015 which was 17,849 acre-feet.[101] The 2015 groundwater production is comparable with the average groundwater production during the 1985-2015 period, which was 15,671 acre-feet per year.[102]

Department staff noticed an inconsistency in the GSP in terms of how the sustainable yield of the Basin is reported. The future sustainable yield is reported as 12,600 acre-feet per year in the Executive Summary section of the GSP[103] while other parts of the GSP reports 11,600 acre-feet per year.[104] Similarly, the uncertainty estimate of the sustainable yield is reported as ±1,200 acre-feet per year[105] in some sections while it is reported as ±1,000 acre-feet per year[106] in other sections of the GSP. Department staff recommend the Agency resolve the discrepancy associated with the sustainable yield value in the GSP and report consistent sustainable yield and associated uncertainty values.

Department staff recognized that the Agency's sustainable yield calculation technique was questioned in several comment letters received by the Department. The comment letters highlighted the fact that sustainable yield value can be different based on the choice of a statistical method. Department staff reviewed the Agency's technique and concluded that, while the technique is new, the approach to estimate sustainable yield appears to be reasonable. The GSP provided the evidence that the groundwater model relied upon is reasonably well-calibrated and peer-reviewed, and the statistical method used is consistent with scientific standards of practice. Although other techniques could have been used to calculate sustainable yield, Department staff believe that, at this time, the Agency approach is scientifically reasonable.

The components of the water budgets, the accounting of the inflows and outflows to the Basin, and the availability of water supply for the future, along with the uncertainties associated with the water budget, population growth, and future land use, are sufficiently detailed and comply with the GSP Regulations. The data and information used to estimate overdraft, sustainable yield, and change in storage appears to be based on the best

[99] Pleasant Valley GSP, Appendix I, Figure 7, p. 1305.
[100] Pleasant Valley GSP, Section 2.4.5.9, p. 158.
[101] Pleasant Valley GSP, Table 2-10, p. 179-180.
[102] Pleasant Valley GSP, Table 2-10, p. 179-180.
[103] Pleasant Valley GSP, Executive Summary, p. 19.
[104] Pleasant Valley GSP, Section 3.2, p. 277.
[105] Pleasant Valley GSP, Section 3.2, p. 277.
[106] Pleasant Valley GSP, Executive Summary, p. 19, Section 5.3.1, p. 359.

available information and science. Department Staff find the Agency's overdraft calculation process substantially complies with the GSP Regulations.[107] Department staff believe the rationale and information utilized to develop the water budgets is sufficiently thorough and substantially complies with the GSP Regulations.

4.2.5 Management Areas

The Agency divided the Pleasant Valley Basin into three management areas, consisting of, the Pleasant Valley Pumping Depression Management Area, the East Pleasant Valley Management Area, and the North Pleasant Valley Management Area. The GSP states that the Pleasant Valley Pumping Depression Management Area was established based on the historically low groundwater elevations recorded in both the Upper Aquifer System and the Lower Aquifer System. The East Pleasant Valley Management Area is predominantly within the jurisdiction of CWD and east of the Bailey Fault, which acts as a barrier to groundwater flow, and where the Fox Canyon aquifer is missing.[108] The North Pleasant Valley Management Area is west of the Bailey Fault and north of the Pleasant Valley Pumping Depression Management Area.[109]

Department staff note that the management area naming convention used in the GSP is inconsistent. The North Pleasant Valley Management Area name is used in the text of the GSP whereas it appears that the same management area is referred to as West Pleasant Valley Management Area in several figures.[110] Department staff recommend using a consistent naming convention to identify and describe management areas.

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.[111]

4.3.1 Evaluation Summary

Department staff find the sustainable management criteria included in the GSP for chronic lowering of groundwater levels and change in storage will improve groundwater condition, are developed using the best available science and data, and are consistent with the requirements of the GSP Regulations. Significant and unreasonable conditions, as defined in the GSP, are based on historical conditions in the Basin. The minimum thresholds are generally set to improve groundwater conditions observed in the Basin in 2015. Specifically, the GSP aims to maintain groundwater levels above 2015 levels, to avoid land subsidence that substantially interferes with surface land uses, to limit degradation of groundwater quality, and not to worsen depletions of interconnected

[107] 23 CCR § 354.18(b)(5).
[108] Pleasant Valley GSP, Section 2.5, p. 159.
[109] Pleasant Valley GSP, Section 2.5, p. 159, Figure 2-46, p. 273.
[110] Pleasant Valley GSP, Figure 3-1 – 3-5, p. 305-313.
[111] 23 CCR § 354.22 *et seq*.

surface waters than the current conditions. Measurable objectives defined in the GSP largely aim to improve groundwater conditions in the Basin over time.

Although the GSP sufficiently describes the rationale used to develop sustainable management criteria for most sustainability indicators, Department staff believe that further work by the GSAs will be necessary to appropriately understand water quality undesirable results, to evaluate land subsidence, and to provide an estimate of current depletions of interconnected surface water. Department staff strongly encourage the GSAs to address any recommended corrective actions and other suggestions for improvement no later than the first five-year update. Despite the fact that some areas in the sustainable management criteria can be improved, Department staff find the sustainable management criteria included in the GSP were developed using sufficient and credible information and science, and substantially comply in form and presentation with the requirements outlined in the GSP Regulations.

4.3.2 Sustainability Goal

The GSP's primary sustainability goal for the Basin is "to maintain a sufficient volume of groundwater in storage in the older alluvium and the Lower Aquifer System so that there is no net decline in groundwater elevation or storage over wet and dry climatic cycles".[112] The Plan utilizes a regional management approach and considers adjacent basins' sustainability goals, stating that the groundwater levels in Pleasant Valley Basin should be maintained at elevations that are high enough to not inhibit the ability of the Oxnard Subbasin to prevent net landward migration of the 2015 saline water impact front.[113] Department staff find that the GSP sets reasonable sustainability goals and adequately describes the measures to be implemented to achieve sustainable management of groundwater within 20 years.

4.3.3 Sustainability Indicators

GSP Regulations specify that an agency define conditions that constitute sustainable groundwater management for a basin, including the characterization of undesirable results and the establishment of minimum thresholds and measurable objectives for each applicable sustainability indicator.[114]

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.[115] Sustainability indicators thus correspond with the six undesirable results – chronic lowering of groundwater levels indicating a significant and unreasonable

[112] Pleasant Valley GSP, Section 3.2, p. 276.
[113] The GSP uses the term "2015 saline water impact front" to describe the landward extent of the seawater intrusion in 2015 in the adjacent Oxnard Subbasin. The area of the Subbasin impacted by chloride concentrations greater than 500 milligrams per liter in 2015 is referred to as the saline water impact area. The Agency's reasoning to use the term saline water impact front rather than seawater intrusion is to reflect all the potential sources of chloride to the aquifer, which are not limited to seawater intrusion.
[114] 23 CCR § 354.22 *et seq*.
[115] 23 CCR § 351(ah).

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[116] – 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.

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 basin, as quantified through the establishment of minimum thresholds, are addressed for each sustainability indicator. However, 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.[117]

4.3.3.1 Chronic Lowering of Groundwater Levels

The GSP states that the chronic lowering of groundwater levels resulting in a significant and unreasonable depletion of supply is an undesirable result applicable to the Pleasant Valley Basin and acknowledges that groundwater production in excess of natural and artificial recharge is the primary cause of the chronic lowering of groundwater levels. The GSP defines undesirable results in three ways.[118] The first definition is based on the total number of key wells, independent of the management area or aquifer, in which an undesirable result will occur if water levels in four of the nine key wells are below their respective minimum thresholds in any single monitoring event. Under the second definition, an undesirable result will occur if the groundwater elevation at any individual key well exceeds the historical low groundwater elevation at the respective monitoring site or in a nearby well if the historical record at the monitoring location is not long enough to capture the historical low water levels. The third definition of an undesirable result is if the water level in any individual key well is below the minimum threshold for either three consecutive monitoring events or three of five consecutive monitoring events.

The Agency selected minimum thresholds for groundwater levels based on historical groundwater elevation data, incorporation of projects, and future groundwater model scenarios with potential for seawater intrusion in the Oxnard Subbasin. Because the aquifers in the Pleasant Valley Basin are hydraulically connected to the aquifers in the Oxnard Subbasin, the current groundwater elevations, which are below sea level, are

[116] Water Code § 10721(x).
[117] 23 CCR § 354.26(d).
[118] Pleasant Valley GSP, Section 3.3.7, p. 286-288.

contributing to seawater intrusion in the Oxnard Subbasin.[119] Therefore, the minimum threshold for groundwater elevations in the Basin were selected to protect against net seawater intrusion in the Upper Aquifer System and Lower Aquifer System in the Oxnard Subbasin.[120] The selected minimum thresholds for wells in the Pleasant Valley Pumping Depression Area were based on the lowest simulated groundwater elevation after 2040, in which net seawater intrusion in the Oxnard Subbasin was minimal. To account for some uncertainty in the projected groundwater elevations, the lowest simulated value was rounded down to the nearest 5-foot interval. The minimum threshold of one key well in the North Pleasant Valley Management Area is set lower than the historical low groundwater elevation. The Agency's justification to select this minimum threshold is that the well is heavily influenced by groundwater production from a desalter project in the area.[121]

The GSP established measurable objectives for each key well as water levels in which there is neither seawater flow into, nor freshwater flow out of, the Upper Aquifer System or Lower Aquifer System in the adjacent Oxnard Subbasin. According to the Plan, there is at least 10 feet of difference between the measurable objective and the minimum threshold water level, which the Agency considers a margin of safety for purposes of operational flexibility.

The GSP intends to use the interim milestones for chronic lowering of groundwater levels as a proxy for other sustainability indicators because the interim milestones measure progress toward groundwater elevations in the Pleasant Valley Basin that will prevent undesirable results. Two sets of interim milestones are discussed in the GSP. One interim milestone is for average climatic conditions and the other one is for dry conditions. The GSP describes two paths to achieve the sustainability goal for the Basin within 20 years of Plan implementation. With the first path, groundwater levels will reach the measurable objective under average climatic conditions, and with the second path, the water level will reach the minimum threshold under dry conditions.[122]

The GSP states that minimum thresholds are anticipated to improve conditions for beneficial uses by preventing chronic lowering of groundwater levels.[123] It is reasonable to expect improvements at minimum threshold groundwater levels; however, the GSP does not clearly discuss how the established minimum thresholds for groundwater levels may impact the beneficial users and uses of groundwater in the Basin. Department staff encourage the Agency to provide additional information on the potential effects of minimum threshold on all beneficial uses and users of groundwater. Despite that, the established minimum thresholds groundwater levels are above historical lows except for one well, and this approach is consistent with SGMA and the GSP Regulations.

[119] Pleasant Valley GSP, Section 3.3.1, p. 279.
[120] Pleasant Valley GSP, Section 3.4, p. 289.
[121] Pleasant Valley GSP, Section 3.4, p. 289-290.
[122] Pleasant Valley GSP, Table 3-2, p. 303, Figure 3-9, p. 321.
[123] Pleasant Valley GSP, Section 3.4.1, p. 290.

Overall, staff find that the Agency plans to take a reasonable approach to significantly improve the groundwater levels as the first improvement will be made by 2025 when the groundwater levels in most representative key wells are anticipated to be above 2015 groundwater levels and continue improving until 2040. Furthermore, Department staff find the established sustainable management criteria for chronic lowering of groundwater level identifies quantitative criteria for tracking future undesirable results, are scientifically reasonable to achieve the sustainability goals of the Basin, and, therefore, substantially complies with the GSP Regulations.

4.3.3.2 Reduction of Groundwater Storage

The GSP states that the significant and unreasonable reduction of groundwater storage is an undesirable result applicable to Pleasant Valley Basin.[124] The Plan acknowledges that the primary cause of reduction in groundwater storage is groundwater production in excess of recharge and that groundwater production may result in an undesirable result if the volume of water produced from the Basin exceeds the volume of freshwater recharging the Basin over a cycle of drought and recovery.

The Agency evaluated the change in groundwater storage during the model period of 1986 to 2015. The cumulative change in storage during the model period was an increase in storage of approximately 68,400 acre-feet.[125] This increase in storage reflects rising groundwater levels between water years 1991 and 2006.[126] The Basin experienced a reduction in groundwater storage between water years 2006 and 2015 and the rate of storage loss increased during the drought beginning 2011.[127]

The GSP states that the minimum thresholds established for groundwater levels are used as a proxy for the reduction of groundwater storage and are anticipated to improve the beneficial uses of the Basin by allowing for long-term use of groundwater supplies. The measurable objective for reduction of groundwater in storage is defined as the groundwater level at which there is neither seawater flow into nor freshwater flow out of the Upper Aquifer System or Lower Aquifer System in the Oxnard Subbasin.[128] The GSP includes operational flexibility by establishing 10 feet or more of separation between the measurable objective and the minimum threshold in each key well.

The sustainable management criteria for groundwater storage utilize the sustainable management criteria for groundwater levels, which were established based on the numerical model and developed utilizing the best available data and information. The Agency plans to improve the condition of declining groundwater storage by improving groundwater levels. Based on the thresholds established by the Agency, the groundwater storage will likely show the first sign of recovery by 2025 when the groundwater level in

[124] Pleasant Valley GSP, Section 3.3.2, p. 280.
[125] Pleasant Valley GSP, Section 2.3.2, p. 120, Figure 2-18, p. 217.
[126] Pleasant Valley GSP, Section 3.3.2, p. 281, Figure 2-17, p. 215.
[127] Pleasant Valley GSP, Section 3.3.2, p. 281, Figure 2-17, p. 215.
[128] Pleasant Valley GSP, Section 3.5.2, p. 296.

every key well, with an exception of one key well, is anticipated to be above 2015 groundwater levels, and the groundwater in storage will be continued improving until 2040. Department staff find the minimum threshold and measurable objective to be reasonable to achieve the sustainability goals defined in the GSP.

4.3.3.3 Seawater Intrusion

The Agency did not establish sustainable management criteria for seawater intrusion because seawater intrusion has not historically occurred in the Basin.[129] Although the Pleasant Valley basin is hydraulically connected to the Oxnard Subbasin, which is experiencing seawater intrusion, model simulations based on the current groundwater production rates in the Pleasant Valley Basin and the Oxnard Subbasin that projected 50 years into the future resulted in no direct seawater intrusion into the Pleasant Valley Basin. Based on this information, Department staff agree with the Agency's decision to not currently develop sustainable management criteria for seawater intrusion in the Basin because the Agency has provided evidence that seawater intrusion does not currently exist and could not occur at this time.

4.3.3.4 Degraded Water Quality

The GSP states that degraded water quality resulting in a significant and unreasonable depletion of supply is an undesirable result applicable to the Basin. In defining the undesirable result, the GSP states that the main constituents of concern are TDS, chloride, nitrate, sulfate, and boron.[130] An undesirable result associated with water quality may occur if there is an expansion of the areas currently impacted by elevated concentrations of the five constituents of concern that limit agricultural and potable use of groundwater.[131]

The GSP acknowledges that the existing water quality in the North Pleasant Valley Management Area have impaired the City of Camarillo's municipal use of groundwater.[132] The Plan states that elevated concentrations of nitrate, sulfate, and boron are present in the North Pleasant Valley Management Area but states that these elevated concentrations are not caused by groundwater conditions occurring throughout the Basin.[133] Rather, these concentrations reflect the influence of past land-use practices in both the Pleasant Valley Basin and adjacent basins, as well as surface water flows to Arroyo Simi–Las Posas and Conejo Creek upstream of the Basin boundary.[134]

The GSP states that groundwater production may exacerbate upward migration of brines from lower aquifers but the influence of groundwater production on the migration of poor-quality water is not well understood. Therefore, the Agency plans to use the minimum thresholds for groundwater levels as a proxy for water quality. The GSP states that the

[129] Pleasant Valley GSP, Section 3.3.3, p. 282.
[130] Pleasant Valley GSP, Section 3.3.4, p. 282-284.
[131] Pleasant Valley GSP, Section 3.3.4, p. 283.
[132] Pleasant Valley GSP, Section 3.3.4, p. 283.
[133] Pleasant Valley GSP, Section 3.3.4.2, p. 284.
[134] Pleasant Valley GSP, Section 3.3.4.2, p. 284.

measurable objective for degraded water quality is the groundwater level at which there is neither seawater flow into nor freshwater flow out of the Upper Aquifer System or Lower Aquifer System in the Oxnard Subbasin. The GSP discusses that water quality will continue to be monitored to evaluate the potential connection between groundwater quality and groundwater production and to assess the effectiveness of water level sustainable management criteria. The Plan states that additional work will be done to better understand the potential for pumping to exacerbate groundwater quality concerns in the Basin.

The Agency intends to use groundwater level as a proxy to monitor the undesirable results related to groundwater quality. However, the GSP does not sufficiently demonstrate the correlation between groundwater quality and the minimum threshold for groundwater level, nor does it sufficiently explain how the minimum threshold and measurable objective established for groundwater level will prevent the undesirable results related to degraded water quality. However, given the Agency's existing water quality monitoring programs, the Water Quality Objectives established by LARWQCB, and the Basin Management Objectives established by FCGMA for multiple water quality constituents,[135] Department staff believe the additional threshold for groundwater quality is not required at this time. Instead, Department staff recommend the GSP be updated to include an improved discussion about how the established groundwater level thresholds will prevent further degradation of groundwater quality and that the GSAs collaborate with all the interested parties to ensure that groundwater quality is not exacerbated by groundwater use in the Basin (see Recommended Corrective Action 4).

Additionally, the GSP recognizes that the inflows of poor-quality water percolate through the shallow alluvial aquifer and recharge both the older alluvium and Fox Canyon aquifer.[136] The GSP lacks adequate assessment of downward migration of degraded water caused by pumping and does not provide clear information on the quantitative relationship between the groundwater level and migration of poor-quality water. The GSP regulations require GSAs to monitor and mitigate the migration of impaired water caused by groundwater use.[137] Therefore, Department staff recommend the Agency investigate the impact of groundwater pumping on the migration of impaired water (see Recommended Corrective Action 2 and 4).

4.3.3.5 Land Subsidence

The GSP defines the undesirable result associated with land subsidence as subsidence that substantially interferes with surface land uses.[138] The Agency does not establish minimum thresholds or measurable objectives for land subsidence. Instead, the Agency plans to use groundwater levels as a proxy for land subsidence. The Agency proposes to

[135] LARWQCB. 2013. Chapter 3: Water Quality Objectives.
[136] Pleasant Valley GSP, Section 2.3.4, p. 121.
[137] 23 CCR § 354.28(c)(4).
[138] Pleasant Valley GSP, Section 3.3.5, p. 284.

maintain groundwater levels above the historical low to avoid land subsidence in the Basin. While Department staff find the approach to be reasonable, staff also recommend the Agency monitor land subsidence on a periodic basis (e.g., for each five-year update) to evaluate the performance of the proxy. (see Recommended Corrective Action 5).

4.3.3.6 Depletions of Interconnected Surface Water

The GSP defines the undesirable result associated with depletion of interconnected surface water in the Basin as a loss of GDE habitat. The Plan identifies three potential GDEs and states that the GDEs are potentially connected to the shallow alluvial aquifer. The GSP states that groundwater elevations in the shallow alluvial aquifer are deeper than 30 feet below the land surface where known. The Plan implies that there is uncertainty in whether the potential GDEs depend on the shallow alluvial aquifer.[139] Based on the depth of groundwater in the shallow alluvial aquifer, low groundwater production in the shallow alluvial aquifer, and the ephemeral flow of streams, the GSP states that undesirable results associated with depletion of interconnected surface water are not currently occurring and are unlikely to occur in the future in the Basin. Therefore, a minimum threshold and measurable objective for depletions of interconnected surface water are not established.[140]

The Agency identifies the health of the GDE habitat as an indicator to assess depletion of interconnection surface water. However, the GSP neither confirms the identification of GDEs in the Basin nor confirms the connection between GDEs and shallow alluvial aquifer. Department staff believe that to assess the health of the GDE habitat, the GDEs should be clearly identified, and the connection between the GDEs and the shallow alluvial aquifer needs to be investigated (see Recommended Corrective Action 2).

4.4 MONITORING NETWORKS

GSP Regulations require that a monitoring network be developed for each basin including monitoring objectives, monitoring protocols, and data reporting requirements. The network shall promote the collection of data of sufficient quality, frequency, and distribution to characterize groundwater and related surface water conditions in the basin and evaluate changing conditions.[141]

4.4.1 Evaluation Summary

The monitoring network for the Basin was developed to track and monitor parameters that demonstrate progress toward meeting the sustainability goals. In addition to existing groundwater level monitoring programs, the Agency developed one monitoring network which monitors groundwater levels in the Basin. Although there are no monitoring networks developed for the other sustainability indicators, the Agency plans to use

[139] Pleasant Valley GSP, Section 3.3.6, p. 286.
[140] Pleasant Valley GSP, Section 3.4.6, p. 293, Section 3.5.6, p. 299.
[141] 23 CCR § 354.32 *et seq*.

groundwater level data as a proxy to assess groundwater conditions related to other applicable sustainability indicators.

The GSP identifies data gaps in each aquifer and in one management area. Department staff concur that there are critical data gaps that should be addressed early in GSP implementation. Failure to do so may make it difficult to demonstrate that implementation of the Plan is achieving the sustainability goal of the Basin, which may influence subsequent Plan assessments by the Department.

4.4.2 Monitoring Networks

The Agency maintains long-term groundwater and surface water data to understand responses to climate, land use, Basin conditions, and for groundwater management. Groundwater level monitoring started in the 1920s, and surface flows have been recorded since the 1970s. Groundwater extraction data has been collected since 1983, and precipitation data have been recorded for more than a century.

A total of 12 wells are selected for representative monitoring from the Agency's broader groundwater level monitoring network, which consisted of as many as 80 wells in the past but is currently smaller.[142] The Agency plans to use the broader network of wells, including the representative wells, to document groundwater conditions in the Basin. The groundwater level data are collected on a monthly, bimonthly, and quarterly basis by the Ventura County Watershed Protection District and UWCD, which are partner agencies. Because these agencies follow different data collection protocols, FCGMA plans to work with these agencies to ensure that future data collection is conducted according to the protocol that is consistent with DWR's Monitoring Protocols for Best Management Practices.[143] In addition to manual measurements, the Agency is monitoring short-term and long-term trends in groundwater levels using transducers. The GSP discusses potentially improving the temporal coverage of groundwater level data and states that data from the 12 representative wells should be collected within a 2-week window in the spring and fall of each year to evaluate the seasonal high and seasonal low.

The Agency has worked with the Department to close data gaps by constructing five new monitoring wells in the Pleasant Valley Basin under the Department's Technical Support Services program. The Agency's rationale for monitoring site selection appears to include wells from all major aquifers and management areas to have adequate temporal and spatial coverage. The Agency believes that the monitoring network is adequate to identify basin-wide undesirable results in a timely manner. Because there are no representative monitoring wells located in the East Pleasant Valley Management Area (EPVMA), the Agency plans to use the wells located in the adjacent Pleasant Valley Pumping Depression Management Area to monitor the groundwater conditions in EPVMA until a monitoring well is installed in the EPVMA. The Agency assumes that the measurable objectives set for the wells located in Pleasant Valley Pumping Depression Management

[142] Pleasant Valley GSP, Section 4.2.1, p. 325-326.
[143] Pleasant Valley GSP, Section 4.5, p. 335.

Area will also protect the EPVMA because of the proximity of the monitoring wells to the EPVMA. Department staff concur with the Agency's plan to add a monitoring well in the future for an improved understanding of EOPMA groundwater conditions and believe that the Agency's approach of using representative key wells located in the adjacent management area for EOPMA is scientifically reasonable.

The GSP states that the current groundwater level monitoring network is capable of tracking changes in groundwater in storage. A numerical model will be used to calculate the annual change in storage using the collected groundwater level data and will be reported by aquifer and by year in annual reports.

The water quality constituents that are currently being monitored in the Basin are TDS, chloride, nitrate, sulfate, and boron. These water quality constituents are associated with the water quality thresholds either adopted by the Agency or mandated by the LARWQCB. The GSP states that the water quality sampling frequency ranges from quarterly to annually which is adequate to analyze trends in water quality constituents identified by FCGMA and LARWQCB. The Agency chooses not to use the water quality monitoring data for the degraded water quality sustainability indicator; instead, the Agency uses groundwater elevation data as the proxy. The GSP states that the groundwater quality data will continue to be collected, analyzed, and submitted to the LARWQCB to evaluate whether groundwater elevation thresholds are sufficiently protective of groundwater conditions in the Basin.

The Agency does not have a monitoring program to directly monitor land subsidence in the Basin, stating that it does not anticipate subsidence related to groundwater production to occur because the minimum thresholds for groundwater level are higher than the historical low groundwater levels in the Basin. The Agency plans to use groundwater elevation data as a proxy for monitoring land subsidence in the Basin and plans to directly monitor land subsidence if the water level falls below historical low levels for an extended period and the potential for land subsidence to substantially interfere with surface land uses is determined.[144] As stated in above in section 4.3.3.5, Department staff recommend the GSP incorporate a plan to monitor ground surface elevation on a periodic basis to evaluate whether land subsidence substantially interferes with land uses (see Recommended Corrective Action 5).

The GSP states that surface water flows and shallow groundwater will be measured to monitor conditions related to depletions of interconnected surface water.[145] However, according to the Plan, there are no dedicated monitoring wells or production wells screened solely in the shallow alluvial aquifer in the Basin. The Plan identifies the locations to install dedicated shallow monitoring wells that will help the Agency understand the relationship between surface water and groundwater but does not confirm if any wells will be installed. Department staff find it unclear how the Agency is planning

[144] Pleasant Valley GSP, Section 4.6.4, p. 338.
[145] Pleasant Valley GSP, Section 4.3.6, p. 333.

to monitor shallow groundwater when there are no wells screened solely in the shallow alluvial aquifer. Department staff believe that understanding the condition of shallow groundwater, its connectivity with surface water bodies, and the dependency of GDEs on shallow groundwater are important for Basin sustainability (see Recommended Corrective Action 2).

4.5 Projects and Management Actions

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.[146]

4.5.1 Evaluation Summary

The Agency has already been managing groundwater in the Basin by implementing various management actions in the past to address the undesirable results described in the GSP. In addition to the management actions that the Agency is currently undertaking, the GSP proposes one new project and one new management action that will likely allow the Basin to be operated within its sustainable yield. By implementing the proposed project and management action, the Plan aims to improve groundwater conditions by encouraging temporary land fallowing and limit groundwater demand reducing groundwater production.

Staff find that the proposed projects described in the GSP, if implemented, present a feasible approach to achieving the sustainability goal of the Basin and are generally consistent with the requirements of the GSP Regulations. However, the GSP lacks specific details regarding the pumping reduction plan, expected timelines of both the project and management action, and when the Agency expects to see benefits from the implemented project and management action. Department staff recognize that the GSA(s) plan to develop implementation details of the project and management action over next several years. Because sustainability of the Basin is entirely dependent on implementation of the project and management action, the inability to implement these project and management actions, or material modification, may affect the Department's conclusions regarding the adequacy of the GSP or its implementation in future evaluations.

4.5.2 Projects

The GSP's one project pertains to temporary fallowing of agricultural land in the Pleasant Valley Pumping Depression Management Area, which is most susceptible to contributing seawater intrusion in the adjacent Oxnard Subbasin. The Plan discusses the project's relationship to sustainability criteria, expected benefits from the project, metrics for evaluation, and funding sources. The GSP states that the project could be implemented

[146] 23 CCR § 354.44 *et seq*.

when FCGMA is able to collect replenishment fees and find willing property lessors to participate.

The Agency used the numerical model to simulate scenarios to determine the relationship between the project and groundwater elevations in the Basin. The project is expected to reduce pumping by approximately 2,230 acre-feet per year.[147] According to the GSP, this reduction in pumping is expected to increase the groundwater level in the Basin but the implementation of the project alone is not sufficient to meet the minimum thresholds.[148] The GSP has a clarifying statement that the inclusion of the project in the GSP does not mean that the Agency is committing to fund or construct these projects; rather, the project met various feasibility criteria, have quantifiable information, and was analyzed and modeled to understand their impacts on groundwater elevation and the sustainable yield of the Basin.

The project is developed by the GSAs to help ensure that the Basin will be operated within its sustainable yield and is expected to mitigate the overdraft condition. Therefore, Department staff believe that the project included in the GSP appears to improve groundwater conditions in the Basin and demonstrates a feasible approach to meet the basin's sustainability goals.

4.5.3 Management Actions

The GSP describes one management action pertaining to the reduction of groundwater production. The Plan discusses the management action's relationship to sustainability criteria, expected benefits from the management action, metrics for evaluation, and funding sources. The Agency intends to implement this management action over the next five years. The GSP provides an estimated long-term rate of groundwater production that will prevent seawater intrusion in the adjacent Oxnard Subbasin.

The GSP provides an overview of how and when the management action will be implemented but also identifies that allocations need to be determined and approved by the GSAs. Department staff believe that the management action included in the GSP is reasonable and, if implemented, will likely help the GSAs achieve sustainability in the Basin.

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."[149] Furthermore, the GSP Regulations state that minimum thresholds defined in each GSP should be designed to avoid causing undesirable results in adjacent basins or

[147] Pleasant Valley GSP, Section 5.2.2, p. 357.
[148] Pleasant Valley GSP, Section 5.2.2, p. 357.
[149] Water Code § 10733(c).

affecting the ability of adjacent basins to achieve sustainability goals.[150] The Pleasant Valley Basin has two adjacent basins; Oxnard Subbasin and Las Posas Basin.

The Pleasant Valley is in hydraulic communication, in varying degrees, with both the adjacent Oxnard Subbasin and Las Posas Basin. The Oxnard Subbasin is a critically overdrafted basin, and Las Posas is a high-priority basin. FCGMA is the lead GSA for developing and implementing groundwater sustainability plans in the Oxnard Subbasin, Pleasant Valley Basin, and Las Posas Basin. FCGMA took a regional approach to determine the combined sustainable yield of all three basins and then determined the sustainable yield for each groundwater basin. The sustainable management criteria for each respective groundwater sustainability plan were established to operate each groundwater basin within their sustainable yield and established with consideration for the sustainability goals of the adjacent basins. However, the GSP describes an alternative path to sustainability under the dry climatic condition when the groundwater level will only reach minimum thresholds. Under this scenario, as stated in the GSP, seawater intrusion in the adjacent Oxnard Subbasin will be minimal but still occurring. Department staff encourage the GSA(s) provide an evaluation of the impact of minimum thresholds established for Pleasant Valley Basin on seawater intrusion in adjacent Oxnard Subbasin (see Recommended Corrective Action 3).

Although some additional work related to minimum thresholds impact assessment is needed, the Agency's overall strategy of managing multiple groundwater basins with mutually beneficial sustainability goals, demonstrates a regional management approach. Additionally, the proposed project in the Pleasant Valley Basin GSP to temporarily fallow agricultural land is targeted at parcels and ranches in areas susceptible to contribute to seawater intrusion in the Oxnard Subbasin. This demonstrates another policy considered by the Agency to ensure that the management of Pleasant Valley Basin will help avoid seawater intrusion in the Oxnard Subbasin. Department staff find that the Agency's approach of establishing sustainable management criteria to achieve regional sustainability goals demonstrates an adequate consideration of adjacent basins and subbasins. Because this regional sustainable groundwater management strategy is adopted by the GSA(s), Department staff determine that the Pleasant Valley GSP will not adversely impact the ability of the adjacent basins to be operated sustainably and will not impede the adjacent basins' ability to achieve their respective sustainability goals.

[150] 23 CCR § 354.28(b)(3).

5 STAFF RECOMMENDATION

Department staff's recommendation is to approve the GSP with the recommended corrective actions listed below. The Pleasant Valley GSP conforms with Water Code Sections 10727.2 and 10727.4 of SGMA and substantially complies with the GSP Regulations. Implementation of the GSP will likely achieve the sustainability goal for the Pleasant Valley Basin. The GSA(s) 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(s) for the first five-year 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

Investigate the groundwater condition of the Grimes Canyon aquifer, identified as one of the principal aquifers in the GSP, by compiling and collecting data and information sufficient to describe the properties of this aquifer. Based on the results of the investigation, provide a discussion of the management of this aquifer.

RECOMMENDED CORRECTIVE ACTION 2

Investigate the hydraulic connectivity of the surface water bodies to the shallow aquifers and principal aquifers to improve the understanding of potential migration of impaired water, the reliance of the potential GDEs on the shallow aquifer(s), and depletion of interconnected surface water bodies. Identify specific locations of gaining and losing reaches of interconnected surface water and quantify the depletion of interconnected surface water. Provide a timeline and discuss the steps that will be taken to fill the data gap identified in the GSP related to shallow groundwater monitoring near surface water bodies and GDEs.

RECOMMENDED CORRECTIVE ACTION 3

Evaluate how the sustainability goals of Pleasant Valley Basin established for the dry climatic condition may affect the sustainability goals of the adjacent Oxnard Subbasin. Also, provide an assessment of the potential impact of sustainable management criteria adopted for Pleasant Valley Basin on seawater intrusion in the adjacent Oxnard Subbasin.

RECOMMENDED CORRECTIVE ACTION 4

Elaborate how the Agency is planning to verify that the groundwater level thresholds are adequate to assess the groundwater quality conditions in the Basin. Discuss how the groundwater quality data from the existing monitoring network will be used for sustainable

management of the Basin. Evaluate and describe how the Agency's current groundwater management strategy, in coordination with other agencies associated with water quality programs, is affecting groundwater quality in the Basin, and describe those effects on all beneficial users of the Basin.

RECOMMENDED CORRECTIVE ACTION 5

Include a periodic subsidence monitoring plan that can be used to quantify whether land subsidence is occurring and whether the groundwater level proxy is avoiding undesirable results associated with land subsidence. As an option, the Department provides statewide InSAR data that can be used for monitoring land subsidence.