DRAFT

2027 Periodic Evaluation

Groundwater Sustainability Plan

Santa Clara River Valley East Subbasin

Prepared for:

SCV GSA

Santa Clarita Valley Groundwater Sustainability Agency
27234 Bouquet Canyon Road
Santa Clarita, California 91350

Prepared by:

INTERA

INTERA Incorporated
1610 R Street, Suite 300
Sacramento, California 95811

SEPTEMBER 2026

Executive Summary

Santa Clarita Valley Groundwater Sustainability Agency (SCV-GSA), formed in 2017, is the exclusive Groundwater Sustainability Agency (GSA) for the Santa Clara River Valley East Subbasin (DWR Basin No. 4-004.07). The Santa Clara River Valley East Subbasin, herein referred to as the Basin, is classified by the California Department of Water Resources (DWR) as a high-priority basin and subject to the Sustainable Groundwater Management Act (SGMA). Under SGMA, medium- and high-priority basins are required to develop Groundwater Sustainability Plans (GSPs), which are intended to guide groundwater management activities over a 50-year implementation horizon.

In January 2022, the SCV-GSA Board of Directors adopted the Basin GSP (GSI et al., 2022). The GSP summarizes historical and current groundwater conditions, evaluates future groundwater conditions, and provides a comprehensive framework to *manage the groundwater resources of the Basin for current and future beneficial uses of groundwater, including the river environment, through an adaptive management approach that builds on robust science and monitoring and considers economic, social, and other objectives of a wide variety of stakeholders.*[1] SCV-GSA submitted the GSP to DWR on January 24, 2022, and DWR approved the Plan in a letter dated January 18, 2024 (DWR, 2024). DWR's approval indicates that the GSP substantially complies with SGMA and provides a path for achieving and maintaining groundwater sustainability.

Why is the SCV-GSA Preparing this Periodic Evaluation of the GSP?

SGMA requires that GSAs evaluate their approved GSPs at least once every five years to assess whether GSP implementation, including the implementation of projects and management actions, is achieving the sustainability goal in the Basin (23 CCR §356.4).[2] The GSP described groundwater conditions in the Basin through water year 2019.[3] Accordingly, this Periodic Evaluation covers water year 2020 through 2025, with a focus on GSP implementation since its adoption in January 2022.

Through this evaluation process, DWR requires that each agency describe:

- The relationship between current groundwater conditions and the sustainable management criteria established in the GSP.
- The status of projects and management actions and their effects on groundwater conditions.
- Any significant new information collected in the Basin that may impact the Basin setting.
- Changes to the GSP monitoring network and any new, or resolved, data gaps.
- Any additional relevant actions taken by the agency, including legal actions or adoption of new regulations or ordinances related to the GSP.

[1] Italicized text is excerpted from Section 8.2 of the GSP (GSI et al., 2022).
[2] The Final GSP Emergency Regulations can be found online at: https://govt.westlaw.com/calregs/Browse/Home/California/CaliforniaCodeofRegulations?guid=IB4B9AC005B6E11EC9451000D3A7C4BC3&originationContext=documenttoc&transitionType=Default&contextData=(sc.Default)
[3] Water year is defined as the period from October 1 of the preceding calendar year through September 30 of the current calendar year. For example, water year 2019 represents the period from October 1, 2018 through September 30, 2019.

- Any completed or proposed Plan Amendments.

In addition to these requirements, GSAs must address Recommended Corrective Actions (RCAs) included in the State's GSP approval letter.[4] RCAs aim to improve or clarify different components of the GSP. Four RCAs were included in the GSP approval letter.

How have groundwater conditions changed over the first evaluation period?

The GSP manages groundwater conditions related to five applicable sustainability indicators: chronic lowering of groundwater levels, reduction of groundwater in storage, degraded water quality, depletion of interconnected surface water, and land subsidence (GSI et al., 2022).[5] Groundwater conditions for each indicator are evaluated using sustainable management criteria. Minimum thresholds identify the quantitative conditions associated with the potential onset of significant and unreasonable effects, while the measurable objectives represent the long-term average groundwater conditions SCV-GSA seeks to achieve and maintain during GSP implementation.

The GSP reports on groundwater conditions related to these indicators through water year 2019. This evaluation provides an update on water years 2020 through 2025, with a particular emphasis on the period following GSP adoption.

Groundwater levels and storage in the Basin vary in response to hydrologic conditions and Santa Clara River streamflow. Both groundwater levels and storage declined during the dry 2021 and 2022 water years. In response to wet conditions in water years 2023 and 2024, groundwater in storage increased by more than 110,000 acre-feet (AF) and groundwater elevations recovered across the Basin. By the end of water year 2025, groundwater levels were at or above the measurable objectives in 12 of the 13 representative monitoring sites (RMS) in the Alluvial Aquifer and at all three of the RMS that were measured in the Saugus Formation.

Since adoption of the GSP, SCV-GSA has substantially expanded its monitoring and characterization of groundwater dependent ecosystems and shallow groundwater conditions along the Santa Clara River, San Francisquito Creek, and Castaic Creek. SCV-GSA constructed five dedicated groundwater dependent ecosystem (GDE) piezometers near the Santa Clara River and initiated annual habitat monitoring at ten GDE monitoring locations identified in the GSP. These efforts provide a more direct basis for evaluating habitat conditions and their relationship to groundwater conditions in the Alluvial Aquifer. Monitoring initiated in 2022 indicates that habitat conditions remained relatively stable despite significant variability in hydrologic conditions. The most notable changes occurred downgradient of the confluence of Santa Clara River and Castaic Creek and were attributable to a change in channel morphology that resulted from flooding in January 2023, rather than groundwater extraction. No loss or significant degradation of GDEs attributable to groundwater conditions was identified.

The GSP manages salt and nutrient concentrations in a manner that considers the Basin's 2016 Salt and Nutrient Management Plan (SNMP). During water years 2020 through 2025, salt and nutrient concentrations generally remained stable or decreased, achieving the measurable objectives in five of the seven groundwater quality management zones identified in the GSP. In one SNMP management zone, total dissolved solids (TDS) and sulfate concentrations exceeded the minimum thresholds.

[4] Santa Clara River Valley East Subbasin RCAs: https://sgma.water.ca.gov/portal/gsp/assessments/131
[5] Seawater intrusion is not an applicable sustainability indicator for the Basin.

However, concentrations for each constituent have been declining over the past 10 years, indicating that groundwater extractions and GSA activities have not resulted in degradation of Basin water quality.

Annual land surface elevation changes monitored as part of the sustainable management criteria for Land Subsidence were generally less than 0.1 foot, and the available information does not indicate permanent, inelastic subsidence caused by groundwater extraction or interference with land uses or critical infrastructure.

Is GSP Implementation Achieving the Sustainability Goal for the Basin?

Information collected since adoption of the GSP indicates that management under the GSP continues to support achievement of the sustainability goal for the Basin:

- No undesirable results occurred for chronic lowering of groundwater levels, reduction of groundwater in storage, depletion of interconnected surface water, degraded water quality, or land subsidence.
- Groundwater conditions are at or progressing toward the measurable objectives for all five applicable sustainability indicators.
- Observed minimum threshold exceedances were localized and did not cause significant and unreasonable effects that define undesirable results in the GSP.

SCV-GSA has also advanced projects and management actions that address data gaps and strengthen long-term groundwater management. Major activities include:

- Planning and constructing new dedicated monitoring wells to support evaluation of GDEs.
- Conducting four years of habitat monitoring to characterize shallow groundwater and habitat conditions along the Santa Clara River, San Francisquito Creek, and Castaic Creek.
- Planning and constructing depth-discrete monitoring wells to better characterize groundwater elevations and vertical gradients between the Saugus Formation and Alluvial Aquifer (ongoing).
- Conducting outreach to domestic well owners to improve understanding of the location and status of privately owned wells, particularly in the canyon areas.
- Completing high-resolution land surface elevation surveys to improve characterization of Santa Clara River channel morphology and thalweg elevations.
- Updating the hydrogeologic conceptual model using new geophysical survey data and geophysical logs from water wells.
- Updating and refining the calibration of the groundwater flow model to incorporate new groundwater level data and hydrogeologic information and improve representation of Basin conditions.

SCV-GSA's governance structure continues to support effective management of the Basin. SCV-GSA has continued to engage with interested parties through public Board meetings, stakeholder workshops, coordination with groundwater users, and targeted outreach to domestic well owners. Input received through these activities has informed GSP implementation and preparation of this Periodic Evaluation.

Are Changes Being Made to the GSP?

Expanded monitoring, technical studies, and continued coordination with groundwater users and interested parties have improved SCV-GSA's understanding of the Basin since 2022. This new information also supports SCV-GSA's response to DWR's RCAs related to chronic lowering of groundwater levels, degraded water quality, and depletion of interconnected surface water. Through this first Periodic Evaluation, SCV-GSA is documenting the following targeted updates and refinements:

- **Hydrogeologic Conceptual Model** is being refined in response to DWR's RCA 1 using new geophysical data, well formation picks, and geologic interpretations. These data improve characterization of the Basin's aquifer geometry, contact between the Alluvial Aquifer and Saugus Formation, and understanding of land subsidence susceptibility.
- **Minimum Thresholds for Chronic Lowering of Groundwater Levels** are being revised in response to DWR's RCA 2, which requested that SCV-GSA more explicitly link the groundwater level thresholds to specific undesirable results in the Basin. The revised thresholds are informed by a well-impact analysis that quantifies local groundwater elevations that may impact future groundwater supply need reliability for municipal and agricultural users. The well-impact analysis is not performed for domestic user-wells due to persisting data gaps.
- **Sustainable Management Criteria for Degraded Water Quality** are being updated in response to DWR's RCA 3, which requested that SCV-GSA define criteria for contaminants (i.e., perchlorate and VOCs). In addition, salt and nutrient sustainable management criteria are being refined to define criteria on a well-by-well basis, rather than a SNMP management zone basis, to better reflect natural variability and conditions that pre-exist GSP adoption.
- **Sustainable Management Criteria for Depletion of Interconnected Surface Water** are being refined using new land surface elevation and Santa Clara River thalweg data.

SCV-GSA has not identified a need to amend the GSP at this time. The updates documented in this Periodic Evaluation refine the technical approach and quantitative criteria used to evaluate groundwater conditions but do not alter the Basin's sustainability goal, the undesirable results that the GSP is intended to avoid, or the overall management strategy, monitoring program, and projects and management actions established to achieve sustainability. SCV-GSA will continue to evaluate the appropriateness of the revised criteria and whether future conditions or new information warrant a GSP amendment during the next five years of implementation.

Table of Contents

1.0 Introduction 1
1.1 Setting and Background 1
1.2 Organization of this Report 1
2.0 New Information Collected [Article 5 § 356.4(f)] 3
3.0 Groundwater Conditions Relative to Sustainable Management Criteria [Article 5, § 356.4(a)] 9
3.1 Chronic Lowering of Groundwater Levels Sustainability Indicator 9
3.1.1 Groundwater Elevation Trends 9
3.1.2 Sustainable Management Criteria 11
3.1.3 Undesirable Results 13
3.1.4 Impacts to Beneficial Uses and Users 14
3.1.5 Progress Towards Achieving Sustainability 14
3.1.6 Relevant Recommended Corrective Actions 14
3.1.7 Revisions to the Sustainable Management Criteria 17
3.2 Reduction of Groundwater in Storage Sustainability Indicator 18
3.2.1 Groundwater Storage Trends 18
3.2.2 Sustainable Management Criteria 19
3.2.3 Undesirable Results 19
3.2.4 Impacts to Beneficial Uses and Users 20
3.2.5 Progress Towards Achieving Sustainability 20
3.2.6 Relevant Recommended Corrective Actions 20
3.3 Degraded Water Quality Sustainability Indicator 20
3.3.1 Groundwater Quality Trends 20
3.3.2 Sustainable Management Criteria 22
3.3.3 Undesirable Results 31
3.3.4 Impacts to Beneficial Uses and Users 31
3.3.5 Progress Towards Achieving Sustainability 32
3.3.6 Relevant Recommended Corrective Actions 32
3.3.7 Revisions to the Sustainable Management Criteria 35
3.3.8 Revisions to the Definition of an Undesirable Result 37
3.4 Seawater Intrusion Sustainability Indicator 40
3.5 Land Subsidence Sustainability Indicator 40
3.5.1 Land Surface Elevation Trends 40
3.5.2 Sustainable Management Criteria 41

3.5.3 Impacts to Beneficial Uses and Users 41
3.5.4 Progress Toward Achieving Sustainability 41
3.5.5 Relevant Recommended Corrective Actions 41
3.5.6 Revisions to the Sustainable Management Criteria 45
3.5.7 Revisions to the Definition of an Undesirable Result 45
3.6 Depletion of Interconnected Surface Water 45
3.6.1 Groundwater and Surface Water Conditions along Santa Clara River 45
3.6.2 Sustainable Management Criteria 49
3.6.3 Undesirable Results 52
3.6.4 Impacts to Beneficial Uses and Users 52
3.6.5 Progress Toward Achieving Sustainability 52
3.6.6 Relevant Recommended Corrective Actions 52
3.6.7 Revisions to the Sustainable Management Criteria 54
3.6.8 Revisions to the Definition of an Undesirable Result 54
4.0 Status of Projects and Management Actions [Article 5, § 356.4(b),(f)] 55
4.1 Basin-Wide Management Actions 59
4.1.1 Projects to Address Data Gaps 59
4.1.2 Monitoring, Reporting, and Outreach 60
4.1.3 Promoting Best Water Use Practices 61
4.1.4 Actions if Minimum Thresholds are Reached or Undesirable Results are Confirmed 62
4.1.5 Actions if GDE Triggers Are Reached or Approached 63
4.2 Other Groundwater Management Actions and Projects 64
4.2.1 Agency Coordination 64
4.2.2 Removal of Invasive Species 65
4.2.3 Optional Managed Aquifer Recharge Projects 65
5.0 Basin Setting Based on New Information or Changes in Water Use [Article 5, § 356.4(d)] 67
5.1 Hydrogeologic Conceptual Model [§354.14] 67
5.1.1 Hydrogeophysical Survey of the Santa Clara River Corridor 67
5.1.2 3D Hydrostratigraphic Model Update 68
5.1.3 Summary of Hydrogeologic Conceptual Model Updates 69
5.2 Groundwater Conditions [§354.16] 69
5.2.1 Land Subsidence Susceptibility Evaluation 69
5.2.2 Updated Groundwater Quality Regulations 70
5.3 Water Use Changes 71
5.3.1 Land Use Changes Over the Evaluation Period 71
5.3.2 Water Supplies 72

5.3.3 Evaluation of Water Use Trends 75
5.4 Groundwater Flow Model Update 78
5.4.1 Model Updates 79
5.4.2 Anticipated Future Modeling Activities 81
5.4.3 Relevant Recommended Corrective Actions 82
6.0 Monitoring Networks [Article 5, § 356.4(e)] 84
6.1 Groundwater Level Monitoring Network 87
6.1.1 Changes to the Groundwater Level Monitoring Network 87
6.1.2 Assessment of Groundwater Level Monitoring Network Function 88
6.2 Groundwater Storage Monitoring Network 88
6.2.1 Changes to the Groundwater Storage Monitoring Network 88
6.2.2 Assessment of Groundwater Storage Monitoring Network Function 88
6.3 Degraded Water Quality Monitoring Network 89
6.3.1 Changes to the Degraded Water Quality Monitoring Network 89
6.3.2 Assessment of Degraded Water Quality Monitoring Network Function 89
6.4 Land Subsidence Monitoring Network 90
6.4.1 Changes to the Land Subsidence Monitoring Network 90
6.4.2 Assessment of Land Subsidence Monitoring Network Function 90
6.5 Depletion of Interconnected Surface Water Monitoring Network 91
6.5.1 Changes to the Interconnected Surface Water Monitoring Network 91
6.5.2 Assessment of Interconnected Surface Water Monitoring Network Function 91
7.0 GSA Authorities and Enforcement Actions [Article 5, § 356.4(g), (h)] 92
7.1 Actions Taken by SCV-GSA 92
7.1.1 Well Permit Review Under the Drought Executive Orders 93
7.1.2 Groundwater Extraction Reporting and Metering 94
7.2 Enforcement and Legal Actions Taken by SCV-GSA 94
8.0 Outreach, Engagement, and Coordination With Other Agencies [Article 5, § 356.4(j)] 95
8.1 Outreach and Engagement 95
8.1.1 Periodic Evaluation Outreach 97
8.1.2 GSP Implementation Engagement and Coordination 97
8.1.3 Public Meetings and Notice 98
8.1.4 Coordination with State and Federal Agencies 98
8.1.5 Disadvantaged Communities 98
9.0 Other Information [§356.4(k)] 100
9.1 Consideration of Adjacent Basins 100

9.2 Challenges Not Previously Discussed 100
10.0 Summary of Proposed or Completed Revisions to Plan Elements [§356.4(c),(i)] ... 102
11.0 References and Technical Studies [§354.4(b)] 104

List of Figures

Figure 1-1 Santa Clara River Valley Groundwater Basin and Subbasins
Figure 1-2 Watershed Boundaries and Upper Santa Clara River Hydrologic Area
Figure 1-3 Areal Extent of Alluvial Aquifer and Saugus Formation
Figure 1-4 Alluvial Aquifer Subareas
Figure 3-1 Watershed Boundaries and Rain Gages for Upper Santa Clara River Hydrologic Area
Figure 3-2 Annual Precipitation at Newhall-Soledad (Newhall Fire Station #73) Rain Gage and Climatic Period Classification for the Santa Clara River Valley East Groundwater Subbasin
Figure 3-3 Groundwater Elevation Monitoring Network in the Santa Clara River Valley Basin
Figure 3-4 Groundwater Elevation Contour Map for the Alluvial Aquifer, October 2020
Figure 3-5 Groundwater Elevation Contour Map for the Alluvial Aquifer, March 2020
Figure 3-6a-l Groundwater Elevation Hydrographs for Representative Monitoring Site Wells in the Alluvial Aquifer
Figure 3-7 Groundwater Elevation Contour Map for the Alluvial Aquifer, September 2025
Figure 3-8 Groundwater Elevation Contour Map for the Alluvial Aquifer, March 2025
Figure 3-9 Groundwater Elevation Contour Map for the Saugus Formation, October 2020
Figure 3-10 Groundwater Elevation Contour Map for the Saugus Formation, March-April 2020
Figure 3-11a-d Groundwater Elevation Hydrographs for Representative Monitoring Site Wells in the Saugus Formation
Figure 3-12 Groundwater Elevation Contour Map for the Saugus Formation, September 2025
Figure 3-13 Groundwater Elevation Contour Map for the Saugus Formation, March 2025
Figure 3-14 Annual Change in Groundwater Storage in the Alluvial Aquifer, Water Years 2020-2025
Figure 3-15 Annual Change in Groundwater Storage in the Saugus Formation, Water Years 2020-2025
Figure 3-16 Groundwater Quality Monitoring Network and Representative Monitoring Sites, Alluvial Aquifer
Figure 3-17 Groundwater Quality Monitoring Network and Representative Monitoring Sites, Saugus Formation
Figure 3-18 Median Total Dissolved Solids (TDS) Concentration, Alluvial Aquifer, Water Years 2020-2025
Figure 3-19 Box Plots of TDS concentration in Alluvial Aquifer Subareas (WY 2020-2025)
Figure 3-20a-g TDS Concentration Time Series in the Alluvial Aquifer
Figure 3-21 Median Chloride Concentration, Alluvial Aquifer, Water Years 2020-2025
Figure 3-22 Box Plots of Chloride Concentration in Alluvial Aquifer Subareas (WY 2020-2025)
Figure 3-23a-g Chloride Concentration Time Series in the Alluvial Aquifer
Figure 3-24 Median Nitrate Concentration, Alluvial Aquifer, Water Years 2020-2025
Figure 3-25 Box Plots of Nitrate Concentration in Alluvial Aquifer Subareas (WY 2020-2025)
Figure 3-26a-g Nitrate Concentration Time Series in the Alluvial Aquifer

Figure 3-27 Median Sulfate Concentration, Alluvial Aquifer, Water Years 2020-2025
Figure 3-28 Box Plots of Sulfate Concentration in Alluvial Aquifer Subareas (WY 2020-2025)
Figure 3-29a-g Sulfate Concentration Time Series in the Alluvial Aquifer
Figure 3-30 Median Total Dissolved Solids (TDS) Concentration, Saugus Formation, Water Years 2020-2025
Figure 3-31 Box Plots of TDS Concentration in the Saugus Formation (WY 2020-2025)
Figure 3-32 TDS Concentrations in the Saugus Formation
Figure 3-33 Median Chloride Concentration, Saugus Formation, Water Years 2020-2025
Figure 3-34 Box Plots of Chloride Concentration in the Saugus Formation (WY 2020-2025)
Figure 3-35 Chloride Concentrations in the Saugus Formation
Figure 3-36 Median Nitrate Concentration, Saugus Formation, Water Years 2020-2025
Figure 3-37 Box Plots of Nitrate Concentration in the Saugus Formation (WY 2020-2025)
Figure 3-38 Nitrate Concentrations in the Saugus Formation
Figure 3-39 Median Sulfate Concentration, Saugus Formation, Water Years 2020-2025
Figure 3-40 Box Plots of Sulfate Concentration in the Saugus Formation (WY 2020-2025)
Figure 3-41 Sulfate Concentrations in the Saugus Formation
Figure 3-42 Salt and Nutrient Management Plan (SNMP) Groundwater Management Zones
Figure 3-43a-d TDS Concentrations at Representative Monitoring Sites, SNMP Groundwater Management Zones, Alluvial Aquifer
Figure 3-44a-d Chloride Concentrations at Representative Monitoring Sites, SNMP Groundwater Management Zones, Alluvial Aquifer
Figure 3-45a-d Nitrate Concentrations at Representative Monitoring Sites, SNMP Groundwater Management Zones, Alluvial Aquifer
Figure 3-46a-d Sulfate Concentrations at Representative Monitoring Sites, SNMP Groundwater Management Zones, Alluvial Aquifer
Figure 3-47 TDS Concentrations at Representative Monitoring Sites, SNMP Groundwater Management Zone 6, Saugus Formation
Figure 3-48 Chloride Concentrations at Representative Monitoring Sites, SNMP Groundwater Management Zone 6, Saugus Formation
Figure 3-49 Nitrate Concentrations at Representative Monitoring Sites, SNMP Groundwater Management Zone 6, Saugus Formation
Figure 3-50 Sulfate Concentrations at Representative Monitoring Sites, SNMP Groundwater Management Zone 6, Saugus Formation
Figure 3-51 Monitoring Sites for Contaminants
Figure 3-52 Satellite-Observed Vertical Displacement (June 2015 through July 2025) and Benchmark Locations for Ground-Based Land Subsidence Monitoring
Figure 3-53 Santa Clarita Valley Benchmark Land-Surface Displacement
Figure 3-54 Groundwater Dependent Ecosystems (GDEs) Representative Monitoring Network and Santa Clara River Reaches
Figure 3-55a-h Groundwater Elevation Hydrographs for Depletion of Interconnected Surface Water Representative Monitoring Site Wells

List of Tables

Table 2.1. Summary of New Information Since GSP Adoption 4
Table 3.1 – Groundwater Levels Relative to the Chronic Lowering of Groundwater Level Sustainable Management Criteria 12
Table 3.2 – Summary of Proposed Minimum Threshold Revisions For Chronic Lowering of Groundwater Levels 17
Table 3-3. Annual and Cumulative Change in Storage in the Basin 19
Table 3.4 – Median Salt and Nutrient Concentrations for Water Years 2020 Through 2025 Relative to the Sustainability Criteria Within SNMP-defined Management Zones 24
Table 3-5. Proposed Measurable Objectives and Minimum Thresholds for Groundwater Sustainability Criteria Pertinent to Salt and Nutrients for Representative Monitoring Sites. 38
Table 3.6. Summary of GDE Field Monitoring Results, Water Years 2022 through 2025. 48
Table 3.7–Seasonal Low Groundwater Levels and Groundwater Level Sustainable Management Criteria Adapted Post GSP and Revised, GDE-RMS network. 51
Table 4-1. Summary of Projects and Management Actions 56
Table 5.2. Land Use Changes in the Basin, 2020 to 2024 71
Table 5.3. Groundwater Extraction by Water Use Sector for Water Years 2020 to 2025. 73
Table 5.4. Imported, Recycled, and Other Surface Water Supplies for Water Years 2020 to 2025. 74
Table 5.5. Total Water Use for Water Years 2020 to 2025. 77
Table 6.1. Changes to the Monitoring Network During the Evaluation Period 85
Table 7.1. Actions Taken by SCV-GSA Since Adoption of the GSP Relevant to Plan Implementation 92
Table 8.1. Outreach, Engagement, and Coordination Activities Since Adoption of the GSP 95

List of Appendices

Appendix A Re-evaluation of the Sustainable Management Criteria for Chronic Lowering of Groundwater Levels

Appendix B SCV Water 2025 Geologic Model Update

Appendix C Additional E-Log Review and Interpretation and Assessment of Subsidence Potential based on Projected Future Saugus Formation Pumping, Santa Clara River Valley East Groundwater Subbasin, SCV Water

1.0 Introduction

The Santa Clarita Valley Groundwater Sustainability Agency (SCV-GSA) has prepared this first periodic evaluation of the Santa Clara River Valley East Subbasin Groundwater Sustainability Plan (GSP) in compliance with the 2014 Sustainable Groundwater Management Act (SGMA) (California Water Code, Section 10720 et seq.). This first periodic evaluation assesses new information and data collected during water years (WYs) 2020-2025 and evaluates its implications for groundwater conditions, sustainability indicators, and GSP implementation. The GSP for the Santa Clara River Valley East Subbasin, herein referred to as the Basin, reported on groundwater conditions through 2019 (GSI et al., 2022). This periodic evaluation provides an update on conditions for water years 2020 through 2025, with a focus on the period since adoption of the GSP in 2022.[6]

1.1 Setting and Background

The GSP was developed on behalf of, and in coordination with, the Santa Clarita Valley Water Agency (SCV Water), the City of Santa Clarita, Los Angeles County Regional Planning, and Los Angeles County Waterworks District No. 36. The GSP was submitted to DWR in January 2022 and was approved by DWR in a letter dated January 18, 2024 (DWR, 2024). In their letter approving the GSP, DWR provided SCV-GSA with four Recommended Corrective Actions (RCAs) to address as part of this Periodic Evaluation.

The GSP, and this periodic evaluation, covers the entire Basin (**Figure 1-1**). The Basin covers approximately 103 square miles in the central-western portion of Los Angeles County and is the eastern-most of six groundwater subbasins that comprise the Santa Clara River Basin (Figure 1-1). The Basin is bound on the north by the Piru Mountains, on the east and southeast by the San Gabriel Mountains, and on the south by the Santa Susana Mountains. The Basin is drained by the Santa Clara River and several tributaries, including Bouquet Creek, San Francisquito Creek, and Castaic Creek (**Figure 1-2**).

The Basin is comprised of two distinct principal aquifers: the Alluvial Aquifer and Saugus Formation (**Figure 1-3**). The Alluvial Aquifer is generally constrained to the canyon areas and Santa Clara River corridor and reaches a maximum thickness of approximately 200 feet in the center of the valley (GSI et al., 2022). For groundwater level and quality evaluations, the Alluvial Aquifer is generally separated into eight distinct subareas (**Figure 1-4**). The Saugus Formation underlies the Alluvial Aquifer and is present throughout all but the easternmost portion of the Basin, reaching up to approximately 5,000 feet thick. Both the Alluvial Aquifer and Saugus Formation are sources of water supply for the Basin. Therefore, under the GSP the groundwater management and monitoring addresses conditions in both Alluvial Aquifer and Saugus Formation principal aquifers.

1.2 Organization of this Report

California Code of Regulations, title 23, section 356.4 (23 CCR §356.4) specifies the contents required of a Periodic Evaluation under SGMA. This report is organized to follow these requirements, alongside the

[6] Water year is defined as October 1 of the previous calendar year through September 30 of the current calendar year. For example, water year 2020 represents the period from October 1, 2019 through September 30, 2020.

additional recommendations provided by DWR in its guidance for the preparation of annual reports, periodic evaluations, and plan amendments (DWR, 2023), and is organized as follows:

- **Section 1: Introduction**. Provides a brief background on the GSP and requirements of a periodic evaluation under SGMA.
- **Section 2**: **New Information.** Summarizes significant new information relevant to the Basin since adoption of the GSP.
- **Section 3**: **Groundwater Conditions Relative to Sustainable Management Criteria.** Provides an update on groundwater conditions relative to the five sustainability indicators applicable to the Basin and evaluates whether groundwater conditions are on track to achieve and maintain the sustainability goal for the Basin.
- **Section 4: Status of Projects and Management Actions**. Provides an update on activities completed towards the projects and management actions identified in the GSP and any key information gathered through this process.
- **Section 5: Basin Setting Based on New Information**. Summarizes new information collected in the Basin relevant to the GSP's description of the Basin Setting, including the hydrogeologic conceptual model and changes to external regulatory frameworks. This section also summarizes groundwater extractions and total water supplies and evaluates recent trends relative to historical and planned usage.
- **Section 6: Monitoring Network.** Evaluates the efficacy of the GSP monitoring networks is tracking progress towards sustainability, identifies monitoring data gaps, and summarizes changes to the GSP monitoring network, including the addition of new dedicated GDE piezometers and multi-depth monitoring wells.
- **Section 7: GSA Authorities and Enforcement Actions.** Summarizes new ordinances, resolutions, or actions taken by SCV-GSA since adoption of the GSP.
- **Section 8: Outreach, Engagement, and Coordination With Other Agencies.** Summarizes outreach and coordination activities.
- **Section 9: Other Information.** Summarizes additional information, including consideration of adjacent basins, relevant to the GSP.
- **Section 10: Summary of Proposed or Completed Revisions to the Plan Elements.** Summarizes key GSP refinements or updates implemented through this periodic evaluation.

2.0 New Information Collected [Article 5 § 356.4(f)]

> **§ 356.4 (f)** *A description of significant new information that has been made available since Plan adoption or Amendment, or the last five-year assessment. The description shall also include whether new information warrants changes to any aspect of the Plan, including the evaluation of the Basin setting, measurable objectives, minimum thresholds, or the criteria defining undesirable results.*

Since adoption of the GSP, significant new monitoring data, outreach activities, management actions, numerical model updates, and technical studies have been completed in the Basin. Key updates include:

- Construction of new dedicated GDE monitoring wells and subsequent initiation of a formal groundwater level monitoring program for these new wells to support filling data gaps, including in areas identified in the GSP as potentially supporting groundwater dependent ecosystems (GDEs).
- Construction of 15 additional monitoring wells to better characterize Basin geology, groundwater elevations, and groundwater quality.
- Implementation of high-resolution land surface elevation surveys to better characterize the Santa Clara River morphology and channel bed elevation.
- Four years of comprehensive habitat monitoring to characterize shallow groundwater and habitat conditions along the Santa Clara River, San Francisquito Creek, and Castaic Creek.
- Development of an Updated Interim Remedial Action Plan (IRAP) by SCV Water to support evaluation of off-site containment of perchlorate contamination originating from Whittaker-Bermite facility.
- Outreach to domestic well owners to seek out owners that would agree to allow their wells to be used for water quality testing. Despite efforts, only one person stepped forward.
- Completion of a screening level domestic well assessment using DWR Well Completion Reports and available mapping information to estimate likely well location, status and potential zonal groundwater use in the Canyon areas. The assessment was completed and provided to DWR as a condition of the studies DWR grant funding.
- Updates to the hydrogeologic conceptual model of the Basin based on new well-log information and a geophysical survey conducted along the Santa Clara River corridor.
- Updates to the groundwater flow model to integrate the new monitoring data and hydrogeologic data collected over this first evaluation period.

Table 2.1 lists and describes significant new information for the Basin since GSP adoption.

Table 2.1. Summary of New Information Since GSP Adoption

Significant New Information	Description	Aspects of Plan Affected	Warrant Change to Any Aspects of the Plan (Yes/No)
Monitoring Network Information			
New monitoring data	Newly constructed GDE monitoring wells	Chronic Lowering of Groundwater Levels, Depletion of Interconnected Surface Waters	No. SCV-GSA is continuing to evaluate data collected from these wells and plan to construct new monitoring wells to reinstate monitoring where wells have been destroyed due to flooding.
	Newly constructed nested monitoring wells	Degraded Water Quality	No. SCV-GSA is collecting baseline data from these newly constructed wells. Information collected over the next five years will inform whether they should be established as RMS and appropriate SMC.
	2022 LiDAR Survey	Chronic Lowering of Groundwater Levels, Depletion of Interconnected Surface Waters	No. Additional land surface elevation data inform current understanding of channel morphology, but these data are transient and do not impact management strategies in the Basin.
	Habitat Monitoring and Surveys	Chronic Lowering of Groundwater Levels, Depletion of Interconnected Surface Waters	No. Data collected since GSP adoption has improved understanding of the relationship between shallow groundwater conditions and habitat health. Additional data are needed during multi-year dry hydrologic conditions.
	Establishment of a new contaminant monitoring network	Degraded Water Quality	No. The SCV-GSA will evaluate contaminants at specific RMS.

Table 2.1. Summary of New Information Since GSP Adoption

Significant New Information	Description	Aspects of Plan Affected	Warrant Change to Any Aspects of the Plan (Yes/No)
Water Supply			
Updated and Amended Interim Remedial Action Plan	In May 2023, SCV Water developed an Updated and Amended Interim Remedial Action Plan (IRAP) for offsite containment of perchlorate and VOCs that originate from the Whittaker-Bermite facility (EKI, 2023). The updated IRAP outlined technical concerns with incomplete onsite containment of perchlorate at the Whittaker-Bermite Property, and recognized increased offsite pumping from the Saugus Formation can enhance containment. It also recognized certain data gaps.	Future Water Supplies and Groundwater Demands.	No. SCV-GSA will evaluate contaminants at specific RMS.

Table 2.1. Summary of New Information Since GSP Adoption

Significant New Information	Description	Aspects of Plan Affected	Warrant Change to Any Aspects of the Plan (Yes/No)
Projects and Management Actions			
Projects to Address Data Gaps	During the evaluation period, SCV-GSA completed installation of the river based GDE monitoring piezometers (2022), reference point elevation surveys for monitoring locations including the riverbed near GDE monitoring wells (2022), identification of initial candidate domestic wells for water quality monitoring (2022), setup of the upland GDE monitoring program (2023), and setup of the subsidence monitoring program (spring 2024), with the 12 land surface elevation benchmarks first surveyed in May 2024.	Chronic Lowering of Groundwater Levels, Land Subsidence, Depletion of Interconnected Surface Waters	No. Data collected since GSP adoption has improved understanding of the groundwater level and land subsidence conditions. Data collected do not indicate the occurrence of an undesirable result or a need to modify the monitoring program established under the GSP.

Table 2.1. Summary of New Information Since GSP Adoption

Significant New Information	Description	Aspects of Plan Affected	Warrant Change to Any Aspects of the Plan (Yes/No)
Basin Setting			
Hydrogeologic Conceptual Model Update	Since GSP adoption, SCV-GSA has completed hydrogeologic, geophysical, subsidence, groundwater, and habitat studies and expanded the monitoring network. These data supported a 2025 update to the Basin's Hydrogeologic Conceptual Model, refining the interpreted extent and thickness of the Alluvial Aquifer and Saugus Formation.	Hydrogeologic Conceptual Model	No. Data collected since adoption of the GSP has improved understanding of the hydrostratigraphy of the Basin but has not materially changed understanding of groundwater levels and storage in the Basin.
Groundwater Flow Model Update	In 2022 and 2026, SCV-GSA completed comprehensive updates of the Basin groundwater flow model. This included integrating new hydrogeologic conceptual model and well data, as well as recalibrating the model to a broader set of surface water and groundwater level data. The update has resulted in an improved model that better represents Basin conditions.	Chronic Lowering of Groundwater Levels, Reduction of Groundwater Storage, Depletion of Interconnected Surface Water, Sustainable Yield	No. The model updates completed to date (after submittal of the GSP in early 2022) have focused on improving characterization of historical conditions, with a particular focus on groundwater conditions in the vicinity of the Santa Clara River. SCV-GSA has initiated work to use this model to re-evaluate future conditions and the sustainable yield estimate. However, this work is ongoing and cannot be finalized before SCV-GSA considers DWR's forthcoming guidance on depletion of interconnected surface water management.

Table 2.1. Summary of New Information Since GSP Adoption

Significant New Information	Description	Aspects of Plan Affected	Warrant Change to Any Aspects of the Plan (Yes/No)
Dry Well Reporting	After adoption of the GSP, DWR published a public dry well reporting system that documents the location and status of domestic wells with impacted water supplies.	Chronic Lowering of Groundwater Levels.	No. DWR's reporting system improves understanding of domestic well impacts; however, reported impacts predate GSP adoption and are generally associated with upstream reservoir operations. SCV-GSA will continue reviewing reported dry wells through regular monitoring.

3.0 Groundwater Conditions Relative to Sustainable Management Criteria [Article 5, § 356.4(a)]

§ 356.4 (a) *A description of current groundwater conditions for each applicable sustainability indicator relative to measurable objectives, interim milestones and minimum thresholds.*

The following sections discuss current groundwater conditions relative to each of the sustainability indicators applicable to the Basin. The GSP reported on groundwater conditions through water year 2019. This Periodic Evaluation provides an update through water year 2025.[7]

3.1 Chronic Lowering of Groundwater Levels Sustainability Indicator

This section summarizes current (i.e., water year 2025) groundwater elevations in the Basin and their relation to conditions since the end of the GSP reporting period (i.e., water year 2019) and the sustainable management criteria established in the GSP. Groundwater extractions and climatic cycles both influence groundwater levels in the Basin (GSI et al., 2022). Since water year 2019, the Basin received an average of approximately 17.6 inches of rainfall annually at the Newhall-Soledad (Newhall Fire Station #73) rain gage, which is similar to the long-term (water years 1930–2025) average annual rainfall of 17.48 inches (GSI, 2026) (**Figure 3-1** and **Figure 3-2**). The evaluation period was characterized by year-to-year variability rather than a sustained wet or dry trend: above normal conditions in water year 2020 (16.07 inches), critically dry conditions in water years 2021 (3.38 inches) and 2022 (15.00 inches), two consecutive wet years in water years 2023 (40.31 inches) and 2024 (23.39 inches), and a return to below normal rainfall in water year 2025 (7.64 inches). The wet 2023 and 2024 water years drove the period's average annual rainfall to approximately equal the long-term average.

During the water year 2020 through 2025 period, groundwater extractions in the Alluvial Aquifer and Saugus Formation averaged 21,175 and 9,451 acre-feet per year (AFY), respectively (see Section 5.3.2 below for details), for a combined basin-wide total of approximately 30,600 AFY, or approximately 90% of the long-term average and 59% of the estimated sustainable yield of 52,200 AFY (GSI et al., 2022).

3.1.1 Groundwater Elevation Trends

The following subsections summarize recent groundwater elevation trends and flow conditions in the Alluvial Aquifer and Saugus Formation. Groundwater elevations are measured at a network of 52 wells in the Alluvial Aquifer and 13 wells in the Saugus Formation (**Figure 3-3**). Seasonal high conditions are represented by the highest static groundwater elevation measured in the spring, and seasonal low conditions by the lowest static groundwater elevation measured in the late summer or early fall. Seasonal high and low conditions from water years 2020 through 2025 are evaluated to characterize groundwater trends since water year 2020.

[7] Water year is defined as the period from October 1 of the preceding year, through September 30 of the current year. For example, water year 2020 is the period from October 1, 2019, through September 30, 2020.

3.1.1.1 Alluvial Aquifer

SCV Water monitors groundwater levels from a network of 52 wells screened in the Alluvial Aquifer (Figure 3-3**;** GSI et al., 2022). From this network, the GSP identifies 13 wells as Representative Monitoring Site (RMS) wells to monitor the chronic lowering of groundwater levels and reduction of groundwater in storage sustainability indicators. The groundwater elevation trends described below focus on the measurements from these 13 RMS wells (GSI et al., 2022).[8]

In water year 2020, seasonal low groundwater elevations at the Alluvial Aquifer RMS wells ranged from approximately 931 ft NAVD88 at future VWD-C12 (NLF-C4) in the downstream (western) part of the Basin to approximately 1,537 ft NAVD88 at NWD-Pinetree 5 in the upstream tributary areas, and seasonal high elevations spanned a similar range of approximately 935 to 1,533 ft NAVD88 (**Figure 3-4** and **Figure 3-5**). Groundwater elevations follow the land surface gradient, decreasing from the upstream tributary canyons toward the downstream, western part of the Basin.

Alluvial Aquifer groundwater levels declined from 2020 through the critically dry water years 2021 and 2022, then rose at each RMS well beginning in December 2022 and throughout the wet water year 2023 (**Figures 3-6a** through **3-6l**). Groundwater level changes varied in water year 2024.

In water year 2025, the end of the evaluation period, seasonal low groundwater elevations ranged from approximately 898 ft NAVD88 at NLF-B20 in the western part of the Basin to approximately 1,545 ft NAVD88 at NWD-Pinetree 5 and 1,509 ft NAVD88 at SCWD-Sand Canyon in the upstream tributary areas (**Figure 3-7**). Relative to water year 2020, seasonal low elevations increased at most RMS wells, with the largest increases occurring in the central and eastern Basin (approximately 29 feet at SCWD-North Oaks Central, 27 feet at VWD-U4, 20 feet at SCWD-Sand Canyon, and 18 feet at VWD-Q2).

Across the evaluation period, the difference between seasonal high and seasonal low elevations varied geographically, with spring levels generally exceeding those measured in the fall. In the western part of the Basin, seasonal high and low groundwater levels differed by only a few feet, while in the eastern part of the basin, seasonal variations were as large as approximately 20 feet (for example, see Figure 3-7 and **Figure 3-8**).

3.1.1.2 Saugus Formation

SCV Water monitors groundwater levels in the Saugus Formation using a network of 13 wells, four of which were established as RMS wells in the GSP (GSI et al., 2022).

At the start of the evaluation period, seasonal low groundwater elevations ranged from approximately 967 ft NAVD88 at NC13-HSU5a to about 989 ft NAVD88 at Library-C (**Figure 3-9**). Seasonal high elevations at these wells in water year 2020 ranged from approximately 991 ft NAVD88 at Library-C and NC13-HSU5a to approximately 1,002 ft NAVD88 at VWD-160, a median of approximately 13 feet above the corresponding seasonal lows (**Figure 3-10**).

[8] The GSP established Future VWD-C12 as an RMS well. This well has not yet been constructed. Because of this, groundwater levels measured at NLF-C4, an existing well approximately 700 feet from the planned location, are used to represent conditions at this RMS well.

Saugus Formation groundwater levels followed the same general patterns as the Alluvial Aquifer, declining through water year 2022 in response to the dry climatic conditions. Groundwater levels at the Saugus RMS wells rose in water year 2023 and generally remained above the lows observed from 2015 through 2022 (**Figures 3-11a** through **3-11d**). During water year 2025, levels at Library-C and NC13-HSU5a remained above those earlier lows. Groundwater levels at VWD-160 were last measured in March 2024; because of access limitations, no seasonal low value is available for water year 2024 or water year 2025 at this RMS well (Figures 3-11a through 3-11d).

Where measured, water year 2025 seasonal low groundwater elevations ranged from approximately 993 ft NAVD88 at VWD-206 to 1,036 ft NAVD88 at NC13-HSU5a, with Library-C at approximately 1,027 ft NAVD88 (**Figure 3-12**). Relative to water year 2020, these values represent increases of approximately 9 feet at VWD-206, 69 feet at NC13-HSU5a, and 38 feet at Library-C (GSI, 2026). Seasonal high elevations in water year 2025 ranged from approximately 1,006 ft NAVD88 at VWD-206 to approximately 1,054 ft NAVD88 at NC13-HSU5a, which is approximately 13 to 17 feet above the corresponding seasonal lows (**Figure 3-13**).

3.1.2 Sustainable Management Criteria

The GSP established sustainable management criteria for chronic lowering of groundwater levels at the 17 RMS wells used to evaluate groundwater levels and storage: 13 wells in the Alluvial Aquifer and four wells in the Saugus Formation.

For the Alluvial Aquifer, minimum thresholds were based on the lower of: (1) the lowest historically observed groundwater elevations (since 1980), or (2) the lowest future modeled groundwater elevations (GSI et al., 2022). For the Saugus Formation, the minimum thresholds were set equal to the projected future low groundwater level at each RMS well (GSI et al., 2022). These thresholds were established to provide sufficient operational flexibility to meet future groundwater demands and ensure the effectiveness of ongoing water quality management programs, while avoiding chronic lowering of groundwater levels.

Measurable objectives for the Alluvial Aquifer were established using either the long-term average future modeled groundwater level or the average groundwater level measured after 1980. In the Saugus Formation, measurable objectives were set equal to the long-term average future modeled groundwater level (GSI et al., 2022).

Table 3.1 summarizes available annual seasonal low groundwater elevations during the evaluation period relative to the sustainable management criteria that were established in the GSP for chronic lowering of groundwater levels. Supporting hydrographs and the applicable criteria are shown in Figures 3-6 and 3-11.

Table 3.1 – Groundwater Levels Relative to the Chronic Lowering of Groundwater Level Sustainable Management Criteria

Well	Minimum Threshold (ft NAVD88)	Measurable Objective (ft NAVD88)	Seasonal Low Groundwater Level (ft NAVD88)					
			2020	2021	2022	2023	2024	2025
Alluvial Aquifer								
NLF-B20	884	890	--	--	888	896	901	898
Future VWD-C12[a]	912	918	931	930	928	935	937	935
VWD-E17	941	959	958	955	955	961	961	958
VWD-D	978	1,005	1,014	1,011	1,009	1,019	1,012	1,018
VWD-N	1,062	1,076	1,095	--	--	--	1,107	1,103
VWD-Q2	1,105	1,126	1,131	1,131	1,135	--	1,150	1,149
VWD-U4	1,154	1,189	1,206	1,210	1,218	1,228	1,235	1,233
SCWD-North Oaks Central	1,286	1,335	1,363	1,367	1,362	1,386	1,393	1,392
SCWD-Sand Canyon	1,418	1,449	1,489	1,476	1,455	1,514	1,517	1,509
NWD-Pinetree 5	1,476	1,499	1,537	1,518	1,492	1,556	1,560	1,545
NWD-Castaic 4	1,058	1,088	1,098	1,090	1,089	1,108	1,100	1,095
VWD-W11	1,103	1,161	1,177	1,166	1,157	1,191	1,189	1,173
SCWD-Guida	1,263	1,295	1,294	1,300	1,302	1,312	1,304	1,303
Saugus Formation								
VWD-160	833	934	986	981	997	1,014	--	--
VWD-206	746	942	984	971	976	1,002	990	993
Library-C	902	968	989	990	1,000	1,022	1,036	1,027
NC13-HSU5a	885	1,002	967	961	956	1,006	1,027	1,036

[a] The minimum threshold and measurable objective shown are the GSP values established for Future VWD-C12, a planned representative monitoring site that had not been installed as of water year 2025. Seasonal low groundwater elevations are measured at NLF-C4, an existing well approximately 700 feet from the planned location, used as an interim proxy consistent with the annual reports.

3.1.2.1 Measurable Objectives

3.1.2.1.1 Alluvial Aquifer

In water year 2020, seasonal low groundwater elevations were reported for 12 of the 13 Alluvial Aquifer RMS wells (**Table 3.1**). Groundwater elevations at ten of the 12 measured wells were at or above their measurable objectives (Table 3.1). By water year 2025, seasonal low values were reported for all 13 wells, and 12 of the 13 wells were at or above their measurable objectives. VWD-E17 was the only well below its measurable objective in water year 2025. However, the seasonal low groundwater elevation at this well was only approximately 1-foot lower than the established measurable objective.

3.1.2.1.2 Saugus Formation

In the Saugus Formation, three of the four RMS wells were at or above their measurable objectives in water year 2020; NC13-HSU5a was below its measurable objective. By water year 2025, all three wells with reported seasonal low values (Library-C, NC13-HSU5a, and VWD-206) were at or above their measurable objectives, including NC13-HSU5a, which had risen above its measurable objective.

VWD-160 had no reported water year 2025 seasonal low value because of access limitations (Table 3.1; GSI, 2026). However, groundwater elevations at this well were approximately 50 to 80 feet higher than the measurable objective during water years 2020 through 2024 (Table 3.1).

3.1.2.2 Minimum Thresholds

3.1.2.2.1 Alluvial Aquifer

Seasonal low groundwater elevations were not measured below the minimum threshold at any of the measured Alluvial Aquifer RMS wells over the evaluation period (Table 3.1).

3.1.2.2.2 Saugus Formation

Among the available measurements, seasonal low groundwater elevations were not measured below the minimum threshold at any of the Saugus Formation RMS wells over the evaluation period (Table 3.1).

3.1.2.3 Interim Milestones

The GSP did not establish interim milestones for the chronic lowering of groundwater levels sustainability indicator, because no undesirable results were identified and the Basin is expected to remain in a sustainable condition throughout the planning and implementation horizon (GSI et al., 2022

3.1.3 Undesirable Results

The GSP defines a qualitative objective for the chronic lowering of groundwater levels sustainability indicator as *maintain[ing] groundwater levels that continue to support current and future groundwater uses and a healthy river environment in the Basin* (GSI et al., 2022). Consistent with this objective, the GSP defines undesirable results as one or more of the following conditions:

1. Groundwater levels in the Alluvial Aquifer fall below the minimum thresholds at the same 25 percent of RMS wells throughout a 3-year period.

2. Groundwater levels in the Saugus Formation fall below the minimum thresholds at the same 50 percent of RMS wells throughout a 3-year period.
3. Groundwater level declines, caused by groundwater extraction, that cause a cessation of surface flow and pools during low-flow conditions in the river in areas that currently provide essential habitat to unarmored threespine stickleback (UTS) and native fishes.

As described in Section 3.1.2, groundwater levels remained above the minimum thresholds at all RMS wells with available measurements in both the Alluvial Aquifer and Saugus Formation.

The third undesirable result criterion is evaluated through the interconnected-surface-water/GDE monitoring program rather than the 17 groundwater-level RMS wells (Section 3.6). As described in Section 3.6, habitat and surface-water evaluations found no evidence of pumping-related cessation of flow or pools in the Basin (GSI, 2026; ESA, 2026).

Based on these combined conditions, the Basin did not experience an undesirable result related to chronic lowering of groundwater levels.

3.1.4 Impacts to Beneficial Uses and Users

The GSP identifies the beneficial uses and users of groundwater in the Basin as municipal, agricultural, domestic, and small public water systems, together with environmental users such as groundwater-dependent ecosystems and the habitat supported by the Santa Clara River. Chronic lowering of groundwater levels could adversely affect these users by reducing available water supplies, increasing pumping costs or requiring well deepening, and reducing groundwater support to interconnected surface water and GDEs.

During the evaluation period, no adverse impacts to beneficial uses and users were identified: groundwater elevations remained above the minimum thresholds (Section 3.1.2), no undesirable results occurred (Section 3.1.3), and groundwater conditions recovered following the dry conditions experienced in water years 2021 and 2022 (Section 3.1.1). Based on these observations, groundwater conditions during the evaluation period continued to support the beneficial uses and users identified in the GSP.

3.1.5 Progress Towards Achieving Sustainability

As described in Sections 3.1.1 and 3.1.2, water year 2025 groundwater elevations were generally higher than at the start of the evaluation period, and no RMS well was below its minimum threshold in any year of the evaluation period. In water year 2025, 12 of the 13 Alluvial Aquifer RMS wells and all three measured Saugus Formation RMS wells were at or above their measurable objectives; VWD-E17 was the only well below its measurable objective, by approximately 1 foot. Together with the absence of an undesirable result, these conditions indicate that the Basin continued to progress toward achieving and maintaining its sustainability goal (GSI et al., 2022).

3.1.6 Relevant Recommended Corrective Actions

DWR issued one recommended corrective action (RCA) related to chronic lowering of groundwater levels (DWR, 2024). This RCA, and SCV-GSA's response, is described below.

3.1.6.1 Recommended Corrective Action 2

DWR's second recommended corrective action on the GSP stated:

> *RCA 2A. Describe the specific undesirable results to be avoided through implementing the Plan. If, for example, significant and unreasonable impacts to municipal wells are a primary management concern for the Subbasin, then the GSA should sufficiently explain why that effect was selected and what type and level of impact(s) to those wells the GSA considers to be significant and unreasonable.*
>
> *RCA 2B. Revise the sustainable management criteria to be based on seasonal low static groundwater levels to ensure potential impacts to beneficial uses and users are considered.*
>
> *RCA 2C. Establish minimum thresholds at representative monitoring wells that account for the specific undesirable results to be avoided in response to 2a) above. The Plan should include a detailed description of the factors and information considered and the analytic route and rationale the GSAs employed to reach conclusions regarding avoiding significant and unreasonable effects constituting undesirable results for groundwater levels and other applicable sustainability indicators. The Plan should clearly discuss and disclose the anticipated impact of operating the Subbasin at minimum threshold conditions on all beneficial uses and users of groundwater, including all groundwater supply wells and GDEs, in the Subbasin. The discussion should be supported using best available information, such as using State or county information on well completion reports and dry well reports, to analyze the location and number of well infrastructure that could be impacted by groundwater management when implementing the Plan. The Plan should use recorded or estimates of non-pumping groundwater levels in its method and analysis to establish minimum thresholds.*

SCV-GSA Response to RCA 2A

The GSP defines undesirable results for chronic lowering of groundwater levels using three separate criteria:

- Groundwater levels in the Alluvial Aquifer that drop below the minimum thresholds in the same 25 percent of representative wells throughout a 3-year period.
- Groundwater levels in the Saugus Formation that drop below the minimum thresholds in the same 50 percent of representative wells throughout a 3-year period.
- Groundwater level declines, caused by groundwater extraction, that cause a cessation of surface flow and pools during low-flow conditions in the river in areas that currently provide essential habitat to UTS and native fishes.

The GSP does not currently define the specific undesirable results that the first two criteria are designed to avoid; however for the third criteria the specific undesirable result to be avoided is well-defined.

As part of this periodic evaluation, SCV-GSA has re-evaluated the definition of an undesirable result for chronic lowering of groundwater levels in areas that lie outside of those that support GDEs. Based on current and planned beneficial uses and users of groundwater in the Basin, the specific undesirable result to be avoided for areas outside of known habitat is:

> *"A loss of municipal and agricultural water supplies during periods of drought when surface or imported water supplies are limited."*

This definition was selected to account for the increasing role that groundwater plays in water supply reliability across the Basin as State Water Project water and other imported water supplies become stressed by changing climatological patterns. The sustainable management criteria were refined to quantify groundwater levels that may impact future municipal and agricultural water supply reliability in the Alluvial Aquifer and Saugus Formation (Section 3.1.7).

SCV-GSA Response to RCA 2B

The clarified sustainable management criteria for chronic lowering of groundwater levels are based on a level below which potential impacts may start occurring (see response to RCA 2C, below). This is independent of a particular time of year. However, water levels are most likely to reach these levels at the seasonal low water level.

The GSP explicitly evaluates minimum threshold exceedances based on non-pumping (static) groundwater levels. This periodic evaluation maintains this evaluation framework.

SCV-GSA Response to RCA 2C

The beneficial uses and users that could be impacted by chronic lowering of groundwater levels are municipal, agricultural, domestic, and environmental users. The main groundwater pumping in the Basin is for municipal uses and agricultural uses. As described above, the updated definition of an undesirable result is based on loss of municipal and agricultural groundwater supplies during periods of drought. To quantify when these conditions occur, SCV-GSA conducted a well impact analysis that considered:

- Future Alluvial Aquifer and Saugus Formation groundwater supply needs.
- Operational constraints within the existing municipal supply transmission zones and agricultural well fields.
- Permitted well capacities.
- Well construction details and minimum head requirements necessary for maintaining long-term well functionality.

Specifically, the well impact analysis quantified minimum groundwater levels within each municipal water supply transmission zone and agricultural well field that could affect the reliability of meeting future groundwater supply needs. Appendix A provides detailed documentation of the well impact analysis. The results are summarized in Section 3.1.7.

Remaining Data Gaps

While the updated minimum thresholds quantify the potential onset of supply reliability concerns associated with municipal and agricultural users, data gaps remain related to domestic well users and groundwater elevations that may impact their access to long-term groundwater supply.

SCV-GSA completed a domestic well survey focused in the canyon areas to identify well locations, status, and anticipated groundwater use, documenting its work in a grant deliverable to DWR. Further, its outreach efforts seeking domestic well owner volunteers to make their wells available for groundwater quality sampling have continued. Despite these outreach efforts, only one volunteer came forward.

This outreach effort is partly hampered by uncertainty in publicly available online well completion report records maintained by DWR. Despite this, the voluntary program remains in place and is mentioned during public engagement as part of the Periodic Evaluation. Moving forward, and with 5 years of GSP Implementation so far, the SCV-GSA will continue to reevaluate the importance of water quality data gaps with GSP implementation. Further, the SCV-GSA continues the non-de minimis well owner extraction reporting.

While the revised sustainable management criteria are not expected to impact domestic well supplies (because these users are located at the fringes of the Basin, away from municipal pumping centers), SCV-GSA anticipates monitoring conditions for these users over the next five years using the DWR's publicly available Dry Well Reporting System. If new dry well reports are submitted to the State, SCV-GSA will initiate outreach to the affected well owners to better understand the cause of impacts and relationship to groundwater extractions from the Basin.

3.1.7 Revisions to the Sustainable Management Criteria

SCV-GSA has revised the minimum thresholds for chronic lowering of groundwater levels using results from a well impact analysis (Appendix A). The revised values are shown **Table 3.2**.

Table 3.2 – Summary of Proposed Minimum Threshold Revisions For Chronic Lowering of Groundwater Levels

Well	Seasonal Static Low Groundwater Level (ft NAVD88)		
	GSP	Proposed	Change[a]
Alluvial Aquifer			
NLF-B20	884	832	-52
Future VWD-C12[b]	912	894	-18
NLF-G3[c]	959	892	-67
VWD-E17	941	896	-45
VWD-D	978	948	-30
VWD-N	1,062	1,043	-19
VWD-Q2	1,105	1,069	-36
VWD-U4	1,154	1,154	0
SCWD-North Oaks Central	1,286	1,297	**11**
SCWD-Sand Canyon	1,418	1,429	**11**
NWD-Pinetree 5	1,476	1,459	-17
NWD-Castaic 4	1,058	1,027	-31
VWD-W11	1,103	1,110	**7**
SCWD-Guida	1,263	1,257	-6
Saugus Formation			
VWD-160	833	894	**61**
VWD-206	746	722	-24

Well	Seasonal Static Low Groundwater Level (ft NAVD88)		
	GSP	Proposed	Change[a]
Library-C	902	812	-90
NC13-HSU5a	885	769	-116

[a] Negative Values denote locations where the proposed minimum threshold is lower than the GSP.
[b] Threshold is evaluated using groundwater elevations measured at nearby well NLF-C4.
[c] Well was originally established as a RMS for depletion of interconnected surface water. However, since adoption of the GSP, this well has been converted to an active irrigation well and is no longer appropriate for interconnected surface water monitoring. This well has been moved to the chronic lowering of groundwater levels sustainability indicator. SCV-GSA plans to construct a new dedicated monitoring well in fiscal year 2027-28 near this location for depletion of interconnected surface water monitoring.

3.1.7.1 Revisions to the Definition of an Undesirable Result

In response to DWR's RCA 2, SCV-GSA has revised the definition of an undesirable result for chronic lowering of groundwater levels to be:

a. Groundwater level declines, caused by groundwater extraction, that result in a loss of municipal or agricultural water supplies during periods of drought when surface or imported water supplies are limited.
b. Groundwater level declines, caused by groundwater extraction, that cause a cessation of surface flow and pools during low-flow conditions in the river in areas that currently provide essential habitat to UTS and native fish.

The quantitative definition of an undesirable result:

a. Seasonal low static groundwater levels that fall below the minimum thresholds in 25 percent of the same RMS wells, due to groundwater extraction, in the Alluvial Aquifer for a 3-year period.
b. Seasonal low static groundwater levels that fall below the minimum thresholds in 50 percent of the same RMS wells, due to groundwater extraction, in the Saugus Formation for a 3-year period.

These revisions clarify the specific undesirable result to be avoided and, outside of critical habitat areas, tie the minimum thresholds directly to the protection of municipal and agricultural water supplies. These revisions do not change the management program established under the GSP: the monitoring network, the static (non-pumping) seasonal-low evaluation framework, and the quantitative undesirable-result triggers (minimum-threshold exceedances at 25 percent of Alluvial Aquifer or 50 percent of Saugus Formation over a 3-year period at the same RMS wells) are unchanged, and the Basin continues to be managed so that groundwater pumping remains within the estimated sustainable yield.

3.2 Reduction of Groundwater in Storage Sustainability Indicator

3.2.1 Groundwater Storage Trends

Since adoption of the GSP, SCV-GSA has estimated change in groundwater in storage in the Basin using the Basin's groundwater flow model (GSI et al., 2022). This model was used to support development of the GSP and simulated groundwater conditions through water year 2019. Since completing the GSP, SCV-GSA has updated the groundwater flow model annually to incorporate new data collected each water year (GSI, 2022, 2023, 2024, 2025, and 2026).

Groundwater storage trends over the evaluation period generally reflected the Basin's hydrologic conditions (**Table 3-3**). Storage declined by approximately 38,500 acre-feet (AF) during the critically dry 2021 and 2022 water years, increased by approximately 111,400 AF during the wet 2023 and 2024 water years, and declined again by 33,200 AF in the below normal water year 2025 (Table 3-3). Since water year 2020, groundwater storage increased by a net of 3,817 AF in the Alluvial Aquifer (with the largest changes occurring in the Eastern Santa Clara River zone; see **Figure 3-14**), and 44,441 AF in the Saugus Formation (**Figure 3-15**), for a basin-wide net increase of 48,258 AF relative to conditions at the end of water year 2019 (Table 3-3).

Table 3-3. Annual and Cumulative Change in Storage in the Basin

Water Year	Annual Rainfall	Water Year Type	Alluvial Aquifer		Saugus Formation		Total Basin	
			Annual	Cumulative	Annual	Cumulative	Annual	Cumulative
2020	16.07	Above Normal	2,294	2,294	6,278	6,278	8,572	8,572
2021	3.38	Critical	-12,291	-9,997	-14,388	-8,110	-26,679	-18,107
2022	15.00	Critical	-4,004	-14,001	-7,826	-15,936	-11,830	-29,937
2023	40.31	Wet	38,889	24,888	56,032	40,096	94,921	64,984
2024	23.39	Wet	-3,279	21,609	19,743	59,839	16,464	81,448
2025	7.64	Below Normal	-17,792	3,817	-15,398	44,441	-33,190	48,258
Total	--	--	**3,817**	--	**44,441**	--	**48,258**	--

Notes: Values are in acre-feet; Rainfall is in inches. Annual rainfall is measured at the Newhall-Soledad (Newhall Fire Station #73) rain gage. Water year types follow the DWR SGMA methodology. Annual and cumulative storage changes are from the SCV-GSA regional groundwater flow model as reported in the annual reports (GSI, 2026).

3.2.2 Sustainable Management Criteria

The GSP evaluates reduction of groundwater in storage using groundwater levels as a proxy (GSI et al., 2022). Accordingly, the RMS well network and the groundwater level minimum thresholds and measurable objectives established for the chronic lowering of groundwater levels sustainability indicator are also used to evaluate reduction of groundwater in storage. As described in Section 3.1.2, groundwater levels remained above their minimum thresholds and were at or above their measurable objectives at most RMS wells through water year 2025.

3.2.3 Undesirable Results

Because reduction of groundwater in storage is evaluated using the same RMS wells and sustainable management criteria as chronic lowering of groundwater levels, the evaluation of undesirable results is the same (Section 3.1.3). No undesirable result related to reduction of groundwater in storage occurred during the evaluation period.

3.2.4 Impacts to Beneficial Uses and Users

The impacts of reduction of groundwater in storage on beneficial uses and users are the same as those described for chronic lowering of groundwater levels (Section 3.1.4). No adverse impacts to beneficial uses and users were identified during the evaluation period.

3.2.5 Progress Towards Achieving Sustainability

Groundwater storage at the end of water year 2025 was approximately 48,300 AF higher than at the start of the evaluation period (Table 3-3). Together with the groundwater levels remaining above the adopted minimum thresholds and the absence of an undesirable result, these conditions indicate that the Basin continued to progress toward achieving and maintaining its sustainability goal (GSI et al., 2022).

3.2.6 Relevant Recommended Corrective Actions

DWR did not issue a recommended corrective action related to reduction of groundwater in storage. However, SCV-GSA's response to DWR's RCA 2 affects the groundwater level thresholds that serve as a proxy for reduction of groundwater in storage (Section 3.1.6 through 3.1.7).

3.3 Degraded Water Quality Sustainability Indicator

This section summarizes groundwater quality conditions in the Basin during the water year 2020 through 2025 period and evaluates how those conditions compare with the sustainable management criteria established in the GSP. The GSP utilizes the Basin's Salt and Nutrient Management Plan (SNMP), which provides the framework for monitoring salts and nutrients in the Basin's surface water and groundwater systems. The SNMP characterizes groundwater quality using concentrations of total dissolved solids (TDS), chloride, nitrate, and sulfate (GSSI, 2016). Consistent with the SNMP, the GSP evaluates groundwater quality using these same constituents.

3.3.1 Groundwater Quality Trends

The following subsections summarize groundwater quality conditions using median salt and nutrient concentrations (i.e., TDS, chloride, nitrate, and sulfate) over the period from water year 2020 through 2025, and describe recent and historical trends in the Alluvial Aquifer and Saugus Formation.

Groundwater quality is characterized using the groundwater quality monitoring network, which consists of 35 wells, 23 of which are completed in the Alluvial Aquifer, and 12 of which are completed in the Saugus Formation (GSI et al., 2022; **Figures 3-16** and **3-17**)

3.3.1.1 Alluvial Aquifer

Total Dissolved Solids (TDS)

Over the evaluation period, TDS concentrations ranged from a median concentration of 430 milligrams per liter (mg/L) to 980 mg/L across the Alluvial Aquifer, with the highest concentrations generally occurring in the Above Saugus subarea, and the lowest concentrations occurring in the Castaic Valley

subarea (**Figures 3-18** and **3-19**). TDS concentrations generally remained stable or decreased, during the evaluation period, with the exception of well VWD-Q2, which exhibited some short-term variability. Overall, TDS concentrations remained within the historical range of observed concentrations (**Figure 3-20a through 3-20g**).

Chloride

Median chloride concentrations ranged between 40 and 110 mg/L, as measured at wells VWD-W11 and SCWD-Clark, respectively, over the evaluation period. The highest concentrations generally occurred in the Bouquet Canyon subarea, and the lowest concentrations occurred in the San Francisquito Canyon subarea (**Figures 3-21** and **3-22**). Chloride concentrations were generally stable or decreasing throughout the evaluation period and were consistent with historical conditions (**Figures 3-23a through 3-23f**). The one exception was well NWD-Castaic1, where chloride concentrations continued a long-term declining trend to levels below the historical range of observed concentrations (**Figure 3-23f**).

Nitrate

Over the evaluation period, median nitrate concentrations, reported as mg/L nitrate, ranged between 1.42 mg/L and 29.66 mg/L as measured in wells NWD-Castaic1 and SCWD-North Oaks Central, respectively (**Figure 3-24**). The highest concentrations occurred in the Mint Canyon subarea, and the lowest concentrations were in the Castaic Valley subarea (**Figure 3-25**). Except for the Santa Clara and VWD-D wells, which showed declining nitrate concentrations, the overall nitrate trends remained stable across the groundwater quality monitoring network and within the range of historical observations (**Figures 3-26a through 3-26f**).

Sulfate

Median sulfate concentrations ranged between 91 mg/L and 350 mg/L as measured in the NWD-Pinetree5 and VWD-U4 wells, respectively, during the evaluation period. The highest concentrations occurred in the Above Saugus subarea, and the lowest concentrations occurred in the Mint Canyon subarea (**Figures 3-27** and **3-28**). Apart from the VWD-U4 well, which has shown an overall decline in sulfate concentrations between 2019 and 2023, sulfate trends across the groundwater quality monitoring network were unchanged and were consistent with historical observations (**Figures 3-29a through 3-29f**).

3.3.1.2 Saugus Formation

Total Dissolved Solids (TDS)

Median TDS concentrations ranged between 555 mg/L and 970 mg/L as measured in wells NWD-12 and VWD-160, respectively, over the evaluation period. Note that well VWD-159 was not considered in the median TDS concentration range analysis because it only had one measurement (**Figures 3-30** and **3-31**). The overall TDS concentration trends remained stable across the groundwater quality monitoring network in the Saugus Formation, and the observed concentrations were within the historical range (**Figure 3-32**).

Chloride

Within the evaluation period, median chloride concentrations ranged between 32 mg/L and 83 mg/L as measured in wells VWD-205 and VWD-207, respectively (**Figures 3-33** and **3-34**). Like TDS, VWD-159 was excluded from the concentration evaluation because it was only measured once since water year 2020. Chloride concentration trend across the Saugus Formation groundwater quality monitoring network remained generally stable and were within the range of historical observations, except for wells VWD-160 and NWD-13 which showed slightly increasing concentration trends (**Figure 3-35**).

Nitrate

Median nitrate concentrations ranged between 11.51 mg/L and 30.10 mg/L as measured in wells VWD-207 and NWD-13, respectively, during the evaluation period (**Figures 3-36** and **3-37**). The nitrate concentration trends across the groundwater quality monitoring network in the Saugus Formation were stable and within the historical range of observed concentrations (**Figure 3-38**).

Sulfate

During the evaluation period, median sulfate concentrations ranged between 175 mg/L and 450 mg/L as measured in wells NWD-12 and VWD-160, respectively (**Figures 3-39** and **3-40**). As before, because well VWD-159 contained a single measurement it was excluded from the median concentration range reporting. The overall sulfate trends across the groundwater quality monitoring network in the Saugus Formation were stable and within the historical range of observed concentrations (**Figure 3-41**).

3.3.2 Sustainable Management Criteria

The GSP establishes sustainable management criteria for salts and nutrients for each SNMP-defined management zone. The GSP bases the measurable objectives on the applicable water quality objectives (WQOs) established by the Los Angeles Regional Water Quality Control Board (LARWQCB, 2016) and assimilative capacities identified in the SNMP (GSSI, 2016). The WQOs are regulatory benchmarks established to protect designated beneficial uses, whereas ambient (i.e., average) groundwater quality (AWQ) represents the existing, management-zone-scale concentration of each constituent. The AWQ concentrations were estimated in 2016 from the areal and vertical distribution of contours developed using median concentrations from wells within each management zone (GSSI, 2016). Available assimilative capacity is calculated as the difference between the applicable WQO and the AWQ concentration. A positive difference indicates that some capacity remains before the WQO is reached; where the AWQ concentration equals or exceeds the WQO, no available assimilative capacity remains.

Guided by the SNMP, the GSP established the minimum thresholds in each SNMP management zone as follows:

a. The minimum threshold equals the applicable WQO in cases where the AWQ concentration identified in the SNMP was below the WQO.
b. The minimum threshold equals the AWQ concentration identified in the SNMP in cases where the AWQ concentration identified in the SNMP exceeded the WQO.

Section 3.3.2.1 discusses how groundwater quality in each SNMP management zone during the five-year evaluation period compares with the measurable objective of preventing water quality degradation for salts and nutrients. In parallel, Section 3.3.2.2 compares the groundwater quality monitored during the

five-year evaluation period to the minimum threshold values (either the WQO or the AWQ concentration, as described above) in each SNMP management zone.

3.3.2.1 Measurable Objectives

Consistent with the SNMP, measurable objectives were established for each of the six groundwater management zones. Five management zones are in the Alluvial Aquifer and one zone consists of the entire Saugus Formation (**Figure 3-42**). Here, the measurable objectives are evaluated with respect to the established WQO and the management zone's assimilative capacity (GSSI, 2016) using median salt and nutrient concentrations measured across the RMS wells within each management zone (Figures 3-16 and 3-17).

3.3.2.1.1 Alluvial Aquifer

Median concentrations in the 12 Alluvial Aquifer RMS wells were compared to the measurable objective for each SNMP management zone (**Figure 3-43a through 3-46d**). As described in the GSP, management zone 1 was subdivided into zones 1A and 1B to distinguish groundwater quality impacts thought to be potentially associated with the former Whittaker-Bermite site (GSI et al., 2022). Accordingly, the AWQ concentrations and the assimilative capacities were calculated for each of these zones separately (GSI et al., 2022).

Of the five management zones in the Alluvial Aquifer, the RMS wells are present in four: 1A and 1B, 4, and 5. No RMS wells are present in management zones 2 and 3 (GSI et al., 2022).

Total Dissolved Solids (TDS)

During the water year 2020 through 2025 period, median TDS concentrations in the Alluvial Aquifer management zones were generally below the applicable WQOs. Where the SNMP identified positive assimilative capacity, the TDS concentrations were within the original AWQ-to-WQO concentration range (**Table 3-4**; Figure 3-43a through 3-43d).

- Management Zone 1A (WQO = 800 mg/L): Median TDS concentrations in RMS wells ranged between 620 and 780 mg/L and were below the WQO. The water year 2020 through 2025 TDS concentration trends suggest that this management zone has remaining assimilative capacity for TDS (Figure 3-43a).
- Management Zone 1B (WQO = 800 mg/L): Median TDS concentration of 980 mg/L exceeded the WQO. However, TDS concentrations have declined at the only RMS well in this zone since 2015, indicating that GSP implementation has not resulted in degraded water quality in this groundwater management zone (Figure 3-43b).
- Management Zone 4 (WQO = 700 mg/L): Median TDS concentrations ranged between 620 mg/L and 710 mg/L and were mostly below the WQO except at well VWD-Q2 (Figure 3-43c). Like zone 1B, the WQO for management zone 4 was also lower than the AWQ (GSSI, 2016), indicating that no assimilative capacity was available for this management zone under the SNMP baseline condition. TDS trends were stable during the water year 2020 through 2025 period (Figure 3-43c).
- Management Zone 5 (WQO = 1,000 mg/L): Median TDS concentrations ranged from 700 mg/L to 770 mg/L and were below the WQO. The WY 2020-2025 TDS concentrations, which were within

the AWQ-to-WQO concentration range, suggest that this management zone has remaining assimilative capacity for TDS (Figure 3-43d).

In summary, TDS concentrations exceeded the WQOs in management zone 1B. Notably for this area, the AWQ concentration exceeded the WQOs prior to GSP adoption, and the TDS concentration trends suggest no long-term groundwater quality degradation has occurred.

Table 3.4 – Median Salt and Nutrient Concentrations for Water Years 2020 Through 2025 Relative to the Sustainability Criteria Within SNMP-defined Management Zones

SNMP Management Zone	Groundwater Subunit	Representative Monitoring Site	TDS (mg/L)	Chloride (mg/L)	Nitrate (mg/L)	Sulfate (mg/L)
1A	Santa Clara Mint-Canyon	Water Quality Objective	**800**	**150**	**45**	**150**
		Ambient Water Quality	728	89	20	138
		Assimilative Capacity	+72	+61	+25	+12
		Median concentration in RMS wells (WY 2020—2025)				
		Sand Canyon	780	100	18.57	150
		Pinetree-5	620	83	14.36	91
		North Oaks Central	750	110	29.66	130
1B	Santa Clara Mint-Canyon	Water Quality Objective	800	**150**	**45**	150
		Ambient Water Quality	**833**	72	21	**269**
		Assimilative Capacity	-33	+78	+24	-119
		Median concentration in RMS wells (WY 2020—2025)				
		VWD-U4	980	110	19	350
2	Placerita Canyon	Water Quality Objective	700	100	45	150
		Ambient Water Quality	—	—	—	—
		Assimilative Capacity	—	—	—	—
		No wells in this management zone				
3	South Fork	Water Quality Objective	700	100	45	200
		Ambient Water Quality	—	—	—	—
		Assimilative Capacity	—	—	—	—
		No wells in this management zone				
4	Santa Clara-Bouquet and San Francisquito Canyons	Water Quality Objective	700	**100**	**45**	**250**
		Ambient Water Quality	**710**	77	16	189
		Assimilative Capacity	-10	+23	+29	+61
		Median concentration in RMS wells (WY 2020—2025)				
		Guida	660	67	19.59	140
		VWD-N	620	97	19.03	140
		VWD-W11	630	40	8.72	200
		VWD-Q2	710	91	19.03	170
5	Castaic Valley	Water Quality Objective	**1,000**	**150**	**45**	**350**
		Ambient Water Quality	727	77	8	246

		Assimilative Capacity	+273	+73	+37	+104
		Median concentration in RMS wells (WY 2020—2025)				
		VWD-E17	770	99	8.2	250
		VWD-D	700	100	5.5	220
		NWD-Castaic4[a]	—	—	—	—
		NLF-B20[b]	—	—	—	—
6	Saugus Formation	Water Quality Objective	700	100	45	—
		Ambient Water Quality	636	28	14	235
		Assimilative Capacity	+64	+72	+31	—
		Median concentration in RMS wells (WY 2020—2025)				
		VWD-160	970	32.5	20.90	450
		VWD-206	730	43	20.36	280
		Library-C[c]	—	—	—	—
		NC13-HSU5a[d]	—	—	—	—

Notes:
Pink cells indicate Water Quality Objective exceedance
Bold text indicates Minimum Thresholds. No minimum thresholds were established for management zone 6/Saugus Formation (LARWQCB 1994, 2019).
Red values indicate Minimum Threshold exceedance
Water Quality Objectives sourced from LARWQCB (2016).
Ambient (average) Water Quality and Assimilative capacity sourced from SNMP (GSSI, 2016), where the ambient water quality is derived from areal and vertical distribution of contours developed using median concentrations from wells within each management zone.
[a] No salt and nutrient measurements reported past 2015
[b] No salt and nutrient measurements reported.
[c] No salt and nutrient measurements reported past 1999, except for nitrate for which the reports stop past 2001.
[d] No salt and nutrient measurements reported.

Chloride

Median chloride concentrations across the five Alluvial Aquifer management zones remained below the WQO and within the ambient water-quality-to-WQO concentration range, suggesting positive remaining assimilative capacity for chloride across these management zones (Table 3.4, **Figures 3-44a through 3-44d**).

- Management Zone 1A (WQO = 150 mg/L): Median chloride concentrations range between 83 mg/L to 110 mg/L during the evaluation period, and below the WQO. The generally declining chloride concentrations during water years 2020 through 2025 were within the AWQ-to-WQO ratio, suggesting that this management zone has remaining assimilative capacity for chloride (Figure 3-44a).
- Management Zone 1B (WQO = 150 mg/L): Median chloride concentration of 110 mg/L is below the WQO. The declining chloride trends with concentrations fluctuating within AWQ-to-WQO concentration range suggest that this management zone has remaining assimilative capacity for chloride (Figure 3-44b).
- Management Zone 4 (WQO = 100 mg/L): Median chloride concentrations ranged between 40 mg/L and 97 mg/L and were below the WQO. The chloride concentrations during the evaluation

period were generally within or below the AWQ-to-WQO concentration range, which suggests that this management zone has remaining assimilative capacity for chloride (Figure 3-44c).

- Management Zone 5 (WQO = 150 mg/L): Median chloride concentrations ranged between 99 mg/L and 100 mg/L and were below the WQO. The chloride concentrations during the evaluation period remained within the AWQ-to-WQO concentration range, suggesting that this management zone has remaining assimilative capacity for chloride (Figure 3-44d).

In summary, median chloride concentrations in the Alluvial Aquifer management zones were below the applicable WQOs and within the AWQ-to-WQO concentration ranges (GSSI, 2016).

Nitrate

Median nitrate concentrations in the Alluvial Aquifer management zones remained below the WQO and within the concentration range represented by the management zone's 2016 SNMP-defined assimilative capacity (GSSI, 2016) (Table 3.4, **Figure 3-45a through 3-45d**).

- Management Zone 1A (WQO = 45 mg/L): Median nitrate concentrations ranged between 14.36 mg/L and 29.65 mg/L were below WQO (Figure 3-45a).
- Management Zone 1B (WQO = 45 mg/L): Median nitrate concentration of 19 mg/L was below the WQO (Figure 3-45b).
- Management Zone 4 (WQO = 45 mg/L): Median nitrate concentrations ranged between 8.72 mg/L to 19.59 mg/L were below WQO (Figure 3-45c).
- Management Zone 5 (WQO = 45 mg/L): Median nitrate concentrations ranged between 5.50 mg/L to 8.20 mg/L were below WQO (Figure 3-45d).

Also, across all management zones the nitrate concentrations remained within or below the AWQ-to-WQO concentration range during the evaluation period, suggesting that the assimilative capacity for nitrate remained across the Alluvial Aquifer.

Sulfate

Median sulfate concentrations in the Alluvial Aquifer management zones remained generally below the WQO, except for zone 1B. Where the SNMP-defined assimilative capacity was positive, sulfate concentrations generally fluctuated around the AWQ-to-WQO concentrations range but remained within the historically observed limits (Table 3.4, **Figure 3-46a through 3-46d**).

- Management Zone 1A (WQO = 150 mg/L): Median sulfate concentrations ranged between 91 mg/L and 150 mg/L during the evaluation period and were below or at the WQO. Sulfate concentrations during the evaluation period were within the historical concentration range and fluctuated around the assimilative capacity window (i.e., periodically above, within, or below the AWQ-to-WQO concentration range).
- Management Zone 1B (WQO = 150 mg/L): Median sulfate concentration of 350 mg/L exceeded the WQO. However, as with TDS, the WQO for sulfate in zone 1B also was set below the SNMP-defined AWQ. In other words, no assimilative capacity was available for this zone under the SNMP baseline condition at the time of GSP adoption. Therefore, under such conditions, the assimilative capacity cannot serve as a metric for the evaluation of declining groundwater quality conditions. The overall sulfate trends for zone 1B remained unremarkable and within

historical ranges, even though they were above the SNMP-defined AWQ-to-WQO concentration range (Figure 3-46b).

- Management Zone 4 (WQO = 250 mg/L): Median sulfate concentrations ranged between 140 mg/L and 200 mg/L during the evaluation period and were below the WQO. Sulfate concentrations during the evaluation period were within the historical concentration range and fluctuated around the assimilative capacity window (i.e., above, within, or below the AWQ-to-WQO concentration range).
- Management Zone 5 (WQO = 350 mg/L): Median sulfate concentrations ranged between 220 mg/L and 250 mg/L during the evaluation period, and were below the WQO. Sulfate concentrations during the evaluation period were stable and within or below the AWQ-to-WQO concentration range, suggesting that this management zone has remaining assimilative capacity for sulfate.

Summary of Measurable Objectives for Salt and Nutrient Concentrations – Alluvial Aquifer

Chloride and nitrate concentrations were consistently below the WQOs and within or below their SNMP-defined AWQ-to-WQO ranges across the Alluvial Aquifer, suggesting that the measurable objectives were met for these two constituents. In management zones where ambient water quality was below the WQO (GSSI, 2016), sulfate and TDS concentrations also remained below the WQO.

Where ambient water quality exceeded the WQO prior to GSP adoption (i.e., Zone 1B for sulfate and TDS and Zone 4 for TDS) groundwater quality concentrations have either remained stable or decreased. Accordingly, these exceedances do not reflect a loss of assimilative capacity or degraded groundwater quality associated with groundwater extraction or GSA activities.

3.3.2.1.2 Saugus Formation

To evaluate measurable objectives pertinent to salt and nutrients in Saugus Formation (i.e., SNMP-defined management zone 6), median concentrations measured in 2 RMS wells are compared against the WQO (Table 3-4). Notably, while the RMS network for the Saugus Formation includes a total of four (4) wells (VWD-160, VDW-206, Library-C, and NC13-HSU5A), only two (2) wells (VWD-160, VDW-206) have salt and nutrient constituents measured within the evaluation period.

Moreover, the original LARWQCB Basin Plan and its 2019 revision do not establish WQOs for the Saugus Formation (LARWQCB, 1994, 2019). Because of this, the LARWQCB recommended setting the WQOs for Saugus Formation using the most conservative WQOs used for the Alluvial Aquifer management zones (GSSI, 2016; LARWQCB, 2016). The one exception to this is sulfate, where, due to the lack of historical data, guidance has not been provided. Accordingly, the assimilative capacities for Saugus Formation (i.e., management zone 6) were calculated using conservative, Alluvial-Aquifer management zone WQOs.

TDS

Median TDS concentrations in management zone 6 ranged between 730 mg/L and 970 mg/L and were above the 2019 LARWQCB-recommended WQO of 700 mg/L. TDS concentrations were above the SNMP-defined AWQ-to-GWQ concentration range but within its historical concentration range and stable over the evaluation period (Table 3-4; **Figure 3-47**). Therefore, these concentrations do not indicate the degradation of groundwater quality or the loss of assimilative capacity for TDS in management zone 6.

Chloride

Median chloride concentrations measured during the evaluation period for management zone 6 were below WQO of 100 mg/L ranging between 32.5 mg/L and 43 mg/L (Table 3-4; **Figure 3-48**). Chloride concentrations within the evaluation period generally fell within the AWQ-to-GWQ concentration range suggesting that management zone 6 has remaining assimilative capacity for chloride (Figure 3-48).

Nitrate

Median nitrate concentrations in management zone 6 were below the recommended WQO of 45 mg/L and ranged between 20.36 mg/L and 20.90 mg/L (Table 3-4; Figure 3-49). Nitrate concentrations were within the AWQ-to-WQO concentration range, suggesting that during the evaluation period management zone 6 had remaining assimilative capacity for nitrate (Figure 3-49).

Sulfate

Sulfate conditions within management zone 6 cannot be evaluated with respect to WQO or the assimilative capacity (see discussion above). Overall, median sulfate concentrations within management zone 6 ranged between 280 mg/L and 450 mg/L and were above the SNMP-defined AWQ (Figure 3-50).

Summary of Measurable Objectives for Salt and Nutrient Concentration – Saugus Formation

Chloride and nitrate concentrations remained below the recommended WQOs and within the SNMP-defined AWQ-to-WQO concentration range, suggesting that management zone 6 has remaining assimilative capacity for these constituents. TDS concentrations exceeded the recommended WQO and the SNMP-defined AWQ-to-WQO concentration range but were stable and within the historical ranges during 2020 to 2025 water-year period. These exceedances do not by themselves indicate groundwater-quality degradation or loss of assimilative capacity with respect to TDS in management zone 6. Sulfate could not be evaluated with respect to WQO or assimilative capacity, although the observed concentrations were above the SNMP-defined AWQ.

3.3.2.2 Minimum Thresholds

For salts and nutrients (TDS, chloride, nitrate, and sulfate), the GSP defines the minimum thresholds in each SNMP management zone as the greater of the WQO or the SNMP-defined AWQ concentrations (GSI et al., 2022). Accordingly, in cases where the AWQ exceeds the WQO, the AWQ is considered the minimum threshold, and where the WQO exceeds the AWQ, the WQO is considered the minimum threshold. Table 3.4 summarizes the GSP-established minimum thresholds for each of the four salt and nutrients (GSI et al., 2022).

3.3.2.2.1 Alluvial Aquifer

Median salt and nutrient concentrations measured within the RMS network in each Alluvial Aquifer management zone during WYs 2020 through 2025 were compared to the minimum thresholds. Overall, median salt and nutrient concentrations in the Alluvial Aquifer management zones were below the defined minimum thresholds, except for TDS and sulfate medians in management zone 1B (Table 3.4).

TDS

Median TDS concentrations were generally below the minimum threshold across the five Alluvial Aquifer management zones, except in management zone 1B (Table 3-4).

- Management zone 1A (minimum threshold = WQO = 800 mg/L): Median TDS concentration range: 620 mg/L to 780 mg/L and below the minimum threshold.
- Management zone 1B (minimum threshold = AWQ = 833 mg/L): Median TDS concentration of 980 mg/L was above the minimum threshold. However, as discussed in Section 3.3.2.1 the TDS concentrations measured across this management zone remained stable and within the historical ranges (Figure 3-43b). Therefore, the exceedance of minimum threshold for TDS is not indicative of groundwater quality degradation in management zone 1B.
- Management zone 4 (minimum threshold = AWQ = 710 mg/L): Median TDS concentration range: 620 mg/L to 710 mg/L and below or at the minimum threshold concentration.
- Management zone 5 (minimum threshold = WQO = 1,000 mg/L): Median TDS concentration range: 700 mg/L to 770 mg/L and below the minimum threshold.

Chloride

Median chloride concentrations were below the minimum thresholds in all five Alluvial Aquifer management zones (Table 3.4).

- Management zone 1A (minimum threshold = WQO = 150 mg/L): Median chloride concentration range: 83 mg/L to 110 mg/L and below the minimum threshold.
- Management zone 1B (minimum threshold = WQO = 150 mg/L): Median chloride concentration of 110 mg/L was below the minimum threshold.
- Management zone 4 (minimum threshold = WQO = 100 mg/L): Median chloride concentration range: 40 mg/L to 91 mg/L and below the minimum threshold.
- Management zone 5 (minimum threshold = WQO = 150 mg/L): Median chloride concentrations range: 99 mg/L to 100 mg/L and below the minimum threshold.

Nitrate

Median nitrate concentrations were below the minimum thresholds in all five Alluvial Aquifer management zones (Table 3.4).

- Management zone 1A (minimum threshold = WQO = 45 mg/L): Median nitrate concentration range: 14.36 mg/L to 29.66 mg/L and below minimum threshold.
- Management zone 1B (minimum threshold = WQO= 45 mg/L): Median nitrate concentration of 19 mg/L and below minimum threshold.
- Management zone 4 (minimum threshold = WQO = 45 mg/L): Median nitrate concentration range: 8.72 mg/L to 19.59 mg/L and below minimum threshold.
- Management zone 5 (minimum threshold = WQO = 45 mg/L): Median nitrate concentration range: 5.5 mg/L to 8.2 mg/L and below minimum threshold.

Sulfate

Overall, median sulfate concentrations were below minimum thresholds across the five Alluvial Aquifer management zones, except in management zone 1B where sulfate exceeded this sustainability criteria (Table 3-4). However, as described above, sulfate concentrations in zone 1B's RMS well remained within its historical range and showed an overall decreasing trend within the evaluation period (Figure 3-46b).

- Management zone 1A (minimum threshold = WQO = 150 mg/L): Median sulfate concentration range: 91 mg/L to 150 mg/L and below or at the minimum threshold.
- Management zone 1B (minimum threshold = AWQ = 269 mg/L): Median sulfate concentration of 350 mg/L exceeded the minimum threshold. However, the stability of sulfate concentrations with respect to its historical range and the overall decreasing trend within the evaluation period confirm that the exceedance of minimum threshold for this constituent is not indicative of groundwater quality degradation in management zone 1B (Figure 3-46b).
- Management zone 4 (minimum threshold = WQO = 250 mg/L): Median sulfate concentration range: 140 mg/L to 200 mg/L and below the minimum threshold.
- Management zone 5 (minimum threshold = WQO = 350 mg/L): Median sulfate concentration range: 220 mg/L to 250 mg/L and below the minimum threshold.

Summary of Minimum Thresholds for Salt and Nutrient Concentrations – Alluvial Aquifer

Chloride and nitrate concentrations remained below their minimum thresholds in the Alluvial Aquifer management zones during the evaluation period, while TDS and sulfate were below or at their minimum thresholds except in management zone 1B. However, zone 1B's exceedances for TDS and sulfate do not, by themselves, indicate worsening of groundwater quality because concentrations showed overall stable or decreasing trends, with no indication that exceedances were caused by groundwater extraction.

3.3.2.2.2 Saugus Formation

Because WQOs have not been established specifically for the Saugus Formation (i.e., recommended WQO's, LARWQCB (2016)), minimum-threshold exceedances could not be directly evaluated for

management zone 6 during the water year 2020 through 2025 period. The median concentrations for salt and nutrients for management zone 6 are shown in Table 3.4.

3.3.2.3 Interim Milestones

The GSP defined two interim milestones for the degraded water quality sustainability indicator. The first interim milestone called for establishing a monitoring program for private domestic and agricultural wells and developing baseline groundwater quality data (GSI et al., 2022). The second interim milestone called for demonstrating that groundwater extraction and GSA activities do not cause an exceedance of relevant water quality standards or objectives in private domestic and agricultural wells (GSI et al., 2022).

Since adoption of the GSP, SCV-GSA has made progress toward implementing the first interim milestone, including development and implementation of a voluntary groundwater quality monitoring program. SCV-GSA has identified candidate domestic wells and conducted outreach to these owners to encourage participation. While these activities have established a framework for expanding groundwater quality monitoring, participation in the program has been limited. SCV-GSA will continue outreach and data collection over the next five years to support achieving these interim milestones.

3.3.3 Undesirable Results

The GSP defines undesirable results for the degraded water quality sustainability indicator, pertaining to salts and nutrients, using spatial and causal criteria. Specifically, the GSP defines undesirable results as groundwater pumping that either (1) causes concentrations of TDS, chloride, nitrate, and sulfate to exceed minimum thresholds in 20 percent of RMS wells within a management zone, or (2) puts new state permits for distribution of recycled water at risk (GSI et al., 2022).

During the evaluation period, minimum threshold exceedances were identified only for TDS and sulfate in Alluvial Aquifer management zone 1B (Section 3.3.2.2). Management Zone 1B is represented by a single RMS well (VWD-U4); therefore, an exceedance at this well represents 100 percent of the RMS wells within the management zone, satisfying the GSP's 20-percent spatial criterion for an undesirable result. However, TDS and sulfate concentrations at VWD-U4 continued a long-term declining trend throughout the evaluation period, indicating a gradual improvement in groundwater quality rather than ongoing degradation (Figures 3-43b and 3-46b). The observed minimum threshold exceedances may instead reflect localized geologic and geochemical conditions, including natural dynamic of dissolved salts and sulfate within the aquifer, rather than impacts associated with groundwater pumping. Importantly, elsewhere in the Basin, median salt and nutrient concentrations remained below minimum thresholds (Section 3.3.1).

These observations suggest that the minimum threshold exceedances are unrelated to groundwater pumping or GSA activities, and that they do not represent significant and unreasonable effects associated with the degraded water quality sustainability indicator.

3.3.4 Impacts to Beneficial Uses and Users

The trends observed during the evaluation period suggest that salt and nutrient concentrations remain suitable for beneficial uses and users in the Basin. Specifically, TDS, chloride, nitrate, and sulfate

concentrations remain generally consistent with the applicable WQO and within the AWQ-to-WQO concentration range established in the Salt and Nutrient Management Plan, suggesting that assimilative capacity remains available. The exception is management zone 1B, where TDS and sulfate did not achieve the applicable sustainability management criteria; however, as discussed in Section 3.3.3, these exceedances reflect pre-existing baseline conditions and do not indicate groundwater quality degradation during the evaluation period.

3.3.5 Progress Towards Achieving Sustainability

Overall, the concentrations and trends in salt and nutrient concentrations in the Alluvial Aquifer and Saugus Formation progress towards achieving and maintaining the sustainability goal for the Basin.

3.3.6 Relevant Recommended Corrective Actions

DWR issued one recommended corrective action (RCA) related to degraded water quality (DWR, 2024). This RCA, and SCV-GSA's response, is described below.

3.3.6.1 Recommended Corrective Action 3

DWR's recommended corrective action 3 stated:

RCA 3A. Describe undesirable results pertaining to contaminants with a combination of exceedances of minimum thresholds in the Subbasin and select representative monitoring sites to monitor contaminant concentrations. Establish minimum thresholds, measurable objectives, and interim milestones pertaining to contaminants in the manner required by the GSP Regulations.

RCA 3B. Clarify whether agricultural wells will be included in the efforts to fill water quality data gaps and whether contaminants will be sampled in agricultural wells.

SCV GSA Response to RCA 3A

Undesirable Results Pertaining to Contaminants

The GSP describes historical perchlorate and VOC contamination in the Basin and its relation to operations at the Whittaker-Bermite Facility (GSI et al., 2022). Groundwater contamination from the Whittaker-Bermite site was discovered in the late 1990s in Saugus Formation Municipal Wells. Groundwater from the Whittaker-Bermite site moves downgradient in an approximate westerly direction consistent with historical groundwater flow directions.

Since the late 1990s, other downgradient municipal wells have been affected by perchlorate. Today municipal wells Saugus 1, Saugus 2, V-201, V-205, and Q-2 have had perchlorate detections greater than the MCL, and as a result, restoration of the municipal groundwater supply from each well means these wells include perchlorate treatment systems, and some also contain VOC removal systems. These wells are considered in an Interim Remedial Action Plan (IRAP), approved by the State's Department of Toxic Substances Control. The IRAP recognizes that restoration of the municipal water supply wells, via addition of groundwater treatment, means that these wells will extract contaminated groundwater. Through operation of these wells, perchlorate and VOC mass within the well capture zones can be removed from the aquifer.

Perchlorate and VOC contamination is regulated by state regulatory agencies including the Division of Drinking Water, the Los Angeles Regional Water Quality Control Board, and the Department of Toxic Substances Control. Each agency has certain statutory authorities to regulate and respond to regional groundwater contamination issues. The SCV GSA does not have such authorities. Given the complexity of the regional perchlorate and VOC plume, and that certain municipal wells affected by the plume are operated under a state approved Interim Remedial Action Plan, the SCV-GSA did not draft its GSP to define minimum thresholds for perchlorate or VOCs.

SCV Water has historically coordinated with LARWQCB, DTSC, and Division of Drinking Water (DDW) to address perchlorate and VOC detections at their wells. In 2023, SCV Water prepared an Updated and Amended Interim Remedial Action Plan (EKI, 2023) to document the implementation and status of interim remedial measures to address a portion of the Saugus Formation groundwater impacted by perchlorate and other chemicals released from the Whittaker-Bermite site. The report also addresses changed conditions since the Water Purveyors submitted the 2005 IRAP, and the IRAP Addendum to DTSC. The report also provides assessments of the adequacy and effectiveness of the remedial actions implemented and performed to date.

The 2023 IRAP report concludes that, among other things, more work is needed to delineate the lateral and vertical extent of contamination and that contamination at the Whittaker-Bermite site is not fully contained onsite, allowing impacts to SCV Water's municipal wells.

Groundwater in the basin is primarily extracted for municipal purposes. The basin contains certain municipal wells now also considered in the Interim Remedial Action Plan to draw in contaminated groundwater for restoration of municipal groundwater supply, and to remove perchlorate and/or VOC mass in the well's capture zone. These (IRAP) wells and their treatment systems are complex and as such subject to numerous state regulatory permitting requirements, and occasional down time for repair or rehabilitation.

Perchlorate and VOC contamination at municipal water supply wells has historically resulted in long-term operational impacts to SCV Water (EKI, 2023). These (IRAP) wells provide benefit to groundwater clean up but the size of the plume is such that the well capture zones do not capture 100 percent of the contaminated water downstream from the Whittaker-Bermite site.

What this means is that municipal wells downstream from the IRAP wells may be affected by perchlorate and/or VOCs over time due to the natural gradient of groundwater. Because perchlorate and VOC contamination can result in long-term impacts to water supply wells in the Basin, restoring a municipal well and to meet state water quality requirements after MCL exceedances may take 5 to 10 years. SCV-GSA has defined an undesirable result for contaminants to be:

> *"One or more regulatory exceedances at production wells in the Basin not currently equipped with a perchlorate and/or VOC treatment system."*

Proposed Sustainable Management Criteria

Consistent with the definition of an undesirable result and 23 CCR § 354.28 (c)(4), SCV-GSA has defined the following sustainable management criteria:

Minimum Threshold

One or more additional production wells (excluding wells currently equipped with perchlorate treatment systems: Saugus 1, Saugus 2, V-201, V-205 (under construction) and Q-2) exceeding regulatory thresholds (i.e., Maximum Contaminant Levels) for perchlorate and/or VOCs.

Measurable Objectives

Zero additional production wells exceeding regulatory thresholds.

Interim Milestones

Water quality that does not affect the ability to meet anticipated demands specified in the 2025 Urban Water Management Plan.

Contaminant Monitoring

Monitoring for perchlorate and VOCs is conducted at production wells by SCV Water under the requirements of the Division of Drinking Water. Additionally, requirements to monitor Monitoring wells are in place from Department of Toxic Substances Control and Division of Drinking Water. Containment and remediation of the perchlorate and VOC plumes originating from the Whittaker-Bermite facility are the responsibility of the LARWQCB, DTSC, and DDW.

Monitoring wells installed under the Sustainable Groundwater Management grant include locations intended to support delineation of the perchlorate plume, which will improve the ability to evaluate these criteria. SCV-GSA intends to utilize a subset of the newly constructed monitoring wells in the Saugus Formation (DW-9 and DW-10) and Alluvial Aquifer (AL-15) as sentry wells to evaluate perchlorate and VOC concentrations near existing production wells that have not historically experienced MCL exceedances (**Figure 3-51**). These monitoring wells will be sampled semiannually by SCV Water.

Additional Considerations

The groundwater contamination plume from Whittaker-Bermite has existed for decades, and with newly filled data gaps in the basin, such as with newly installed DWR funded monitoring wells, more is known about the nature and distribution of the perchlorate and VOC plume.

While these new criteria in the Periodic Evaluation respond to DWR's recommended corrective action by establishing quantifiable goals and metrics for contaminant management under the GSP, the SCV GSA points out that regional groundwater flow is transporting contaminants in the natural flow direction and, in the future MCL exceedances may take place in additional wells along the natural groundwater flow path. Groundwater extraction from municipal production wells may be less likely the cause of exceedances compared to the natural direction of groundwater flow. Further, actions under the IRAP help to reduce contaminant mass in the capture zone of those wells, providing some reduction in contaminant mass that would naturally flow downgradient toward other wells. The LARWQCB, DTSC, and DDW remain the regulatory agencies responsible for regulation of the contaminant plume. Considering this, SCV-GSA has developed a management action that supports effective collaboration and communication between agencies if an undesirable result occurs in the Basin during the GSP implementation horizon.

<u>Proposed Management Action:</u> Coordinate with DTSC In the Event that Perchlorate and/or VOC Contamination Impacts Additional Offsite Production Wells

SCV Water has long standing relationships with DTSC, DDW, and LARWQCB regarding groundwater quality issues in the basin. The SCV GSA is not the party responsible for the historical contamination, nor is it the regulatory agency in charge of addressing the contamination, it is however a key stakeholder in the basin.

The SCV-GSA will use available groundwater quality data from wells to provide early warning of potential migration of contaminants. These data sources may include monitoring wells upgradient of wells such as Saugus 3, Saugus 4, V-206, V-207, or other production wells, including future wells.

If monitoring indicates increasing perchlorate and/or VOC concentration that may pose a risk to a production well that is not currently equipped with a perchlorate and/or VOC treatment system, the SCV-GSA will notify DTSC of the concern and seek DTSC's engagement to direct and require evaluation and cleanup by the responsible party to protect the production well or wells.

Conditions that may initiate the above management action include

- An increasing concentration trend at a sentry well indicating potential downgradient migration of perchlorate and/or VOCs toward a production well.
- An increasing concentration trend at a municipal well not currently equipped with treatment for perchlorate and/or VOCs indicating potential downgradient migration of perchlorate and/or VOCs toward a production well.
- An MCL exceedance at a sentry well.
- An MCL exceedance at an production well that is not currently equipped with treatment for perchlorate and/or VOC.

SCV-GSA Response to RCA 3B

Agricultural wells will not be included in the efforts to fill water quality data gaps or evaluate contaminant concentrations at this time. These wells are located in the western part of the Basin, far downgradient of the known offsite perchlorate and VOC plume extents. If minimum thresholds are exceeded at additional wells, and/or if future data suggests ongoing downgradient contaminant migration, then SCV-GSA will evaluate the need to sample agricultural wells to better characterize degraded water quality conditions.

3.3.7 Revisions to the Sustainable Management Criteria

In addition to establishing new sustainable management criteria for contaminants, SCV-GSA is updating the sustainable management criteria for salts and nutrients. The revisions are intended to better distinguish groundwater quality degradation associated with groundwater pumping or GSA activities from exceedances associated with pre-existing groundwater quality conditions, natural variability, and limitations in the spatial distribution of RMS wells. These revisions also address comments from DWR requesting additional clarity on well-by-well sustainable management criteria concentrations (DWR, 2024).

3.3.7.1 Salt and Nutrients

As described in Sections 3.3.2 and 3.3.3, concentrations of salts and nutrients have generally remained stable or decreased since adoption of the GSP. These conditions do not indicate degradation of water quality during GSP implementation. However, application of the existing sustainable management criteria can result in minimum threshold exceedances, and potentially indicate an undesirable result, where groundwater quality has not deteriorated.

This outcome results in part from a mismatch between SNMP criteria, which were established for each groundwater-management-zone, and their application to individual RMS wells. The SNMP characterizes AWQ at the management-zone scale using groundwater quality data from 2001 through 2011, yet groundwater quality at individual wells may differ because of natural variability and pre-existing groundwater quality conditions. In addition, the number of RMS wells varies among management zones and does not reflect the exact set of wells used in the SNMP to calculate AWQ concentrations.

To better distinguish groundwater quality degradation associated with groundwater pumping or GSA activities from pre-existing conditions, SCV-GSA is revising the sustainable management criteria. The revisions aim to establish measurable objectives and minimum thresholds at individual wells using the applicable WQOs and the 2001-2011 well-specific median concentrations from the historical period used in the SNMP, rather than the management zone AWQ concentrations derived from those medians. Specifically, the applicable management-zone WQOs are used as the RMS well-specific measurable objectives, while the minimum thresholds are defined as the greater of the applicable WQO or the 2001–2011 median concentration for the constituent measured at each RMS well. The revisions to the degraded groundwater quality sustainable management criteria apply only to the Alluvial Aquifer RMS well network because WQOs have not been established for the Saugus Formation (LARWQCB, 1994, 2019). Accordingly, the sustainable management criteria framework cannot be applied to Saugus Formation RMS wells. The revised criteria are described below and shown in Table 3-5.

Measurable Objectives

Measurable objectives for salt and nutrients will remain equal to the applicable WQOs established in the Basin Plan (LARWQCB, 2016), but will be assigned on a per-well basis using the RMS well network. As described above, this approach only applies to the Alluvial Aquifer because the Basin Plan has not established WQOs for the Saugus Formation.

Minimum Thresholds

Minimum thresholds will be established individually for each RMS well and each salt and nutrient constituent as the higher of:

- The applicable WQO; or
- The median concentration measured at the RMS well during the 2001-2011 period used by the SNMP to characterize ambient groundwater quality and assimilative capacity (GSSI, 2016).

This approach maintains the applicable WQO as the minimum threshold where historical groundwater quality was better than the WQO. Where concentrations have historically exceeded the WQO, the well-specific historical concentration provides the minimum threshold, allowing subsequent changes in groundwater quality to be evaluated relative to conditions that existed prior to GSP implementation. As

described above, this approach only applies to the Alluvial Aquifer because the Basin Plan has not established WQOs for the Saugus Formation.

3.3.7.2 Contaminants

SCV-GSA's proposed sustainable management criteria for contaminants are described previously in section 3.3.6.

3.3.8 Revisions to the Definition of an Undesirable Result

3.3.8.1 Salt and Nutrients

Under the revised criteria, an undesirable result for salts and nutrients is defined as concentrations that exceed the minimum thresholds in 20 percent or more of the RMS wells in the Alluvial Aquifer. Because WQOs have not been established for the Saugus Formation (LARWQCB 1994, 2019), the minimum threshold cannot be revised and the undesirable result cannot be evaluated. Evaluating the occurrence of an undesirable result across the RMS network within the Alluvial Aquifer reduces the sensitivity of the determination to individual management zones with limited RMS coverage and better reflects the occurrence of Basin-wide water quality degradation. The salt and nutrient concentrations in Saugus Formation will continue to be monitored. The concentration trends will be compared against the most conservative WQO established in the Alluvial Aquifer and the 2001-2011 median concentrations measured at a given Saugus Formation RMS well.

3.3.8.2 Contaminants

SCV-GSA's proposed definition of an undesirable result for contaminants is described previously in section 3.3.6.

Table 3-5. Proposed Measurable Objectives and Minimum Thresholds for Groundwater Sustainability Criteria Pertinent to Salt and Nutrients for Representative Monitoring Sites.

Representative Monitoring Site	Constituents							
	TDS (mg/L)		Chloride (mg/L)		Nitrate (mg/L)		Sulfate (mg/L)	
	Measurable Objective	Minimum Threshold	Measurable Objective	Minimum Threshold	Measurable Objective	Minimum Threshold	Measurable Objective	Minimum Threshold
Alluvial Aquifer								
NWD-Pinetree5	800	800	150	150	45	45	150	150
SCWD-NorthOaksCentral	800	800	150	150	45	45	150	150
SCWD-SandCanyon	800	**808**	150	150	45	45	150	**175**
VWD-U4	800	**983**	150	150	45	45	150	**406**
SCWD-Guida	700	**703**	100	100	45	45	250	250
VWD-N	700	700	100	100	45	45	250	250
VWD-Q2	700	700	100	100	45	45	250	250
VWD-W11	700	700	100	100	45	45	250	250
NLF-B20	—	—	—	—	—	—	—	—
NWD-Castaic4	1,000	1,000	150	150	45	45	350	350
VWD-D	1,000	1,000	150	150	45	45	350	350
VWD-E17	—	—	150	150	—	—	350	350
Saugus Formation[a]								
Evaluation Metric								
Representative Monitoring Site	**WQO[a]**	**2001-2011 Median**	**WQO[a]**	**2001-2011 Median**	**WQO[a]**	**2001-2011 Median**	**WQO[a]**	**2001-2011 Median**
Library-C	—	—	—	—	—	—	—	—
NC13-HSU5a	—	—	—	—	—	—	—	—
VWD-160	700	815	100	27	45	12	—	335
VWD-206	700	786	100	100	45	45	—	271

Notes:

WQO = Water Quality Objective (LARWQCB, 2016)

Measurable Objectives are set at WQO (LARWQCB, 2016)

In **bold** – minimum thresholds equal to 2001-2011 median concentrations of the constituent reported in SNMP (2016).

[a] Because water quality objectives have not been established for the Saugus Formations, concentration values shown in this table section do not represent formal sustainable management criteria. Here, Saugus Formation WQOs reflect the most conservative alluvial management zone's WQO values used in the 2016 SNMP to calculate the assimilative capacity for salt and nutrients in Saugus Formation. However, salt and nutrient concentrations in the Saugus Formation will be monitored relative to the concentrations shown below to evaluate concentration trends throughout GSP implementation.

3.4 Seawater Intrusion Sustainability Indicator

Seawater intrusion is not an applicable sustainability indicator for the Basin (GSI et al., 2022).

3.5 Land Subsidence Sustainability Indicator

This section summarizes current (i.e., water year 2025) land subsidence conditions in the Basin and their relation to conditions since the end of the GSP reporting period (i.e., water year 2019) and the sustainable management criteria established in the GSP. The GSP defined land subsidence sustainable management criteria to prevent significant and unreasonable subsidence that could interfere with groundwater supply, land uses, infrastructure, or property interests. Land subsidence is evaluated using Interferometric Synthetic Aperture Radar (InSAR) data and land-surface elevation measurements collected at Los Angeles County benchmark locations (GSI et al., 2022).

3.5.1 Land Surface Elevation Trends

The following subsections summarize recent land surface elevation trends throughout the Basin and evaluate observed conditions relative to the sustainable management criteria established in the GSP.

3.5.1.1 Subsidence Conditions

Land subsidence in the Basin is monitored using three complementary datasets: satellite based Interferometric Synthetic Aperture Radar (InSAR) measurements of ground surface displacement for the July 2015 through July 2025 period of record, a network of 12 locally established benchmarks surveyed semiannually (in spring and fall), and the background UNAVCO SKYB continuous global positioning system station (**Figure 3-52**; GSI et al., 2022).

During the evaluation period, available data indicates that groundwater extraction did not cause measurable land subsidence in the Basin. Since 2015, total displacement within the Basin has not exceeded -0.2 foot (or a local average displacement of 0.03 feet per year) anywhere in the Basin, except for a localized area at the Chiquita Canyon Landfill (Figure 3-52). Monitoring at the locally established benchmarks began in 2024. Between October 2024 and September 2025, the 12 local benchmarks recorded net changes ranging from -0.09 foot to +0.01 foot, with two benchmarks (MP05 and MP06) showing no net change (**Figure 3-53**; GSI, 2026).

The observed changes are small, fall within the combined uncertainty of the InSAR and benchmark survey methods, and show no persistent downward trend indicative of inelastic compaction.

3.5.1.2 Areas of Potential Subsidence Concern

The only area exhibiting localized cumulative subsidence greater than approximately 0.2 foot since June 2015 is the Chiquita Canyon Landfill, located just north of Highway 126 at the western edge of the Basin (Figure 3-52. Satellite-Observed Vertical Displacement (July 2015 through July 2025) and Benchmark Locations for Ground-Based Land Subsidence Monitoring). This area is underlain by the Saugus Formation and not by the Alluvial Aquifer. The observed land surface change at this location is attributable to cutting and filling operations at the landfill and is not associated with groundwater

extraction from the Basin (GSI, 2026). Because this change is not caused by groundwater conditions, it does not represent land subsidence for purposes of the land subsidence sustainability indicator.

3.5.2 Sustainable Management Criteria

The GSP establishes the minimum threshold for land subsidence as an average of 0.1 feet of subsidence in any single year and a cumulative 0.5 foot of subsidence in any 5-year period, as observed at 10 percent or more of the monitoring locations (GSI et al., 2022; GSI, 2026). The GSP defines an undesirable result for land subsidence as significant and unreasonable, permanent (inelastic) subsidence caused by groundwater extraction that substantially interferes with surface land uses, impacts the use of critical infrastructure and roads, or results in subsidence greater than the minimum thresholds at 10 percent of the monitoring locations (GSI et al., 2022). The measurable objective for land subsidence is to maintain current average ground surface elevations, reflecting the absence of observed permanent subsidence in the Basin.

During the evaluation period, no monitoring location exceeded either the single year (0.1 foot) or the 5-year (0.5 foot) minimum threshold (Figure 3-52 and 3-53). Further, the available monitoring data does not indicate that groundwater extraction has caused measurable subsidence, and the observed conditions do not substantially interfere with land uses, infrastructure, groundwater supply, or property interests. Accordingly, no undesirable result related to land subsidence occurred during the evaluation period.

3.5.3 Impacts to Beneficial Uses and Users

Significant and unreasonable land subsidence could adversely affect beneficial uses and users by damaging groundwater supply wells and other infrastructure, roads, utilities, flood control facilities, and buildings, and by affecting land uses and property interests. During the evaluation period, no land subsidence attributable to groundwater extraction was identified, and no impacts to these uses, users, or facilities were reported (GSI, 2026). The localized land surface change at the Chiquita Canyon Landfill is attributable to landfill operations rather than to groundwater conditions.

3.5.4 Progress Toward Achieving Sustainability

Land surface elevation monitoring during the evaluation period, using InSAR, semiannual benchmark surveys, and the UNAVCO SKYB station, indicates that no subsidence exceeding the GSP minimum thresholds occurred at any monitoring location, that the small elevation changes observed are consistent with elastic responses to seasonal groundwater level fluctuations rather than permanent inelastic subsidence, and that no undesirable result occurred. These conditions indicate that the Basin remained consistent with the sustainability goal for the Basin (GSI, 2026).

3.5.5 Relevant Recommended Corrective Actions

DWR issued one recommended corrective action related to the land subsidence sustainability indicator:[9]

[9] This RCA includes two separate parts. Part B, which requests additional clarification of the sustainable yield, is discussed in Section 5 of this periodic evaluation.

RCA 1A. Identify data gaps and uncertainty associated with the hydrogeologic conceptual model including the extent, depths, and thicknesses of the semi-confining clay layers and their physical properties found in the Saugus Formation. Explain how these data gaps and uncertainty will be resolved. Discuss any uncertainty in other aspects of the Plan such as the flow model, sustainable yield calculations, and subsidence estimates that may exist prior to resolving the data gaps.

SCV-GSA Response to RCA 1A

Hydrogeologic Conceptual Model Update

The GSP defines the hydrogeologic conceptual model (HCM) for the Basin using measured data that characterizes the geologic setting and lateral and vertical extents of the subsurface materials that affect groundwater resources, and development, within the Basin. Since adoption of the GSP, SCV-GSA has implemented multiple studies to refine its understanding of the hydrogeologic setting of the Basin. This has included:

- Implementation of a high-resolution LiDAR survey to better characterize land surface elevations, particularly along Santa Clara River where there is known riparian and aquatic habitat that rely on groundwater.
- Implementation of a focused geophysical survey along the Santa Clara River to improve the understanding of the contact between the Alluvial Aquifer and Saugus Formation in the vicinity of Round Mountain.
- Evaluation and review of newly available water well and oil and gas well geophysical and lithologic logs.
- Construction of five new shallow groundwater monitoring wells and continuous water level and temperature monitoring equipment to characterize conditions underlying known riparian and aquatic habitat.
- Four years of habitat monitoring and biological surveys to determine the presence of undesirable results to GDE areas from groundwater extraction.
- Implementation of a subsidence risk study to characterize the susceptibility of the Saugus Formation to groundwater extraction-induced compaction (RC Slade, 2026).
- Use of DWR grant funds for construction of 15 new depth-discrete monitoring wells to better understand local hydrogeologic conditions and water quality, including use of data to constrain groundwater flow directions and vertical gradients between the Alluvial Aquifer and the Saugus Formation.

Updated Interpretations of Principal Aquifers

In 2025, SCV-GSA updated the Hydrogeologic Conceptual Model of the Basin, using the Leapfrog Geo 3D software, refining both the lateral extents and thicknesses of the Alluvial Aquifer and Saugus Formation (Geosyntec, 2025). The Hydrogeologic Conceptual Model is supported by an extensive dataset, including well logs, geophysical surveys, and historical geologic maps and cross sections. The primary changes to the HCM are as follows:

- Updates of the surface elevation of the Alluvial Aquifer based on different data sources and team discussions. Data sources include the older Digital Elevation Model, a more recent LiDAR survey, and a 2020 geologic map by RC Slade. Some very detailed updates were also carried forward in the vicinity of the Santa Clara River near Interstate 5 relying on boring logs, a 2025 geophysical survey, and previously published geologic cross sections. Overall, the lateral and vertical refinements resulted in a net increase of over 1.5 billion yards of alluvium across an area of ~85 square miles.
- Updates to the lateral and vertical extent of the Saugus Formation, including the top of its "Sunshine Ranch" member were also made. Data utilized included formation picks of the Saugus Formation's Hydrostratigraphic Units (HSUs), use of e logs, and previously published geologic cross sections. The Saugus Formation was extended approximately one mile to include previously mapped surficial outcrops. Further the Santa Clarita Aquifer Zone was also added into the HCM; this zone is characterized by a laterally extensive coarse-grained interval near the Saugus Formation and Sunshine Ranch Member contact and serves as a primary water producing interval for many of the high-yielding Saugus Formation wells. Overall, 16 billion cubic yards of the Saugus Formation (primarily related to the extension of the Saugus Formation surface outcrop) were added.

Subsidence Potential Evaluation

In 2026, SCV-GSA conducted a detailed land subsidence evaluation using new and re-evaluated geophysical and borehole data (R.C. Slade, 2026). The evaluation reviewed InSAR, continuous GPS, and benchmark survey data to assess historical land-surface elevation changes and compare projected groundwater levels with the depths of fine-grained sediments identified from borehole geophysical data and lithologic logs. Importantly, the evaluation incorporated data from two Saugus Formation wells constructed after completion of the GSP, both of which in an area just west of Interstate 5 where data were limited during GSP development (R. C. Slade, 2026).

Key findings from the evaluation included:

- Land surface elevation data do not show evidence of subsidence related to groundwater extraction.
- Available geophysical and lithologic data do not show the presence of laterally extensive, compressible, fine-grained materials.

The evaluation concluded that subsidence potential in the Basin remains low, supporting the continued monitoring and adaptive management strategy established in the GSP to manage this sustainability indicator (GSI et al., 2022)

Data Gaps and Uncertainties in the HCM

As part of this periodic evaluation, SCV-GSA has performed a quantitative assessment of data gaps and uncertainties in the HCM (Geosyntec, 2025). The primary data gaps and uncertainties in the HCM are:

- Lateral Data Distribution: Lateral distribution of data is sufficient for a Basin scale map, but not for detailed interpretations. In peripheral areas, data gaps exist in the northeast, south, and eastern portion of the basin where limited data on the Saugus Formation is present.

- Geologic Unit Data Distribution: Primary data are formation picks from water and oil and gas wells, with supporting information from geologic mapping and limited geophysical surveys (near Santa Clara River and Interstate 5)
- Limited measurements of aquifer properties in the peripheral areas of the Basin.
- Uncertainty regarding the thickness, extent, and lateral continuity of well-defined clay layers within the Saugus Formation that may create local confining conditions and may be susceptible to inelastic deformation.
- Uncertainty regarding the location of groundwater upwelling to, and degree of connection with, the Santa Clara River upgradient of the new GDE-B well.
- Uncertainty in the role of tectonic forces on land surface elevation measurements, for example with the San Gabriel Fault showing evidence of Holocene displacement in some areas.

Path to Resolving Data Gaps in the HCM

Spatial Data Gaps in the Peripheral areas of the Basin

SCV-GSA is conducting ongoing outreach to domestic and small system well owners in the peripheral areas of the Basin to obtain well construction and groundwater level information that will help fill these spatial data gaps. SCV-GSA will integrate these data into the HCM opportunistically, as information is collected from these operators or new wells are drilled in the Basin. While these data gaps exist and remain, uncertainty in the hydrogeologic setting of these peripheral areas of the Basin does not impact the management strategies that aim to avoid undesirable results in the Basin.

Clay Layers

The GSP identified that the Basin has limited potential for subsidence related to groundwater extraction (GSI et al., 2022). Additionally, the GSP also acknowledged data gaps related to the lateral continuity and presence of clay layers that may be susceptible to compaction within the Saugus Formation (GSI et al., 2022; DWR, 2024). To address this data gap, SCV-GSA implemented a technical evaluation of available downhole geophysical data and well logs aimed at identifying clay lenses that may be susceptible to compaction (RC Slade, 2026). This study demonstrated that laterally extensive, thick clay or confining layers are not known to exist in the Saugus Formation (RC Slade, 2026).

While the updated study continues to support the interpretation of low subsidence potential, SCV-GSA's approach for addressing remaining data gaps will rely on adaptive management that focuses on monitoring land surface elevation changes as groundwater development from the Saugus Formation increases. Additionally, as new wells are drilled, the prevalence of fine-grained, compactible materials will be evaluated to assess the current understanding of land subsidence risks in the Basin.

Effects of HCM Uncertainties on GSP Implementation

Uncertainty in the HCM propagates into the groundwater flow model because the model uses the interpreted aquifer geometry and properties to simulate groundwater flow, groundwater-surface water interactions, changes in storage, and the effects of pumping. The model represents the heterogeneous aquifer system using generalized hydrostratigraphic units and equivalent average hydraulic properties.

Accordingly, localized features, including discontinuous fine-grained layers within the Saugus Formation, may not be represented at the scale of individual wells.

While these uncertainties remain, they do not prevent implementation of, or effective management under, the GSP because Basin conditions are evaluated using observed data at RMS. Model results and the sustainable yield estimate support planning and evaluation of Basin management strategies, but they do not replace monitoring and are not used to define the onset of undesirable results in the Basin.

SCV-GSA will continue reducing data gaps by incorporating new data from depth-discrete monitoring wells, groundwater-level and temperature monitoring, aquifer testing, new well completion reports and geophysical logs, GDE monitoring, and land-surface elevation monitoring. These data will be incorporated into future HCM and groundwater flow model updates.

3.5.6 Revisions to the Sustainable Management Criteria

Land surface elevations and subsidence rates measured over the evaluation period indicate that the sustainable management criteria established in the GSP remain appropriate for the next five years.

3.5.7 Revisions to the Definition of an Undesirable Result

Land surface elevations and subsidence rates measured over the evaluation period indicate that the undesirable result definition established in the GSP remains appropriate for the next five years.

3.6 Depletion of Interconnected Surface Water

This section evaluates the depletion of interconnected surface water conditions during the evaluation period and compares observed conditions with the sustainable management criteria established in the GSP. The GSP addresses this sustainability indicator by evaluating groundwater levels in Alluvial Aquifer wells, together with habitat monitoring and biological surveys. Since adoption of the GSP, SCV-GSA has expanded its understanding of groundwater-surface water interactions through installation of dedicated GDE monitoring wells, annual monitoring of riparian habitat and surface water conditions, and continued refinement of the Basin's HCM and groundwater flow model.

3.6.1 Groundwater and Surface Water Conditions along Santa Clara River

3.6.1.1 Shallow Groundwater Conditions

Shallow groundwater conditions associated with interconnected surface water were evaluated using a network of eight groundwater monitoring wells located adjacent to the Santa Clara River, San Francisquito Creek, and Castaic Creek (**Figure 3-54**). The network includes three monitoring wells with long-term records (NLF-W5, NLF-E, and NLF-G3) and five dedicated GDE piezometers (GDE-A through GDE-E) that were installed in 2022 to monitor shallow groundwater conditions adjacent to the Santa Clara River. The monitoring network is generally grouped into three main sections (i.e., reaches) (Figure 3-53; GSI et al., 2022):

- **Reach 1:** Which includes the lower portion of San Francisquito Creek and portions of the Santa Clara River upstream of the Valencia Water Reclamation Plant (WRP).

- **Reach 2:** Which includes the lower portions of Castaic Creek and the portions of the Santa Clara River between the Valencia WRP and its confluence with Castaic Creek.
- **Reach 3:** Which covers the portion of the Santa Clara River downstream of its confluence with Castaic Creek, extending downstream to the Basin boundary.

The long-term monitoring wells along San Francisquito Creek (NLF-W5, Reach 1) and Castaic Creek (NLF-E, Reach 2) exhibited the greatest seasonal and interannual variability, including declines of approximately 20 to 30 feet during the 2012 to 2016 drought followed by increases of similar magnitude during the wetter periods encountered over the past five years (**Figures 3-55a through 3-55h**). Along the Santa Clara River, groundwater levels generally exhibited less variability than measured at NLF-W5 and NLF-E. In the easternmost well along the Santa Clara River (Reach 1), upstream of the confluence with San Francisquito Creek, groundwater levels at GDE-A increased during the wet 2023 and 2024 water years before stabilizing through the end of water year 2025. At GDE-A, groundwater levels varied from a low of approximately 1,092 ft NAVD88 (or approximately 35 ft bgs) to a high of approximately 1,120 ft. NAVD88 (or approximately 9 ft bgs).

Near Interstate 5, and downgradient of the confluence with San Francisquito Creek, groundwater levels at GDE-B remained consistently shallow and exhibited comparatively little seasonal or interannual variability relative to GDE-A and NLF-W5. Since monitoring began in April 2022, groundwater levels at GDE-B have remained shallower than 7.5 ft bgs (Figure 3-55b). Farther downgradient, groundwater levels at GDE-C remained within approximately 3 ft bgs. These conditions are consistent with its location downstream of the Valencia WRP, where treated effluent is discharged to the Santa Clara River (GSI et al., 2022). Farther downgradient, but upstream of Castaic Creek, groundwater elevations measured at NLF-G3 were encountered deeper than GDE-C (at depths ranging generally between 15 and 25 feet and elevations ranging between 975 and 985 ft NAVD88; Figure 3-55g).

At GDE-D and GDE-E, the two westernmost GDE monitoring wells in the Basin, groundwater was consistently shallow and remained within 10 feet of ground surface (Figure 3-55d and 3-55e). Importantly, groundwater level measurements at these two wells were impacted by flooding events in January 2023:

- GDE-D was destroyed due to flooding.
- Groundwater levels at GDE-E deepened due to migration of the Santa Clara River channel following flooding.

3.6.1.2 Surface Water and Habitat Conditions

Annual monitoring of GDE habitat conditions began in 2022 following adoption of the GSP (ESA, 2023). In 2023, SCV-GSA implemented a formal GDE Monitoring Protocol that integrates groundwater elevations, vegetation condition, and surface-water observations to evaluate whether groundwater extraction is causing an undesirable result. Importantly, the protocol establishes habitat monitoring at 10 locations, generally co-located with the network of GDE groundwater monitoring wells, to locally monitor and quantify:

- The presence or absence of surface water.
- Vegetation canopy extent.

- Vegetation condition and stress (quantified using the EVI metric).
- Changes in general habitat and river condition as observed through repeat photography and reflected in the Biological Field Monitoring Datasheets.

Table 3.6 summarizes the habitat conditions observed over the past four years of GDE monitoring.

Results from SCV-GSA's monitoring activities demonstrate that habitat conditions across the Basin remained relatively stable despite significant variability in hydrologic conditions. The wet 2023 water year generally resulted in increased greenness and surface water extent relative to the dry 2022 water year. Additionally, while surface water flows generally declined from 2023 through the end of the evaluation period, riparian canopy extent generally remained stable and vegetation at most locations exhibited only local signs of minor stress.

The most notable localized change in habitat conditions was at ML-Ga/b, which experienced increased cottonwood and willow stress and a reduction in surface water flows from 2023 through 2025. These changes were attributed to a change in channel morphology that resulted from flooding in January 2023, rather than being attributable to groundwater extraction (ESA, 2024).

Based on the results of these monitoring activities, SCV-GSA concluded that the observed changes in groundwater, surface water, and habitat conditions do not indicate the onset of an undesirable result related to depletion of interconnected surface water arising from groundwater extractions (ESA, 2023, 2024a, 2024b, 2026).

Table 3.6. Summary of GDE Field Monitoring Results, Water Years 2022 through 2025.

Monitoring Location	Field Monitoring Findings				Summary of Changes
	2022 Dry Water Year	2023 Wet Water Year	2024 Wet Water Year	2025 Dry Water Year	
ML-A	Minor localized vegetation stress; surface water present.	Vegetation greenness increased; surface water increased substantially during the wet year.	No new canopy-edge stress; EVI increased slightly; surface water decreased from 2023.	Mild mulefat browning; EVI decreased slightly but remained healthy; surface water increased slightly.	Riparian extent remained stable. Surface water responded to hydrologic conditions, while vegetation remained generally healthy.
ML-AA	Minimal to moderate localized stress; no surface water observed.	Stress generally unchanged; EVI increased; three flowing channels observed.	No new canopy-edge stress; EVI increased slightly; surface water increased to five channels.	Slight increase in localized deadwood and dieback; EVI decreased slightly; four flowing channels observed.	Riparian extent remained stable. Surface water increased through 2024 and declined slightly in 2025.
ML-B	Moderate localized deadwood, branch dieback, and leaf drop; surface water present.	Vegetation condition generally unchanged; EVI and surface-water extent increased.	Historic stress persisted; no new canopy-edge stress; EVI decreased slightly; surface water decreased.	Similar vegetation condition; one fewer surface-water channel and slight reduction in surface water.	Persistent localized stress, but no progressive degradation. Surface water varied with hydrologic conditions.
ML-C	-	Minimal vegetation stress; surface water present.	No visible canopy-edge stress; EVI increased slightly; surface water decreased.	No visible canopy-edge stress; EVI decreased slightly; one fewer flowing channel.	Riparian condition remained stable; surface water declined following the wet 2023 conditions.
Seepage Location	-	Minimal vegetation stress; surface water not evaluated.	No visible canopy-edge stress; EVI increased slightly; surface water not evaluated.	No visible canopy-edge stress; EVI remained similar; surface water not evaluated.	No material change in riparian condition.
ML-F	-	Minimal stress with localized fire effects; robust native recruitment; abundant surface water.	No visible canopy-edge stress; EVI increased slightly; surface water decreased.	No visible canopy-edge stress; EVI remained similar; slight increase in surface-water volume.	Riparian habitat remained stable despite interannual changes in surface water.
ML-FF	-	Minimal stress; robust native recruitment; surface water present.	No visible canopy-edge stress; EVI increased slightly; surface water decreased.	No visible canopy-edge stress; EVI and surface water generally unchanged.	Riparian condition remained stable.
ML-Ga/b	-	Minimal vegetation stress; surface water present.	Increased browning, leaf drop, and deadwood; notable decrease in EVI; surface water generally unchanged.	Additional cottonwood dieback and standing dead willows; surface water decreased from four channels to one.	Greatest localized habitat change in the network, attributed to river-channel migration following the 2023 floods.
ML-NLFE	-	Minimal stress with localized fire effects; intermittent surface water reported.	Minor leaf browning; no surface water observed.	No visible canopy-edge stress; EVI similar to 2024; slight increase in surface water.	Minor localized stress and variable surface water; no sustained habitat decline.
San Francisquito Creek	-	Minimal vegetation stress; no surface water observed.	No visible canopy-edge stress; EVI increased slightly; no surface water observed.	No visible canopy-edge stress; EVI decreased slightly; no surface water observed.	Riparian condition remained stable; no flowing surface water observed during the monitoring period.

Notes: EVI = Enhanced Vegetation Index

3.6.2 Sustainable Management Criteria

The GSP establishes sustainable management criteria for depletion of interconnected surface water to protect GDEs and aquatic habitat from adverse effects caused by groundwater extraction. Specifically, the GSP defines an undesirable result for this sustainability indicator as (GSI et al., 2022):

- Permanent loss or significant degradation of existing native riparian or aquatic habitat due to lowered groundwater levels caused by groundwater extraction.
- In areas that currently provide essential habitat to UTS and native fishes (sensitive aquatic species in the vicinity of Interstate 5 Bridge), cessation of surface flow and pools during low-flow conditions in the river channel caused by groundwater extraction.

To evaluate these conditions, the GSP established groundwater-elevation-based sustainable management criteria at eight shallow GDE monitoring wells located adjacent to the Santa Clara River, San Francisquito Creek, and Castaic Creek (Figure 3-54, GSI et al., 2022). At each monitoring location, SCV-GSA establishes three groundwater-elevation-based management criteria:

- **Measurable objective**, representing the average future modeled groundwater elevation at each well.
- **Minimum threshold**, representing the lowest future predicted groundwater elevation at each well.
- **Trigger level**, representing the lowest historical low groundwater elevation at each well. At GDE-A and GDE-B, trigger levels were established two feet above model-estimated historical low water levels to provide additional protection for native fish habitat near the Interstate 5 Bridge.

While not a requirement under SGMA, SCV-GSA established trigger levels to provide additional protection of the Basin's environmental resources. Exceedance of the trigger level initiates an evaluation of groundwater, surface water, and habitat conditions to determine whether groundwater extraction is contributing to potential impacts and whether management actions are warranted.

Importantly, five of the eight GDE monitoring wells were constructed after adoption of the GSP. Because these wells had not yet been installed, the GSP established groundwater elevation criteria for GDE-A through GDE-E using projected well locations, anticipated construction details, and modeled groundwater elevations. Following construction of these piezometers in 2022, SCV-GSA refined these criteria using surveyed land-surface elevations, as-built well construction information, and updated model results (GSI, 2022).

The refined criteria, referred to in the GSP Annual Reports as "Tentative Revised" thresholds, are used throughout this Periodic Evaluation to evaluate compliance with the measurable objectives, minimum thresholds, and trigger levels because they are based on the post-GSP actual constructed well locations, surveyed reference elevations, and construction details (rather than relying on the estimates and assumptions available during GSP development).

3.6.2.1 Measurable Objectives

In water year 2022, the first full year of monitoring following construction of the GDE piezometers, groundwater elevations were higher than the tentative revised measurable objectives at five of the eight representative monitoring sites (Table 3.7). Groundwater elevations generally increased across

these wells through the evaluation period, with most monitoring locations remaining above their measurable objectives through water year 2025 (Table 3.7; Figures 3-55a through 3-55h).

The exception to this increasing trend was GDE-E, where groundwater elevations declined after the January 2023 flooding events (Table 3.7, Figure 3-55e). As described above, this decline is attributable to the local migration of the Santa Clara River channel and does not reflect a groundwater production-induced decline.

3.6.2.2 Minimum Thresholds and Trigger Levels

During the evaluation period, groundwater elevations remained above the tentative revised minimum thresholds and trigger levels at all GDE monitoring wells. Seasonal low groundwater elevations approached the tentative trigger level at GDE-E, but the declines measured at this well are associated with Santa Clara River channel migration (Table 3.7, Figures 3-55a through 3-55h)

3.6.2.3 Interim Milestones

The GSP did not establish interim milestones for depletion of interconnected surface waters (GSI et al., 2022).

Table 3.7–Seasonal Low Groundwater Levels and Groundwater Level Sustainable Management Criteria Adapted Post GSP and Revised, GDE-RMS network.

Well	Minimum Threshold (feet NAVD88)		Measurable Objective (feet NAVD88)		GDE Trigger (feet NAVD88)		Seasonal Low Groundwater Level (feet NAVD88)					
	GSP	Tentative Revised	GSP	Tentative Revised	GSP	Tentative Revised	2020	2021	2022	2023	2024	2025
NLF-E	977	976	1,000	1,003	981	990	--	--	1,009	1,019	1,010	1,018
NLF-G3	959	960	980	980	975	967	981	**974**	**976**	983	982	981
NLF-W5	1,087	1,086	1,119	1,127	1,108	1,111	--	--	**1,123**	1,155	1,154	1,145
GDE-A	1,087	1,057	1,103	1,092	1,089	1,068	Not constructed		1,093	1,107	1,112	1,107
GDE-B	1,059	1,034	1,062	1,046	1,062	1,036	Not constructed		1,046	1,048	1,049	1,049
GDE-C	1,024.5	984	1,035	1,005	1,027	990	Not constructed		1,007	1,009	1,010	1,010
GDE-D	930	915	934	929	932	916	Not constructed		**923**	Destroyed by flooding		
GDE-E	860	851	861	855	860	851	Not constructed		858	856	**852**	**852**

Notes:

Minimum Thresholds, Measurable Objectives, and Triggers were updated to "Tentative Revised" elevations after construction of wells GDE-A through GDE-E and land surveying conducted at NLF-E, NLF-G3, and NLF-W5.

In bold, values below the revised Measurable Objective but above the revised Minimum Threshold

3.6.3 Undesirable Results

As described above, the GSP defines an undesirable result associated with depletion of interconnected surface waters as (GSI et al., 2022):

- Permanent loss or significant degradation of existing riparian or aquatic habitat due to lowered groundwater elevations caused by pumping.
- Temporary acute loss of aquatic habitat in locations critical to sensitive aquatic species due to lowered groundwater elevations caused by pumping.

During the evaluation period, groundwater elevations remained above the tentative revised minimum thresholds and trigger levels at all GDE monitoring wells (Table 3.7; Figures 3-55a through 3-55h)[10]. Concurrent habitat monitoring documented generally stable riparian canopy, healthy vegetation conditions, and no progressive loss of surface water habitat attributable to groundwater extractions. Although localized changes in habitat condition were observed at several habitat monitoring locations, these changes were generally attributable to migration of the Santa Clara River channel due to flooding events (ESA, 2023a, 2023b, 2025, 2026). Collectively, these data indicate that undesirable results associated with depletions of interconnected surface water did not occur during the evaluation period.

3.6.4 Impacts to Beneficial Uses and Users

During the evaluation period, no adverse impacts to beneficial uses and users associated with depletion of interconnected surface water were identified. Groundwater elevations remained above the tentative revised GDE trigger levels and minimum thresholds, and habitat monitoring did not identify permanent loss or significant degradation of GDEs or aquatic habitat attributable to groundwater extraction. Localized changes in groundwater, surface water, and habitat conditions were observed but were attributed to climate-related hydrologic or geomorphic processes.

3.6.5 Progress Toward Achieving Sustainability

Groundwater, surface water, and habitat monitoring conducted since adoption of the GSP identified no undesirable results associated with depletion of interconnected surface water. These findings indicate that GSP implementation remains on track to achieve and maintain the sustainability goal for the Basin.

3.6.6 Relevant Recommended Corrective Actions

DWR issued one recommended corrective action for the depletion of interconnected surface water (RCA 4A through 4D):

> *RCA 4A. Define how the GSA determines an undesirable result occurring in the Subbasin with one or more minimum threshold exceedances as required by the GSP Regulations.*

[10] Figures 3-54a through 3-54h show that groundwater elevations dropped below the minimum thresholds established in the GSP. However, as described above, these thresholds were set using incorrect land surface elevations that placed the thresholds higher than land surface. Because of this, these sustainable management criteria are not used to evaluate the occurrence of an undesirable result.

RCA 4B. Consider utilizing the interconnected surface water guidance, as appropriate, when issued by the Department to establish quantifiable minimum thresholds, measurable objectives, and management actions.

RCA 4C. Continue to fill data gaps, collect additional monitoring data, and implement the current strategy to manage depletions of interconnected surface water and define segments of interconnectivity and timing.

RCA 4D. Prioritize collaborating and coordinating with local, state, and federal regulatory agencies as well as interested parties to better understand the full suite of beneficial uses and users that may be impacted by pumping induced surface water depletions within the GSA's jurisdictional area.

SCV-GSA Response to RCA 4A

The GSP establishes minimum thresholds for depletion of interconnected surface water using groundwater elevations measured at GDE RMS wells. The GSP also establishes GDE trigger levels above the minimum thresholds to provide an early indication of groundwater conditions that could adversely affect GDEs or aquatic habitat. When a GDE trigger is reached or approached, Section 9.5.5 of the GSP requires SCV-GSA to initiate an evaluation to determine whether lowered groundwater levels and potential depletion of interconnected surface water are attributable to groundwater extraction and could result in significant and unreasonable effects (GSI et al., 2022).

The existing framework for GDE evaluation under the GSP considers multiple lines of evidence, including the presence of surface water and WRP-supported flows, groundwater elevations relative to vegetation rooting depths, the duration and frequency of lowered groundwater conditions, observed vegetative stress or habitat degradation, and the relative influence of groundwater extraction and hydrologic conditions on observed groundwater-level declines. The GSP requires the evaluation to be documented in an Evaluation Report, which is used to determine whether management actions are warranted to avoid an undesirable result. The GSP further provides implementation of management actions before significant and unreasonable effects occur.

To address this RCA, SCV-GSA will clarify that this existing evaluation process also provides the basis for determining whether an undesirable result has occurred following exceedance of one or more minimum thresholds. Exceedance of a minimum threshold at one or more GDE RMS wells will initiate, or if already initiated following a trigger exceedance, continue the evaluation process described in Section 9.5.5 of the GSP (GSI et al., 2022). A minimum threshold exceedance alone does not constitute an undesirable result because the GSP's definition of an undesirable result also requires an adverse effect to GDEs or aquatic habitat that is attributable to groundwater extraction.

Accordingly, SCV-GSA will determine that an undesirable result has occurred when one or more minimum threshold exceedances are accompanied by monitoring evidence that demonstrates either:

- Permanent loss or significant degradation of existing native riparian or aquatic habitat due to lowered groundwater elevations caused by groundwater extraction; or
- Temporary acute loss of aquatic habitat in locations critical to sensitive aquatic species due to lowered groundwater elevations caused by groundwater extraction.

SCV-GSA Response to RCA 4B

SCV-GSA understands that DWR is still developing guidance to support effective management of this sustainability indicator. When released, SCV-GSA will consider the contents and applicability of the guidance documentation and evaluate the appropriate use of the recommendations to manage the transient, locally interconnected sections of the Santa Clara River.

SCV-GSA Response to RCA 4C

SCV-GSA is continuing to implement monitoring programs that have been established following adoption of the GSP, including:

- Habitat monitoring along the Santa Clara River.
- GDE water level monitoring.

SCV-GSA Response to RCA 4D

Through implementation of its Stakeholder Communication and Engagement Plan, SCV-GSA coordinates with environmental groups and interests to support effective monitoring and evaluation of habitat conditions within the Santa Clara River. These coordination efforts have, and will continue to, inform management of depletions of interconnected surface water. SCV-GSA and its member agencies will continue to prioritize this collaboration and coordination as a regular part of GSP implementation.

3.6.7 Revisions to the Sustainable Management Criteria

Following installation and survey of the GDE piezometers in 2022, SCV-GSA developed tentative revised sustainable management criteria to correct land-surface elevation errors in the original GSP criteria (Table 3.7). As part of this Periodic Evaluation, SCV-GSA is formally adopting the tentative revised sustainable management criteria at all wells except GDE-B. At GDE-B, the sustainable management criteria are being further revised to more directly relate groundwater elevations to aquatic habitat near Interstate 5. The revised GDE trigger at this location is established at 2 feet below the adjacent Santa Clara River thalweg (1,041 ft NAVD88) and the minimum threshold is established at 4 feet below the thalweg (1,039 ft NAVD88).

SCV-GSA will re-evaluate sustainable management criteria at four monitoring locations following planned monitoring network improvements in fiscal year 2027-28. GDE-A, GDE-D, and GDE-E will be replaced because these wells have been damaged or otherwise affected by flooding and Santa Clara River channel migration, while NLF-G3 will be replaced with a dedicated monitoring well because it has been reactivated for irrigation. Following construction of the replacement wells and collection of site-specific monitoring information, SCV-GSA will evaluate whether additional revisions to the sustainable management criteria are warranted.

3.6.8 Revisions to the Definition of an Undesirable Result

SCV-GSA has not identified the need to revise the definition of an undesirable result for depletion of interconnected surface water based on the additional monitoring and site-specific information collected since adoption of the GSP.

4.0 Status of Projects and Management Actions [Article 5, § 356.4(b),(f)]

§ 356.4 (b) *A description of the implementation of any projects or management actions, and the effect on groundwater conditions resulting from those projects or management actions.*

(f) A description of significant new information that has been made available since Plan adoption or Amendment, or the last five-year assessment. The description shall also include whether new information warrants changes to any aspect of the Plan, including the evaluation of the basin setting, measurable objectives, minimum thresholds, or the criteria defining undesirable results.

This section of the periodic evaluation summarizes SCV-GSA implementation activities related to the projects and management actions identified in the GSP (GSI et al., 2022). Since adoption of the GSP, SCV-GSA 's implementation program has included two related components: (1) implementation of the projects and management actions identified in the adopted GSP, and (2) technical investigations, monitoring expansion, analysis, and agency coordination undertaken to address the four RCAs included in DWR's January 2024 approval determination. Much of the RCA-response work was implemented through, or directly supported by, the GSP's existing management actions for addressing data gaps (Section 4.1.1); monitoring, reporting, and outreach (Section 4.1.2); actions related to GDE triggers (Section 4.1.5); and agency coordination (Section 4.2.1).

Table 4-1. Summary of Projects and Management Actions

Project or Management Action Name	Project or Management Action Description	Targeted Sustainability Indicator	Project Status	Expected Schedule	Benefits Observed to Date or Anticipated Benefits	Estimated Accrued Benefits at Completion
Projects to Address Data Gaps	Install piezometers in the GDE area; survey reference point elevations; and establish domestic well water quality sampling, subsidence benchmarks, and upland GDE assessment.	All five sustainability indicators	Ongoing; most elements completed between 2022 and 2025	Initiated upon GSP adoption. Implementation is ongoing.	GDE, subsidence, and upland GDE monitoring established; water level data referenced to a common datum	Improved understanding of Basin conditions and expanded monitoring coverage
Monitoring, Reporting, and Outreach	Direct the GSP Section 7 monitoring programs, maintain the data management system, prepare annual reports, and conduct new monitoring and stakeholder outreach.	All five sustainability indicators	Ongoing	Initiated upon GSP adoption. Implementation is ongoing.	Data record supporting the sustainability evaluation; expanded stakeholder engagement	Sustained data collection and refinement of the sustainable management criteria over time
Promoting Best Water Use Practices	Rely on existing municipal conservation and promote best management practices among private and de minimis well operators.	All five sustainability indicators	Ongoing	Implementation is ongoing.	Continued municipal conservation; non-de minimis metering program in progress	Water conservation supporting drought preparedness

Project or Management Action Name	Project or Management Action Description	Targeted Sustainability Indicator	Project Status	Expected Schedule	Benefits Observed to Date or Anticipated Benefits	Estimated Accrued Benefits at Completion
Actions if Minimum Thresholds Are Reached or Undesirable Results Are Confirmed	Evaluate the cause of any minimum threshold exceedance and, if attributable to extraction, implement pumping, supply, and conservation actions by sustainability indicator.	Chronic lowering of groundwater levels, reduction of groundwater in storage, water quality, and subsidence	Not triggered during the evaluation period	Triggered by a minimum threshold exceedance or undesirable result	No undesirable results confirmed; actions not required	Avoidance of undesirable results if triggered
Actions if GDE Triggers Are Reached or Approached	Evaluate whether GDE trigger exceedances are caused by pumping and, if a potential undesirable result is indicated, implement pumping, supply, and outreach actions to protect GDEs.	Depletion of interconnected surface water (GDEs)	Biological assessments conducted; no undesirable results for four consecutive years	Triggered when GDE trigger levels are approached or reached	No undesirable results to GDEs; trigger and SMC refinements planning and contracting for the installation	Protection of riparian and aquatic habitat
Agency Coordination	Ongoing coordination with state and local agencies with authority over land use, water supply, and water quality.	All five sustainability indicators	Ongoing	Ongoing function	Coordinated monitoring and evaluation; support for responses to DWR corrective actions	Effective, coordinated basin management
Removal of Invasive Species	Support efforts led by others to remove invasive species (primarily Arundo donax) along the Santa Clara River; not required under the GSP.	Depletion of interconnected surface water (GDEs)	No SCV-GSA-funded project identified during the evaluation period	Not required; supports efforts by others	None reported	Not quantified in the GSP

Project or Management Action Name	Project or Management Action Description	Targeted Sustainability Indicator	Project Status	Expected Schedule	Benefits Observed to Date or Anticipated Benefits	Estimated Accrued Benefits at Completion
Optional Managed Aquifer Recharge Projects	Optional recharge using stormwater, excess imported water, or recycled water to augment supplies and improve drought resiliency.	Chronic lowering and storage	Optional; not required or implemented (no undesirable results identified)	Optional; no schedule	None (not implemented)	Improved drought resiliency if implemented

4.1 Basin-Wide Management Actions

The basin-wide management actions described in the GSP were developed to support the attainment and maintenance of sustainability (GSI et al., 2022). These actions include projects to address data gaps; monitoring, reporting, and outreach; the promotion of best water use practices; actions to be taken if minimum thresholds are reached or undesirable results are confirmed; and actions to be taken if GDE triggers are reached or approached (GSI et al., 2022).

Each management action is described below, including its targeted sustainability indicators, implementation triggers, status during the evaluation period, and observed and expected benefits.

4.1.1 Projects to Address Data Gaps

The GSP identified several data gaps to be addressed through this management action, including groundwater levels within the GDE area, reference point elevations for monitoring locations (including the riverbed near GDE monitoring wells), domestic well water quality, subsidence benchmarks for monitoring land surface elevation, and verification and assessment of potential upland GDEs. The associated activities include installing piezometers within the GDE area, conducting reference point elevation surveys, establishing a domestic well water quality sampling program, establishing subsidence benchmarks, and verifying and assessing potential upland GDEs (GSI et al., 2022).

4.1.1.1 Targeted Sustainability Indicators

Addresses all five applicable sustainability indicators.

4.1.1.2 Implementation Triggers

This management action has been implemented proactively by SCV-GSA since adoption of the GSP.

4.1.1.3 Project Status

Since adoption of the GSP, SCV-GSA:

- Installed five GDE piezometers (2022)
- Completed reference point elevation surveys for monitoring locations, including at the GDE monitoring wells (2022), and conducted a LiDAR survey of the perennial reach of the Santa Clara River
- Identified initial candidate domestic wells for water quality monitoring
- Initiated the upland GDE monitoring program
- Initiated the subsidence monitoring program (spring 2024), with the 12 land surface elevation benchmarks first surveyed in May 2024.

The upland GDE verification and assessment was completed, and a final report was presented to the SCV-GSA Board of Directors in June 2025 (ESA, 2025). The assessment found no evidence that upland GDEs are present, except for isolated pools in Placerita Canyon, an upstream tributary watershed far from the Santa Clara River, that are not affected by groundwater extraction (ESA, 2025).

Ongoing activities include:

- Monthly and quarterly monitoring of groundwater levels at representative monitoring sites in the GDE area
- Semiannual surveying of the subsidence benchmarks, which were first surveyed in May 2024 to establish a baseline elevation and have been surveyed semiannually since, most recently in September 2025
- Outreach for a voluntary de minimis domestic well water quality monitoring program; and

In addition to this, SCV-GSA has managed planning and contracting for the installation of additional monitoring wells under a Sustainable Groundwater Management grant (SCV-GSA, 2025, 2026).

4.1.1.4 Project Benefits

4.1.1.4.1 Benefits Observed to Date

The management action improved the understanding of Basin conditions by establishing the GDE, subsidence, and upland GDE monitoring programs, referencing groundwater level data to a common vertical datum, and initiating a study of domestic wells (SCV-GSA, 2026).

4.1.1.4.2 Expected Benefits

The GSP anticipated that addressing data gaps would result in an improved understanding of groundwater levels in the GDE area, improved accuracy and correlation of water level elevations among monitoring sites, an improved understanding of domestic well water quality, and improved monitoring of land surface elevations and identification of potential land subsidence resulting from groundwater pumping (GSI et al., 2022).

4.1.2 Monitoring, Reporting, and Outreach

This management action comprises the core functions that SCV-GSA performs to comply with SGMA, including directing the monitoring programs described in Section 7 of the GSP, routinely evaluating monitoring data to track progress toward sustainability and identify potential undesirable results, maintaining a data management system (DMS), and preparing annual reports. The action also includes new monitoring not previously conducted, including domestic well water quality monitoring, GDE monitoring, subsidence monitoring, receipt of extraction data from non-de minimis well owners, and a de minimis self-certification program for domestic wells pumping less than 2 acre-feet per year (GSI et al., 2022).

4.1.2.1 Targeted Sustainability Indicators

Addresses all five applicable sustainability indicators.

4.1.2.2 Implementation Triggers

Implemented proactively by SCV-GSA upon adoption of the GSP. No specific triggers are required.

4.1.2.3 Project Status

Monitoring and reporting activities occurred throughout the evaluation period and are documented in the GSP Annual Reports (GSI, 2022, 2023, 2024, 2025, 2026). Groundwater elevation and other monitoring data were routinely reviewed and imported into the DMS, and annual reports were prepared and submitted. Outreach during the evaluation period included initiating the voluntary de minimis groundwater quality monitoring program and distributing associated materials, initiating GDE monitoring along the perennial reach of the Santa Clara River in coordination with FivePoint and its biological consultants, and enrolling non-de minimis well owners in the groundwater extraction reporting process (GSI, 2025, 2026).

4.1.2.4 Project Benefits

4.1.2.4.1 Benefits Observed to Date

The monitoring, reporting, and outreach program produced the data record used to evaluate Basin conditions relative to the sustainable management criteria, including the data supporting this periodic evaluation, and the data supporting expanded stakeholder engagement through the de minimis monitoring and non-de minimis reporting programs (GSI, 2026).

4.1.2.4.2 Expected Benefits

The GSP anticipated that monitoring, reporting, and outreach would increase the understanding of Basin conditions and, over time, support refinement of the sustainable management criteria (including potential modifications to minimum thresholds and GDE trigger levels) and increase community knowledge of groundwater sustainability (GSI et al., 2022).

4.1.3 Promoting Best Water Use Practices

The GSP anticipated that the conservation programs already implemented by municipal agencies are sufficiently conservative that SCV-GSA is not required to develop separate municipal conservation programs. Nonetheless, the GSP identifies that the SCV-GSA could encourage additional conservation; in particular, the GSP calls for SCV-GSA to work with private well operators through workshops or other programs to (1) communicate best water use practices and (2) encourage private pumpers to implement water use efficiency methods in the form of specific best management practices (BMPs). BMPs identified in the GSP include efficient irrigation practices, implementation of recycled water programs to reduce reliance on groundwater for irrigation, and use of soil and plant monitoring tied to evapotranspiration estimates to optimize irrigation (SCV-GSA, 2022a).

4.1.3.1 Targeted Sustainability Indicators

Addresses all five applicable sustainability indicators.

4.1.3.2 Implementation Triggers

This management action has been implemented proactively by SCV-GSA since adoption of the GSP.

4.1.3.3 Project Status

Since adoption of the GSP, SCV-GSA has continued planning and outreach for a non-de minimis metering program for non-municipal wells, which began in 2023, and continued discussing implementation of the program with well owners through water year 2025 (SCV-GSA, 2025, 2026).

4.1.3.4 Project Benefits

4.1.3.4.1 Benefits Observed to Date

Municipal water conservation, which is measured and reported by the municipal agencies, continued during the evaluation period. Groundwater conservation benefits attributable to best management practices by private well operators had not been quantified as of the end of the evaluation period (GSI et al., 2022, GSI, 2026).

4.1.3.4.2 Expected Benefits

The GSP anticipated that continuing conservation programs and initiating best management practices would conserve water and improve the Basin's preparedness for drought, although the GSP notes that the benefits attributable to best management practices by private well operators are difficult to quantify (GSI et al., 2022).

4.1.4 Actions if Minimum Thresholds are Reached or Undesirable Results are Confirmed

The GSP provides that, if a minimum threshold is exceeded, SCV-GSA will evaluate the cause and, if the exceedance is attributable to groundwater extraction or the data indicates that undesirable results are imminent, will implement management actions (GSI et al., 2022). For chronic lowering of groundwater levels and reduction of groundwater in storage, these actions may include redistributing or reducing pumping, conducting additional releases from Castaic Lake, importing additional State Water Project or banked water, and/or implementing tiered water conservation. For degraded water quality, these actions may include wellhead treatment, arranging for an alternative water supply, or shifting or reducing pumping near the affected area. For land subsidence, the evaluation steps and management actions identified for chronic lowering of groundwater levels would be applied and directed to the affected regions (GSI et al., 2022).

4.1.4.1 Targeted Sustainability Indicators

This management action addresses the chronic lowering of groundwater levels, reduction of groundwater in storage, degraded water quality, and land subsidence sustainability indicators.

4.1.4.2 Implementation Triggers

This Management Action is triggered when a minimum threshold is exceeded or when monitoring data indicate that an undesirable result attributable to groundwater extraction is imminent (GSI et al., 2022).

4.1.4.3 Project Status

No minimum threshold exceedances attributable to groundwater extraction were identified during the evaluation period, and no undesirable results were confirmed. Accordingly, the management actions associated with minimum threshold exceedances were not required for the chronic lowering of

groundwater levels, reduction of groundwater in storage, degraded water quality, or land subsidence sustainability indicators (GSI, 2026).

4.1.4.4 Project Benefits

4.1.4.4.1 Benefits Observed to Date

Because no undesirable results were confirmed, no management actions under this element were implemented during the evaluation period. The monitoring and evaluation framework provided the basis for confirming that Basin conditions remained consistent with the sustainability goal (GSI, 2026).

4.1.4.4.2 Expected Benefits

The GSP anticipated that these actions, if triggered, would arrest and reverse the conditions contributing to an undesirable result until monitoring data indicate that the undesirable result has been eliminated (GSI et al., 2022).

4.1.5 Actions if GDE Triggers Are Reached or Approached

The GSP provides that if GDE trigger levels are approached or reached, then SCV-GSA will perform an evaluation to determine whether the condition is caused by groundwater extraction and whether it is likely to result in significant and unreasonable effects on GDEs (GSI et al., 2022). The evaluation considers, among other factors, whether the affected river reach is supported by surface flow from water reclamation plant discharges, whether the historical low groundwater level is already below vegetation rooting depths, whether the GDEs will survive a temporary loss of access to groundwater, how frequently the trigger has been reached, whether the declines result from pumping, and whether new information supports refinement of the trigger levels. If the evaluation indicates a potential undesirable result, then management actions may include shifting or stopping pumping near the GDEs, increasing imported or banked water, coordinating on water conservation, conducting outreach to private well owners, and/or, if necessary, developing projects to increase the amount of water in the river system (GSI et al., 2022).

4.1.5.1 Targeted Sustainability Indicators

Addresses the depletion of interconnected surface water sustainability indicator and the associated protection of groundwater-dependent ecosystems.

4.1.5.2 Implementation Triggers

Triggered when groundwater levels within GDE areas approach or reach the GDE trigger levels established in the GSP, which are set at the lowest historical groundwater levels (within the previous 50 years) and, in the area near the Interstate 5 bridge where sensitive aquatic species are present, at two feet above the lowest historical levels (GSI et al., 2022).

4.1.5.3 Project Status

SCV-GSA has conducted comprehensive habitat monitoring and biological assessments consistent with Section 8 of the GSP since adoption of the GSP (ESA, 2023, 2024a, 2024b, 2026). These evaluations did not identify undesirable results to GDEs, a result that has been reached for four consecutive years. As

part of the periodic evaluation, the initial GDE trigger levels and minimum thresholds are to be revised at the GDE monitoring locations (Section 3.6; GSI, 2026).

4.1.5.4 Project Benefits

4.1.5.4.1 Benefits Observed to Date

The GDE evaluation process functioned as designed during the evaluation period, providing a documented basis for concluding that no undesirable results to GDEs occurred and identifying refinements to the GDE trigger levels and sustainable management criteria to be incorporated into the GSP update (GSI, 2026).

4.1.5.4.2 Expected Benefits

The GSP anticipated that these actions, if triggered, would avoid water levels falling below historical lows and GDE trigger levels and would prevent the permanent loss or significant degradation of riparian and aquatic habitat (GSI, 2022a).

4.2 Other Groundwater Management Actions and Projects

4.2.1 Agency Coordination

This management action consists of the ongoing coordination that SCV-GSA maintains with the state and local agencies that have authority over land use, water supply, and water quality in the watershed, including the California Department of Fish and Wildlife, the Regional Water Quality Control Board, DWR, the California Department of Transportation, the State Water Resources Control Board, Los Angeles County, Los Angeles County, and the City of Santa Clarita (GSI et al., 2022).

4.2.1.1 Targeted Sustainability Indicators

Supports all five applicable sustainability indicators through coordinated management of land use, water supply, and water quality.

4.2.1.2 Implementation Triggers

Implemented proactively by SCV-GSA as an ongoing function. No specific triggers are required.

4.2.1.3 Project Status

Coordination continued throughout the evaluation period. SCV-GSA met with DWR's GSP review team to address DWR's RCAs and subsequently coordinated with DWR on formatting and updating the GSP's projects and management actions for DWR's SGMA data portal. SCV-GSA also continued to coordinate with FivePoint and its biological consultants on monitoring along the Santa Clara River corridor (GSI, 2025; 2026). This coordination is carried out within the framework of the Stakeholder Communication and Engagement Plan included in the GSP (GSI et al., 2022).

4.2.1.4 Project Benefits

4.2.1.4.1 Benefits Observed to Date

Coordination supported the shared monitoring and evaluation of Basin and habitat conditions and the development of responses to DWR's recommended corrective actions during the evaluation period (GSI, 2026).

4.2.1.4.2 Expected Benefits

The GSP anticipated that ongoing agency coordination would support effective management of the groundwater resources of the Basin, given that multiple agencies have authority over land use, water supply, and water quality in the watershed (GSI et al., 2022).

4.2.2 Removal of Invasive Species

Invasive plant species, primarily Arundo donax, have become established within the riparian area along the Santa Clara River and some of its tributaries. The GSP provides that, although not required, SCV-GSA will continue to support efforts by others to raise funds for invasive species removal projects (GSI et al., 2022).

4.2.2.1 Targeted Sustainability Indicators

Primarily relevant to the depletion of interconnected surface water sustainability indicator and the associated groundwater-dependent ecosystems.

4.2.2.2 Implementation Triggers

Not required under the GSP. SCV-GSA supports removal efforts led by others; no specific triggers are established.

4.2.2.3 Project Status

No invasive species removal project was funded or implemented by SCV-GSA during the evaluation period.

4.2.2.4 Project Benefits

4.2.2.4.1 Benefits Observed to Date

No benefits attributable to a SCV-GSA invasive species removal project were reported during the evaluation period.

4.2.2.4.2 Expected Benefits

The GSP did not require this action and identified it as support for efforts led by others; accordingly, the GSP did not quantify expected benefits (GSI et al., 2022).

4.2.3 Optional Managed Aquifer Recharge Projects

The GSP describes optional managed aquifer recharge projects that could use stormwater, excess imported water, or recycled water to augment groundwater supplies and improve the Basin's resiliency to extended drought. The conceptual projects include recharge at the Old Castaic School site and

potential eastern recharge, recharge using potable water in the vicinity of the Placerita Nature Center, off-stream recharge using recycled water, aquifer storage and recovery in the Saugus Formation, and restoration of Bouquet Canyon Creek. Because undesirable results from over-pumping have not been identified, implementation of these projects is not required and is considered optional (GSI et al., 2022).

4.2.3.1 Targeted Sustainability Indicators

Primarily relevant to the chronic lowering of groundwater levels and reduction of groundwater in storage sustainability indicators.

4.2.3.2 Implementation Triggers

Optional under the GSP. Not required because no undesirable results from over-pumping have been identified; no specific triggers are established (GSI et al., 2022).

4.2.3.3 Project Status

These projects remained optional during the evaluation period. Because no undesirable results from over-pumping were identified, no managed aquifer recharge project under this element was required or implemented.

4.2.3.4 Project Benefits

4.2.3.4.1 Benefits Observed to Date

No managed aquifer recharge project under this element was implemented during the evaluation period, and no associated benefits were reported.

4.2.3.4.2 Expected Benefits

The GSP anticipated that, if implemented, these optional projects would improve the resiliency of Basin groundwater resources to extended drought by making new water supplies available for recharge (GSI et al., 2022).

5.0 Basin Setting Based on New Information or Changes in Water Use [Article 5, § 356.4(d)]

§ 356.4 (d) *An evaluation of the basin setting in light of significant new information or changes in water use, and an explanation of any significant changes. If the Agency's evaluation shows that the basin is experiencing overdraft conditions, the Agency shall include an assessment of measures to mitigate that overdraft.*

This section provides an evaluation of the Basin setting based on new information and changes in Basin water uses.

5.1 Hydrogeologic Conceptual Model [§354.14]

Following adoption of the GSP, SCV-GSA completed additional hydrogeologic investigations and updated the three-dimensional hydrostratigraphic model used to characterize the Basin. The work incorporated new topographic, geophysical, water well, and geologic information to refine the representation of the Alluvial Aquifer, Saugus Formation, principal aquifers and production zones, and fault geometry, particularly near the Holser Fault, and was completed in support of DWR's RCA 1.

The principal HCM work completed since GSP adoption included:

- Conducting an electrical resistivity survey along the Santa Clara River near the Interstate 5 corridor to refine the interpreted contact between the Alluvial Aquifer and Saugus Formation.
- Developing a composite ground-surface elevation model that incorporates topobathymetric LiDAR data collected in July 2022, following GSP submission.
- Incorporating additional formation picks from water and oil-and-gas wells, Slade geologic cross-sections, and USGS geologic mapping.
- Refining the three-dimensional geometry of the Alluvial Aquifer and Saugus Formation.
- Adding the Santa Clarita Aquifer Zone as a distinct interval within the Saugus Formation.
- Extending and refining the three-dimensional hydrostratigraphic model of the Basin.

The updated information refines the geometry and extent of the hydrostratigraphic units that comprise the principal aquifers identified in the GSP (GSI et al., 2022). It does not identify any previously unrecognized principal aquifer or materially change the conceptual understanding of groundwater occurrence and flow in the Basin. However, the hydrogeologic conceptual model refinements were integrated into the groundwater flow model update described in Section 5.4, which evaluates the effects of these refinements on simulated groundwater conditions and the Basin water budget.

The geophysical investigation and three-dimensional geologic model updates completed by SCV-GSA are summarized below.

5.1.1 Hydrogeophysical Survey of the Santa Clara River Corridor

In February 2025, HGI conducted an electrical resistivity survey for SCV Water along the Santa Clara River near the Interstate 5 (I-5) corridor (HGI, 2025). The survey was intended to improve characterization of riverbed sediments, the contact between the Alluvial Aquifer and Saugus Formation,

and the depth to bedrock. Approximately 19,200 linear feet of resistivity data were collected along 11 survey lines, consisting of 10 cross-channel lines and one longitudinal line extending along the river corridor (HGI, 2025).

Key findings relevant to the Basin's principal aquifers include:

- **West of I-5 (Lines 1-4)**: The interpreted Alluvial Aquifer thickness generally ranged from 3 to 40 feet.
- **Between I-5 and San Francisquito Creek (Lines 5-9)**: Interpreted Alluvial Aquifer thicknesses ranged from approximately 5 to 65 feet along Lines 5-7. Along Lines 8 and 9, the base of the Alluvial Aquifer could not be clearly identified, suggesting that the Alluvial Aquifer extends beyond the maximum survey depths of 140 to 150 ft bgs.
- **East of San Francisquito Creek (Line 10)**: The base of the Alluvial Aquifer could not be clearly identified, suggesting the Alluvial Aquifer extends beyond the maximum modeled depth of 140 to 150 ft bgs.

This information was used to refine the interpreted contact between the Alluvial Aquifer and Saugus Formation near I-5 and subsequently integrated into the 3D geologic and hydrostratigraphic models of the Basin (Section 5.1.2).

5.1.2 3D Hydrostratigraphic Model Update

Following the hydrogeophysical investigation, SCV Water updated the 3D geologic and hydrostratigraphic models of the Basin. The updates incorporated the hydrogeophysical results, topobathymetric LiDAR data, formation picks from water wells and oil-and-gas wells, USGS geologic mapping, and additional cross-sections (Geosyntec, 2025). Key updates to the models are described below.

Alluvial Aquifer

The Alluvial Aquifer was updated primarily along channel margins and terrace contacts to better delineate its lateral extent and contact with the underlying Saugus Formation. Alluvial Aquifer thickness was also adjusted locally based on well information and the 2025 hydrogeophysical investigation. These refinements resulted in a net increase of approximately 1.5 billion cubic yards of alluvium across an area of approximately 85 square miles (Geosyntec, 2025).

Saugus Formation

The top of the Saugus Formation, which generally coincides with the base of the Alluvial Aquifer, was refined based on the updated Alluvial Aquifer interpretations. The Saugus Formation was extended approximately one mile to the southeastern boundary based on updated USGS mapping of surface outcrops (Geosyntec, 2025). Collectively, these refinements resulted in a net increase of approximately 16 billion cubic yards of Saugus Formation across an area of approximately 240 square miles. Most of this increase resulted from extending the formation, rather than updating its interpreted thickness (Geosyntec, 2025).

The updated model also revised the geometry of the Sunshine Ranch member at the base of the Saugus Formation based on USGS surface outcrop mapping (Geosyntec, 2025).

Santa Clarita Aquifer Zone

In addition to refining the Saugus Formation structure, the updated hydrogeologic conceptual model now recognizes a distinct water-bearing interval within the Saugus Formation, defined as the Santa Clarita Aquifer Zone. This is a laterally extensive, coarse-grained interval near the contact between the upper Saugus Formation and Sunshine Ranch Member and generally occurs between 800 to 1,500 ft bgs. While Santa Clarita Aquifer Zone is not recognized as a principal aquifer distinct from the Saugus Formation, it is an important production interval for several high-capacity Saugus Formation wells.

Sunshine Ranch Member

Similarly to Santa Clarita Aquifer Zone, the interpreted outcrop extent of the Sunshine Ranch Member, located at the base of the Saugus Formation, was also revised. Specifically, the Sunshine Ranch Member interpretation was revised to reflect geologic mapping indicating that the unit extends to the surface in the southeastern portion of the valley rather than pinching out entirely below ground. The updates resulted in revised interpretations of the top and base of the Sunshine Ranch Member and its extent south of the San Gabriel Fault.

5.1.3 Summary of Hydrogeologic Conceptual Model Updates

The technical work summarized above has improved representation of the Basin's hydrogeologic conceptual model and understanding of:

- The extent and thickness of the Alluvial Aquifer.
- The contact between the Alluvial Aquifer and Saugus Formation.
- The hydrostratigraphy of the Saugus Formation, including the Santa Clarita Aquifer Zone.
- The geometry of the Sunshine Ranch Member.

The updated information refines the spatial representation of features previously identified in the GSP but does not fundamentally change the hydrogeologic conceptual model or identify any previously unrecognized principal aquifers.

5.2 Groundwater Conditions [§354.16]

5.2.1 Land Subsidence Susceptibility Evaluation

The GSP concluded that the potential for future land subsidence in the Saugus Formation was uncertain because groundwater levels were projected to locally decline below historical levels and available data suggested that portions of the Basin may contain compressible fine-grained materials (GSI et al., 2022). However, these fine-grained materials were interpreted to occur several hundred feet below the historical and projected potentiometric surface in the Saugus Formation, and data were limited in the vicinity of the anticipated groundwater level declines (GSI et al., 2022).

In 2026, SCV-GSA conducted a detailed land subsidence susceptibility evaluation using new and re-evaluated geophysical and borehole data (R.C. Slade, 2026). The evaluation reviewed InSAR, continuous GPS, and benchmark survey data to assess historical land-surface elevation change. Projected groundwater levels were compared with the depths of fine-grained sediments identified from borehole

geophysical data and lithologic logs. Importantly, the evaluation incorporated data from two Saugus Formation wells constructed after completion of the GSP, both of which are located in an area just west of Interstate 5 where data were limited during GSP development (R. C. Slade, 2026).

Key findings from the evaluation included:

- Land surface elevation data do not show evidence of subsidence related to groundwater extraction.
- Available geophysical and lithologic data do not show the presence of laterally extensive, compressible, fine-grained materials.

Importantly, the evaluation concluded that subsidence potential in the Basin remains low, supporting the continued monitoring and adaptive management strategy established in the GSP to manage this sustainability indicator (GSI et al., 2022).

5.2.2 Updated Groundwater Quality Regulations

5.2.2.1 PFAS

Groundwater quality in portions of the Basin is affected by the presence of per- and polyfluoroalkyl substances (PFAS; GSI et al., 2022). SCV Water, the largest municipal water provider in the Basin, actively monitors and manages PFAS detections in its drinking water wells and uses its diverse water supply portfolio to reduce the effects of wells removed from service on overall water supply reliability (GSI et al., 2022).

On April 10, 2024, the U. S. Environmental Protection Agency (EPA) announced final National Primary Drinking Water Regulation for PFAS[11]. The regulation established maximum contaminant levels (MCLs) of 4 nanograms per liter (ng/L) for PFOA and PFOS and 10 ng/L for PFHxS, PFNA, and HFPO-DA. The regulation also established a Hazard Index MCL of 1 for mixtures containing two or more PFHxS, PFNA, HFPO-DA, and PFBS. However, in May 2025, the EPA announced its plan to rescind the MCL proposals for PFHxS, PFNA, GenX (HFPO-DA) and the Hazard Index. In May 2026, formally issued proposed rules and therefore the recission is a listed as proposed and not final. The EPA is retaining MCLs for PFOA and PFOS, but allowing qualifying water systems two additional years to comply, to 2031. In addition to these requirements, DDW has established nonregulatory, health-based advisory response and notification levels for six PFAS.[12]

The 2024 regulation established the following implementation schedule:

- Public water systems have three years to complete initial monitoring (by 2027).
- Public water systems have five years (by 2029) to implement solutions that reduce these PFAS if monitoring shows that drinking water levels exceed the MCLs.
- Beginning in five years (2029), public drinking water systems that have PFAS in drinking water which violates one or more of these MCLs must take action to reduce levels of these PFAS in their drinking water and must provide notification to the public of violation.

[11] https://www.epa.gov/sdwa/and-polyfluoroalkyl-substances-pfas
[12] https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/pfas.html

The new federal regulations affect the operation of public drinking-water systems but do not fundamentally change SCV-GSA's approach to sustainable groundwater management. SCV Water has monitored PFAS in its wells since 2019 and has responded to detections through removal of affected wells from service, permitted blending, and construction of groundwater treatment facilities (GSI et al., 2022; SCV Water, 2026). SCV-GSA will continue to evaluate PFAS concentrations and regulatory developments through GSP implementation.

5.3 Water Use Changes

The GSP characterized historical land uses and water supplies in the Basin through water year 2019. Since 2019, operators in the Basin have continued to rely on a broad portfolio of water supplies to meet agricultural, municipal, and industrial demands. This section summarizes the water supplies to the Basin from water year 2020 through water year 2025. Land use changes over the evaluation period are provided for context.

5.3.1 Land Use Changes Over the Evaluation Period

Land use change in the Basin over the evaluation period was assessed using DWR's statewide land use data for 2020 and 2024.[13] Land use data were grouped into four categories: agricultural, urban, unclassified, and idle (Table 5.2). The Basin encompasses approximately 67,700 acres in total, of which approximately 38,800 acres were mapped in DWR's crop mapping dataset in 2020 and 33,200 acres in 2024. On average across the two years, urban land comprised the largest of mapped land cover at roughly 35,000, while agricultural operations comprised approximately 575 acres of the mapped area (Table 5.2).

The total mapped area in DWR's datasets varies by approximately 5,631 acres between 2020 and 2024. This difference in areas is attributable to inconsistencies in spatial coverage (e.g., unmapped urban areas in the southeastern portion of the Basin in 2024) rather than actual land use change. The most notable land use change over the evaluation period is the reclassification of approximately 369 acres from agricultural use in 2020 to idle to or unclassified land by 2024. There is significant uncertainty in the unclassified and idle land use classification (Table 5.2).

Table 5.2. Land Use Changes in the Basin, 2020 to 2024

Land Use Categorization	Year		
	2020 (Acres)	2024 (Acres)	Difference (Acres)
Agricultural	759	390	-369
Urban	37,735	32,082	-5,653
Unclassified	293	369	76
Idle	0	315	315
Total	**38,787**	**33,156**	**-5,631**

Notes:
[a]Land cover data was obtained from the DWR SGMA Data Viewer, crop mapping dataset.

[13] Land use data for water year 2025 had not been published at the time of reporting.

[b]Mapped acreage does not fully cover the Basin and vary by year.

5.3.2 Water Supplies

Water supplies in the Basin consist of locally pumped groundwater, recycled water produced at the Valencia WRP, and imported water supplied by SCV Water. SCV Water's imported water portfolio includes the following supplies:

- Water recovered from the Semitropic Water Storage District and Rosedale Rio-Bravo Water Storage District water banks. These sources are classified as *State Water Project (SWP) Imported Water* for the purposes of this periodic evaluation.
- A firm supply of 11,000 AFY obtained through a purchase agreement with Buena Vista/Rosedale Rio-Bravo Water. This source is classified as *Local Imported Water* for the purposes of this periodic evaluation.
- Water obtained through exchange programs with the Antelope Valley-East Kern Water Agency and United Water Conservation District. These sources are classified as *State Water Project (SWP) Imported Water* for the purposes of this periodic evaluation.
- Water available under an option contract with the Yuba Accord Agreement with DWR and Yuba County Water Agency. This is classified as *Local Imported Water* for the purposes of this periodic evaluation.

Groundwater is pumped from the Alluvial Aquifer and Saugus Formation to meet municipal, agricultural, small public water system, golf course irrigation, and rural domestic demands. Groundwater is also extracted for remediation activities at the Whittaker-Bermite facility.

This section summarizes total water supplies in the Basin and compares them with historical and anticipated future water supply availability, as described in the GSP (GSI et al., 2022). Because the GSP provides data on water supplies through 2019, water supply data are summarized here for water years 2020 through 2025 using water use information that is provided in the annual reports submitted to DWR for each of these water years.

5.3.2.1 Groundwater Extraction

Groundwater extraction data are compiled from metered records, regulatory reports, and estimated pumping volumes, depending on use type (for example, see GSI, 2026):

- Municipal groundwater extraction is metered by SCV Water and LACWWD-36.
- Agricultural groundwater extraction is metered or estimated by FivePoint and the Walt Disney Company (Golden Oaks Ranch).
- Groundwater extracted as part of remediation activities at the Whittaker-Bermite facility is reported to DTSC.
- Rural Domestic extraction is estimated using the volumes cited in the Groundwater Flow Model development report (GSI et al., 2022).
- Small public water system extraction consists of metered pumping at the Pitchess Detention Center. Beginning in December 2021, the facility began providing a portion of its pumped groundwater to LACWWD-36.

- Golf course extraction is based on metered pumping from privately owned wells used for irrigation.

Table 5.3 summarizes total groundwater extractions in the Basin during the water year 2020 through 2025 period.

Table 5.3. Groundwater Extraction by Water Use Sector for Water Years 2020 to 2025.

Water Year	Water Use Sector							Total
	Municipal		Rural Domestic	Small PWS	Golf Courses	Agricultural	Whittaker-Bermite	
	SCV Water	LACWWD-36						
2020	17,909	1,132	500	1,338	706	8,013	469	30,067
2021	23,537	1,432	500	1,431	834	10,856	483	39,073
2022	22,900	306	500	2,322	343	11,815	497	38,683
2023	15,177	100	500	2,831	487	6,102	625	25,822
2024	13,607	6	500	2,784	497	3,620	570	21,584
2025	18,678	56	500	2,636	579	5,301	773	28,523
2020-2025 Average	**18,635**	**505**	**500**	**2,224**	**574**	**7,618**	**570**	**30,625**

Notes:

Totals may not match sum of values due to rounding.

Extraction volumes are in units of acre-feet.

PWS = Public Water System

5.3.2.1.1 Groundwater Extractions over the Evaluation Period

During water years 2020 through 2025, groundwater extractions have varied from a low of approximately 21,600 AFY in water year 2024 to a high of approximately 39,100 AFY in water year 2021 (Table 5.3). This is largely attributable to fluctuations in municipal and agricultural pumping, which account for approximately 63% and 25%, respectively, of average annual extractions from the Basin. The remaining uses accounted for 12% of total extractions from the Basin. While small public water systems, golf courses, and remediation systems showed variable pumping from year to year, their pumping represented a comparatively small component of the total pumping occurring in the Basin.

5.3.2.1.2 Comparison to Historical Pumping Trends

Between 1980 and 2019, groundwater extractions from the Basin averaged approximately 39,800 AFY (GSI et al., 2022), which is 30% higher than the average groundwater extractions during the evaluation period. The largest difference between historical and current groundwater extraction trends occurred for the municipal and agricultural sectors; extractions in these sectors during 1980-2019 were approximately 35% and 36% higher, respectively, than during the 2020-2025 evaluation period.

5.3.2.1.3 Comparison to Pumping Projections in the GSP

The GSP evaluated future groundwater conditions using SCV Water's Basin Operating Plan and full-build-out projections from the 2020 Urban Water Management Plan, together with private well pumping projections developed with stakeholder input (GSI et al., 2022).[14] The GSP simulated three future climate scenarios: Future Baseline (no climate change), 2030 Climate Change, and 2070 Climate Change. The GSP projects that future groundwater extractions will average approximately 52,200 AFY, regardless of the climate scenarios (GSI et al., 2022).

The average annual extractions between water year 2020 and 2025 were approximately 41% lower than the GSP projections. The lower-than-projected pumping rates over the past six years are consistent with plans for progressive development and build-out of the Basin over time (SCV Water, 2026).

5.3.2.2 Surface Water and Imported Supplies Used in the Basin

SCV Water's State Water Project (SWP) Imported Water supplies consist of deliveries under SCV Water's Table A contractual entitlement of 92,500 AFY, supplemented by two water banking programs and two water exchange programs. Local Imported Water supplies consist of a firm water purchase from Buena Vista/Rosedale-Rio Bravo and an option contract under the Yuba Accord Agreement with DWR and the Yuba County Water Agency. Recycled water, produced at the Valencia WRP, is used for irrigation of common landscaped areas (e.g., golf courses, roadway medians) within the SCV Water service area (GSI et al., 2022; GSI, 2023; 2024, 2025, 2026).

Table 5.4 summarizes total imported, recycled, and other surface water use in the Basin for water years 2020 through 2025.

Table 5.4. Imported, Recycled, and Other Surface Water Supplies for Water Years 2020 to 2025.

Water Year	Imported Water			Recycled Water	Other Surface Water	Total
	SWP Imported Water	Local Imported Water	*Subtotal*			
2020	37,575	8,514	*46,089*	496	0	46,585
2021	35,618	10,340	*45,958*	466	0	46,424
2022	30,226	9,332	*39,558*	335	0	39,893
2023	27,548	8,947	*36,495*	284	0	36,779
2024	33,235	10,800	*44,035*	257	0	44,292
202[5]	31,253	13,950	*45,203*	467	0	45,670
2020-2025 Average	**32,576**	**10,314**	***42,890***	**384**	**0**	**43,274**

Notes: All values reported in units of acre-feet.

[14] In 2026, SCV Water updated their UWMP (SCV Water, 2026). The updated groundwater extraction projects in the 2026 UWMP are consistent with the 2020 UWMP and GSP.

5.3.2.2.1 Surface Water and Imported Supplies over the Evaluation Period

Combined imported and recycled water used in the Basin varied from a low of 36,800 AFY in water year 2023 to a high of 46,600 AFY in water year 2020, averaging approximately 43,300 AFY (Table 5.4). Imported SWP is the largest component of this supply, averaging 32,600 AFY (about 75% of the total), followed by local imported water at 10,300 AFY (about 24% of the total); and recycled water contributes a comparatively minor but stable average of 380 AFY, 1% annually.

This variability primarily reflects year-to-year changes in SWP uses. Annual SWP water use reflects both the Table A allocation available to SCV Water and its operations decisions regarding the timing and use of available supplies (SCV-GSA, 2026a). SCV Water's annual Table A allocations have varied substantially, including allocations of 5% in 2021 and 2022 and 100% in 2023. However, the volume of water received each year does not necessarily equal the corresponding calendar year allocation. For example, although the 2023 Table A allocation was 100% in 2023, SCV Water took receipt of 27,548 AF, which is approximately 30% of the 92,500 AFY allocation (SCV-GSA, 2026a).

5.3.2.2.2 Comparison to Historical Surface Water Uses

The GSP estimated that total surface water and imported supplies between 1980 and 2019 averaged approximately 26,700 AFY (GSI et al., 2022).[15] Surface water supplied to the Basin during the 2020 through 2025 period (averaging 42,890 AFY as shown in Table 5.4) was approximately 60% higher than the 1980 to 2019 historical average.

5.3.2.2.3 Comparison to Surface Water Supply Projections in the GSP

Under the three future scenarios presented in the GSP, the average annual surface water and imported supply used in the Basin was estimated to be approximately 57,300 AFY (GSI et al., 2022)[16], comprising about 48,400 AFY of imported water and 9,000 AFY of recycled water, consistent across all three climate scenarios. These projections are approximately 32% higher than the surface water and imported supplies used during the 2020-2025 evaluation period (which averaged a combined 43,274 AFY as shown in Table 5.4). This difference is driven primarily by recycled water, which has been used during the evaluation period at only a small fraction of its projected future volume, while imported water use during the 2020-2025 evaluation period (42,890 AFY on average) is much closer to the GSP's projected future volume (48,400 AFY).

5.3.3 Evaluation of Water Use Trends

The total estimated water uses within Basin for water years 2020 through 2025 is summarized by water source type in Table 5.5.

During the evaluation period, total water use averaged approximately 73,900 AFY (Table 5.5). Municipal uses accounted for approximately 85% of the total water use, followed by agriculture at approximately 10%, and all other non-municipal, non-agricultural uses at 5%. Approximately 59% of the total water used in the Basin was supplied by surface water and imported supplies, while groundwater supplied the remaining 41%.

[15] See Table 6.3-1 of the GSP (GSI et al., 2022).
[16] See Table 6.5-7 of the GSP.

The 2020 to 2025 total water use data reflect short-term variability in hydrologic conditions, imported-water availability, and Basin operations. Average groundwater extractions remained below the full-build-out projections evaluated in the GSP, while imported water use was closer to, but remained below, the GSP assumptions for future imported water use (GSI et al., 2022). The lower observed values are consistent with the Basin not yet having reached the level of buildout represented in the GSP's future projections.

Table 5.5. Total Water Use for Water Years 2020 to 2025.

Water Year	Water Source by Type (Acre-Feet)												Total Water Use
	Groundwater								Surface Water				
	Municipal		Rural Domestic	Small Public Water Systems	Golf Courses	Agricultural	Whittaker-Bermite	*subtotal*	Imported Water		Recycled Water	*subtotal*	
	SCV Water	LACWD-36							SWP Imported Water	Local Imported Water			
2020	17909	1,132	500	1,338	706	8,013	469	*30,067*	37,575	8,514	496	*46,585*	76,652
2021	23537	1,432	500	1,431	834	10,856	483	*39,073*	35,618	10,340	466	*46,424*	85,497
2022	22900	306	500	2,322	343	11,815	497	*38,683*	30,226	9,332	335	*39,893*	78,576
2023	15177	100	500	2,831	487	6,102	625	*25,822*	27,548	8,947	284	*36,779*	62,601
2024	13607	6	500	2,784	497	3,620	570	*21,584*	33,235	10,800	257	*44,292*	65,876
2025	18678	56	500	2,636	579	5,301	773	*28,523*	31,253	13,950	467	*45,670*	74,193
2020-2025 Average	**18,635**	**505**	**500**	**2,224**	**574**	**7,618**	**570**	***30,625***	**32,576**	**10,314**	**384**	***43,274***	**73,899**

Notes:

- Totals may not match sum of values due to rounding.

- Volumes are in units of acre-feet.

5.3.3.1 Evaluation of Future Groundwater Pumping Projections

The GSP future pumping projections considered the availability and reliability of imported water presented in SCV Water's 2020 UWMP (SCV Water, 2021), which was based on DWR's 2019 Delivery Capability Report (DCR; DWR, 2020). The 2019 DCR estimated that SWP deliveries available to SCV Water by 2050 would range from 5% to 52% of its Table A amount, depending on water-year conditions (SCV Water, 2021). SCV Water's 2026 UWMP incorporates updated estimates from DWR's 2025 Draft DCR (DWR, 2025), which reduce the assumed allocation to 43% in normal years and 13% during an extended drought (SCV Water, 2026).

Although projected imported-water reliability has decreased, the 2026 UWMP retains the groundwater operating ranges incorporated into the GSP and concludes that projected municipal demands can be met under normal- and dry-year conditions. The updated reliability estimates may affect the annual timing and mix of imported and local water use, but do not indicate that the GSP's long-term groundwater pumping projections require revision at this time.

5.4 Groundwater Flow Model Update

The Santa Clarita Valley groundwater flow model (Flow Model) is a three-dimensional numerical model of the Basin that simulates groundwater flow in the Alluvial Aquifer and Saugus Formation. The model was originally developed in the early 2000s (CH2M Hill, 2004) and has been periodically updated to incorporate new hydrogeologic data and water use information (GSI and LSCE, 2013). In 2022, SCV Water updated the Flow Model to support GSP development (GSI et al., 2022).

Following adoption of the GSP, SCV Water updated the GSP Flow Model to incorporate additional information (GSI, 2023b). The updated model, herein referred to as the 2023 Flow Model:

- Integrated new Santa Clara River elevation data.
- Integrated new GDE piezometer data.
- Integrated updated survey elevation data for production wells.
- Incorporated manual stream flow measurements along the perennial reaches of Santa Clara River.
- Extended the model simulation time by three years.

In 2025, SCV Water initiated an update to the 2023 Flow Model, with the goal of:

- Converting the model from MODFLOW-USG to MODFLOW 6
- Incorporating new hydrostratigraphic information into the model layer geometry.
- Integrating results from a Surface Water Assessment Tool Plus (SWAT+) watershed model to refine estimates of groundwater recharge (Bieger et al., 2017).
- Implementing an ensemble-based calibration approach to refine model parameters, improve model performance, and evaluate model uncertainty.

While some of these updates have been completed, additional work is ongoing. This section summarizes the completed and ongoing changes to the 2023 Flow Model and the additional work being considered

to support ongoing GSP implementation. Updated Flow Model documentation will be published by SCV Water upon completion of the current modeling work.

5.4.1 Model Updates

The recent Flow Model updates retain the model domain, horizontal grid, historical simulation period, and temporal discretization of the 2023 Flow Model. However, the most recent model update utilizes:

- The current generation of MODFLOW, MODFLOW 6
- Refined model-layer geometry based on the updated hydrogeologic conceptual model.
- Updated groundwater recharge estimates.

Model calibration is being implemented using an ensemble-based calibration. The following sections describe these updates and identify model components that remain unchanged.

5.4.1.1 Modeling Software

The 2023 Flow Model was developed using MODFLOW-USG, an unstructured control-volume finite difference formulation of MODFLOW (Panday et al, 2013). As part of the most recent Flow Model update, SCV Water converted the Flow Model from MODFLOW-USG to MODFLOW 6, the current generation of the USGS MODFLOW groundwater modeling software (Langevin et al., 2026).

The conversion to MODFLOW 6 is designed to:

- Utilize software that is actively developed and maintained by the USGS.
- Improve numerical solution capabilities and the representation of groundwater flow across the model's unstructured grid.
- Facilitate use of modernized workflows that support state-of-the-art optimization and uncertainty quantification toolsets.

The modeling software conversion process has been completed.

5.4.1.2 Spatial and Temporal Discretization

The 2023 Flow Model simulated historical groundwater conditions in the Basin for the period from January 1980 through December 2022, discretized into monthly stress periods. The updated Flow Model maintains the same temporal discretization and is undergoing updates to extend the simulation period through December 2025.

The 2023 Flow Model spatially discretizes the Basin using a nested quadtree grid that transitions from a uniform 500-foot grid spacing to a locally refined 250-foot grid spacing (GSI et al., 2022). The Alluvial Aquifer is represented using a single model layer and the Saugus Formation is vertically discretized into seven layers. The updated Flow Model maintains this spatial discretization and eight-layer model design.

5.4.1.3 Model Layer Geometry

The updated Flow Model incorporates new hydrostratigraphic information that improves representation of the contact between the Alluvial Aquifer and Saugus Formation. The updated information will be

developed from the 3D Hydrostratigraphic Model described in Section 5.1.3, which incorporates new borehole and geophysical data.

The primary changes to the layer geometry will occur in Layer 1, which represents the Alluvial Aquifer. The bottom elevation of Layer 1 is being updated using the revised elevation of the base of the alluvium. Where revisions to the Layer 1 bottom intersect model layers that represent the Saugus Formation, those layer elevations will be lowered to maintain a minimum 30-foot thickness across all model layers.

The model layer geometry updates have been completed.

5.4.1.4 Model Boundary Conditions

5.4.1.4.1 Groundwater Pumping

The 2023 Flow Model represented groundwater extraction using the MODFLOW-USG multi-node well (MNW2) and connected linear network (CLN) package. As part of the conversion to MODFLOW 6, groundwater pumping was transferred to the MODFLOW 6 WEL package. The screened intervals of production wells will be compared with the updated model layer elevations, and well-layer assignments have been updated where appropriate. Conversion from the MNW2 and CLN package to the WEL package has been completed.

5.4.1.4.2 Groundwater Recharge

One of the primary changes to the 2023 Flow Model will be the representation of groundwater recharge. Both the GSP and 2023 Flow Model versions estimated recharge using a recharge compiler developed in Microsoft Excel by GSI (GSI et al., 2022).

The updated Flow Model will implement a SWAT+ watershed model to estimate recharge (Bieger et al., 2017). SWAT+ a peer-reviewed, widely used, physically based watershed model that simulates surface water movement across land surface and through the shallow soils to the groundwater table. The SWAT+ model was developed to provide spatially and temporally distributed estimates of recharge for groundwater flow models. Development of the SWAT+ simulation for the updated Flow Model will incorporate geospatial and point-scale datasets characterizing:

- Precipitation and temperature;
- Land use and land cover;
- Soil properties;
- Topography;
- Evapotranspiration;
- Municipal water use;
- Reservoir and WRP releases;
- Septic system releases and irrigation volumes.

A key differentiator between the SWAT+ model and the previous recharge compiler is the ability to calibrate basin-specific parameters in SWAT+ using available streamflow observations and OpenET evapotranspiration estimates (Melton et al., 2022). Calibrated output from the SWAT+ model will be used to develop spatially and temporally distributed recharge inputs for the updated Flow Model. These

recharge estimates will be adjusted during the groundwater flow model calibration. Refinement and calibration of the SWAT+ model is ongoing.

5.4.1.4.3 Other Boundary Conditions

The updated Flow Model will retain the general-head, streamflow routing, evapotranspiration, and horizontal flow barrier boundary conditions and designs used in the 2023 Flow Model.

5.4.1.5 Model Calibration Approach

The updated Flow Model will be calibrated to historical groundwater-level, streamflow, and aquifer test data for the period from 1980 through 2022. Calibration will be performed using the iterative ensemble smoother implemented in PEST++IES (White et al., 2020). PEST++IES evaluates an ensemble of model parameter sets and iteratively adjusts each set to improve agreement between the simulated and observed groundwater levels, streamflow, and aquifer tests, and characterizes uncertainty in parameter values and model predictions.

The calibration will modify the following parameters to improve the model's ability to match historical stream flow and groundwater elevation measurements:

- Horizontal hydraulic conductivity;
- Vertical hydraulic conductivity;
- Specific yield;
- Specific Storage;
- Streambed hydraulic conductivity; and
- Groundwater Recharge.

Initial calibration has been completed, with further refinement expected as part of the anticipated future modeling activities (see below).

5.4.2 Anticipated Future Modeling Activities

The 2026 Flow Model update is ongoing. To date, SCV-GSA has successfully:

- Converted the 2023 Flow Model from MODFLOW-USG to MODFLOW 6.
- Developed a SWAT+ watershed model to estimate recharge.
- Updated the model layering to integrate new hydrogeologic data.
- Conducted initial calibration work using the 2023 Flow Model simulation period (January 1980 through December 2022).

While the work completed to date represents significant advancements in the modeling framework, SCV-GSA is pursuing additional updates before finalizing the latest revisions. These additional updates, which are planned for completion over the next year, include:

- Conducting an independent peer review of the model to evaluate the updated model design.
- Extending the model to simulate conditions through December 2025, which, importantly, integrates a longer-period of record for the GDE wells located along Santa Clara River and a period of substantial rainfall and recharge following an extended drought.

- Re-calibrating the model following the model extension work and independent peer review.

After finalizing the current Flow Model updates, SCV-GSA anticipates utilizing the updated flow model to re-evaluate the sustainable yield of the Basin, with consideration of new data that have been collected since adoption of the GSP and, if available, DWR's Interconnected Surface Water Guidance, which may impact the sustainable management criteria established in the GSP. SCV-GSA will keep DWR and the public informed of progress on this re-evaluation through regular communications in public meetings and through the GSP Annual Reporting process.

5.4.3 Relevant Recommended Corrective Actions

DWR issued one recommended corrective action related to the Flow Model and estimate of sustainable yield:

RCA 1B. Clarify that the estimate of the sustainable yield is preliminary and subject to necessary adjustments to avoid causing undesirable results. Reevaluate and refine the sustainable yield in future periodic evaluations of the Plan. The GSA should include an explanation of how the estimate of sustainable yield will allow the basin to be operated to avoid locally defined undesirable results. The explanation should include a discussion of the relationship or linkage between the estimated sustainable yield for the basin and the local determination of the sustainable management criteria (sustainability goal, undesirable result, minimum thresholds, and measurable objectives).

SCV-GSA Response to RCA 1B

Sustainable Yield Clarification

The GSP evaluated future groundwater conditions based on a full build-out water demand scenario, using two different climate conditions (2030 central tendency, and 2070 central tendency climate change). Under long-term average conditions, the GSP found that pumping could average approximately 52,200 AFY without creating a chronic lowering of groundwater levels or reduction of groundwater in storage (GSI et al., 2022). The GSP refers to this value as the Basin Yield because it focuses on the relationship between groundwater pumping, levels, and storage. While the GSP recognizes that the Basin Yield and sustainable yield are not the same, the GSP identifies the two as numerically equivalent because:

- Groundwater modeling and historical data suggest that pumping at the Basin Yield would not cause undesirable results associated with other sustainability indicators.
- The GSP established a monitoring program to evaluate the potential onset of future undesirable results under the proposed pumping conditions.
- The GSP's list of projects and management actions focused in large part on maintaining the Basin's sustainability and conducting monitoring to demonstrate that the Basin continues to be managed sustainably. Additionally, the GSP's list of projects and management actions include activities that would return the Basin to sustainable conditions in the event that unexpected undesirable results occur in the future.

While the GSP did not explicitly identify the 52,200 AFY values as a preliminary estimate of the sustainable yield, the management program established in the GSP focused on addressing data gaps

early in the implementation cycle, and utilizing information collected through those efforts to evaluate future operating conditions. In response to this RCA, SCV-GSA is explicitly characterizing the sustainable yield in the GSP as preliminary and subject to necessary adjustments as new data and information are collected in the Basin.

Connection between the Sustainable Yield and Locally Defined Undesirable Results

SCV-GSA has implemented monitoring well construction projects, technical studies, and actions to better characterize the onset of specific undesirable results in the Basin and further constrain the estimate of sustainable yield. These have included:

- Implementation of a well impact analysis to characterize groundwater levels that may impact future groundwater supply need reliability for municipal and agricultural users (Appendix A).
- Implementation of a desktop survey of private domestic wells, and associated outreach efforts, to identify the locations of domestic users in the Basin and estimate the annual volume of domestic groundwater pumping that is occurring in different portions of the Basin.
- Implementation of habitat monitoring along Santa Clara River to better characterize conditions that may lead to undesirable results associated with GDEs and depletion of interconnected surface water.
- Implementation of a LiDAR survey to better characterize land surface elevations and improve sustainable management criteria.
- Construction of nested monitoring wells to better characterize groundwater conditions and quality.

These new data and information have resulted in refined sustainable management criteria for chronic lowering of groundwater levels and reduction of groundwater in storage (Section 3.1), depletion of interconnected surface water (Section 3.6), and degraded water quality (Section 3.3). Importantly, these data will be integrated into the future flow modeling efforts, which are aimed at re-evaluating and refining the preliminary estimate of the Basin's sustainable yield.

6.0 Monitoring Networks [Article 5, § 356.4(e)]

§ 356.4 (e) *A description of the monitoring network within the Basin, including whether data gaps exist, or any areas within the Basin are represented by data that does not satisfy the requirements of Sections 352.4 and 354.34(c). The description shall include the following:*

1) *An assessment of monitoring network function with an analysis of data collected to date, identification of data gaps, and the actions necessary to improve the monitoring network, consistent with the requirements of Section 354.38.*

2) *If the Agency identifies data gaps, the Plan shall describe a program for the acquisition of additional data sources, including an estimate of the timing of that acquisition, and for incorporation of newly obtained information into the Plan.*

3) *The Plan shall prioritize the installation of new data collection facilities and analysis of new data based on the needs of the Basin.*

The GSP established groundwater elevation, groundwater quality, and land surface elevation monitoring networks to monitor conditions related to the chronic lowering of groundwater levels, reduction of groundwater in storage, degraded water quality, land subsidence, and depletion of interconnected surface water sustainability indicators. Seawater intrusion is not applicable to the Basin because the Basin is not adjacent to the Pacific Ocean, and the GSP does not define a monitoring network or sustainable management criteria for that indicator (GSI et al., 2022.).

The wells that comprised the monitoring networks at the time of GSP adoption are identified in Tables 7-7 and 7-8 of the GSP, which list 43 wells, of which 25 were designated as representative monitoring sites (RMS) where sustainable management criteria are established (GSI et al., 2022). These wells were selected from the broader set of wells monitored under existing programs in the Basin, including SCV Water's water level monitoring network of 65 wells (GSP Table 7-1). The GSP's monitoring networks are shown in Figures 3-3, 3-16, 3-17, and 3-54.

This section summarizes specific changes to the GSP monitoring networks and evaluates whether the networks remain sufficient to monitor and manage groundwater conditions in the Basin over the next five years.

Table 6.1. Changes to the Monitoring Network During the Evaluation Period

Monitoring Location or Component	Activity	Water Year	Effect on Monitoring Network Function
Groundwater Level and Groundwater Storage Monitoring Networks			
RMS wells	Completed reference point elevation surveys.	2022	Addressed the elevation control data gap identified in the GSP. Also applies to the interconnected surface water monitoring network.
Grant-funded monitoring wells (Proposition 1 Sustainable Groundwater Management grant 4600015406)	Installation of fifteen (15) new monitoring wells in the Alluvial Aquifer and Saugus Formation.	2024 to 2026	Construction was completed in April 2026. Data collected via these wells is supporting perchlorate plume delineation, GDE monitoring, and additional characterization of Alluvial Aquifer and Saugus Formation groundwater conditions.
SCV-Saugus3 and SCV-Saugus4	New Saugus Formation production wells constructed west of Interstate 5, with exploratory drilling in 2023 and construction completed in 2024.	2023 to 2024	Complete. Data from these wells contribute to the characterization of the Saugus Formation.
Degraded Water Quality Monitoring Network			
See grant-funded monitoring wells above.			
Degraded Water Quality RMS	Added new sentry wells to monitor new sustainable management criteria for perchlorate and VOCs.	2026	Addresses DWR RCA 3, which requested that SCV-GSA establish sustainable management criteria for contaminants (DWR, 2024)
Land Subsidence Monitoring Network			
Land surface elevation benchmarks (12)	Benchmark network established in spring 2024.	2024 to 2025	Addressed the land surface elevation benchmark data gap identified in the GSP. The most recent survey was in September 2025.
Depletion of Interconnected Surface Water Monitoring Network			
Wells Added			
GDE-C, GDE-D, and GDE-E	Piezometers installed by FivePoint on its property west of Interstate 5.	2021	Complete. Established shallow groundwater monitoring in the GDE areas, addressing the most pronounced data gap identified in the GSP. GDE-D and GDE-E were destroyed by flooding. SCV-GSA is coordinating the replacement of these wells.
GDE-A and GDE-B	Piezometers installed by SCV Water during the first quarter of 2022.	2022	Complete. Limitations on the suitability of both locations are discussed in Section 6.5.2.

Monitoring Location or Component	Activity	Water Year	Effect on Monitoring Network Function
Wells That Require Replacement			
GDE-A	Erosion close to the well caused by stormwater flows may result in the well being destroyed under a Los Angeles County permit.	2025	While destroying this well will reduce the number of GDE piezometers in the Basin, data collected over the past three years indicate that the water table does not reflect typical GDE conditions.
GDE-D	Destroyed by flooding on the Santa Clara River in January 2023.	2023	Introduces a data gap that was previously filled. A replacement location is being identified with Five Point Holdings, LLC.
GDE-E	Destroyed by flooding in December 2025.	2025	Introduces a data gap that was previously filled. A replacement location is being identified with Five Point Holdings, LLC.
NLF-G3	This production well was offline for many years and was returned to service during water year 2025 as an active pumping well for irrigation. A replacement well is now required to more effectively monitor groundwater elevations in the vicinity of GDEs and the Santa Clara River.	-	Removal of this well from the depletion of interconnected surface water monitoring network creates a temporary data gap. SCV-GSA plans to construct a dedicated monitoring well in fiscal year 2027/28 to address this.

6.1 Groundwater Level Monitoring Network

The groundwater level monitoring network consists of 25 RMS wells, of which 21 are screened in the Alluvial Aquifer and 4 are screened in the Saugus Formation. Of the 21 Alluvial Aquifer RMS wells, 13 are used to evaluate the chronic lowering of groundwater levels and reduction of groundwater in storage sustainability indicators, and the remaining 8 are non-pumping wells used to evaluate depletion of interconnected surface water. This section addresses the 13 Alluvial Aquifer wells and the 4 Saugus Formation wells; the 8 non-pumping wells are addressed in Section 6.5. Groundwater levels are measured monthly at most locations, and at least in the spring and late summer of each year to obtain seasonal high and seasonal low elevations as required by the SGMA regulations (GSI et al., 2022; GSI, 2026).

6.1.1 Changes to the Groundwater Level Monitoring Network

Changes to the groundwater level monitoring network during the evaluation period are summarized in Table 6-1. They fall into three groups: improvements that addressed data gaps identified in the GSP, losses of monitoring coverage at individual wells, and additions that are underway.

6.1.1.1 Improvements Completed

Reference point elevation surveys were completed in 2022 for monitoring locations in the Basin, including the bed of the Santa Clara River in selected areas near the GDE monitoring wells. These surveys referenced groundwater level data at the RMS wells to a common vertical datum and addressed the elevation control data gap identified in the GSP (GSI, 2023).

6.1.1.2 Losses of Monitoring Coverage

Future VWD-C12, designated as an RMS well in the GSP, had not been installed as of water year 2025. Groundwater elevations measured at NLF-C4, an existing well approximately 700 feet from the planned location, are used to represent conditions at this site for the evaluation period. Because NLF-C4 provides a continuous record across the evaluation period at essentially the same location, the absence of VWD-C12 has not resulted in a groundwater level data gap in this part of the Basin (GSI et al., 2022; GSI, 2026).

Groundwater levels at Saugus Formation RMS well VWD-160 could not be measured from March 2024 through July 2026 because of an obstruction that created access limitations. Accordingly, no seasonal low value is available for water year 2024 or water year 2025. The three remaining Saugus Formation RMS wells continued to provide seasonal high and seasonal low measurements. Measurements at VWD-160 resumed in August 2026 after successfully addressing the obstruction.

6.1.1.3 Additions Underway

In 2024, SCV-GSA was awarded a Proposition 1 Sustainable Groundwater Management grant from DWR (grant number 4600015406) of approximately $5.3 million, of which approximately $4.9 million was dedicated to expanding the monitoring well network in the Basin. Wells were installed to support perchlorate plume delineation, GDE monitoring, and subsurface characterization. While some wells are being constructed in the Alluvial Aquifer, most were constructed as multi-level monitoring wells in the

Saugus Formation. Well construction and reporting activities were completed in April 2026. SCV-GSA anticipates incorporating data collected from these wells into future annual reports and integrating the wells into the formal GSP monitoring network after sufficient baseline data have been collected (GSI, 2024).

Two new Saugus Formation production wells, SCV-Saugus3 and SCV-Saugus4, were constructed west of Interstate 5 during the evaluation period, with exploratory drilling occurring in 2023 and construction completed in 2024. A well siting study for two additional Saugus Formation production wells, Saugus 5 and Saugus 6, is currently underway. Data from these wells will contribute to the characterization of the Saugus Formation (GSI, 2024).

6.1.2 Assessment of Groundwater Level Monitoring Network Function

The groundwater level monitoring network remains suitable for GSP implementation.

While groundwater level measurements at VWD-160 were temporarily impacted, seasonal high and seasonal low groundwater elevations were obtained at all other RMS wells throughout the evaluation period, and the resulting data were sufficient to evaluate conditions relative to the minimum thresholds and measurable objectives at each site, to construct seasonal groundwater elevation contours for each principal aquifer, and to evaluate groundwater flow directions and gradients (Section 3.1).

6.2 Groundwater Storage Monitoring Network

Because change in groundwater storage is estimated from groundwater elevations, the storage monitoring network is the same network described in Section 6.1. Groundwater elevations measured at these wells are used as a proxy to estimate change in groundwater storage within each principal aquifer and basin-wide, in combination with aquifer parameters and the Basin groundwater flow model (Section 3.2; GSI et al., 2022).

An additional component of monitoring the reduction of groundwater in storage involves tracking groundwater extraction against the estimated sustainable yield. Extraction is reported by municipal water suppliers and, since water year 2025, by enrolled non-de minimis well owners (GSI, 2026).

6.2.1 Changes to the Groundwater Storage Monitoring Network

Changes to the groundwater level monitoring network, which also apply to the groundwater storage monitoring network, are described in Section 6.1.1. In addition, a groundwater extraction reporting policy and associated materials were developed during water year 2024, and enrollment of non-de minimis well owners in the reporting process occurred during water year 2025, which addressed the extraction data gap identified in the GSP for wells other than municipal wells (GSI, 2025; 2026).

6.2.2 Assessment of Groundwater Storage Monitoring Network Function

Because groundwater elevations are used as a proxy to estimate change in groundwater storage, the assessment of the groundwater storage monitoring network is the same as the groundwater level monitoring network (Section 6.1.2). The extraction reporting component of the network is functioning,

and the completeness of reported volumes will depend on continued participation by non-de minimis well owners (GSI, 2026).

6.3 Degraded Water Quality Monitoring Network

The degraded water quality monitoring network consists of 35 of the 43 wells identified in Tables 7-7 and 7-8 of the GSP, with 23 wells in the Alluvial Aquifer and 12 wells in the Saugus Formation.

6.3.1 Changes to the Degraded Water Quality Monitoring Network

Candidate domestic wells for inclusion in the water quality monitoring program were identified in 2022, and SCV Water reviewed its data management system and other data sources during 2022 and 2023 to identify suitable wells. Outreach materials describing a voluntary groundwater quality monitoring program for de minimis wells were developed during water year 2024 and distributed during water year 2025 (GSI, 2024; 2025; 2026).

The Sustainable Groundwater Management grant awarded in 2024 included approximately $95,000 dedicated to conducting a domestic well survey and using the results to address the needs of disadvantaged and severely disadvantaged communities. Wells installed under the same grant included locations intended to support perchlorate plume delineation, which added water quality monitoring coverage in the Saugus Formation (GSI, 2024).

In addition, through this periodic evaluation, SCV-GSA established new sustainable management criteria for perchlorate and VOCs (Section 3.3.6). To monitor concentrations relative to these new sustainable management criteria, SCV-GSA has added new wells to the degraded water quality monitoring network (Table 6.1). These include newly constructed monitoring wells in the Saugus Formation (DW-9 and DW-10) and Alluvial Aquifer (AL-15). The location of these wells are shown in Figure 3-51.

6.3.2 Assessment of Degraded Water Quality Monitoring Network Function

The degraded water quality monitoring network has expanded since GSP adoption and remains suitable for GSP implementation. Data collected during the evaluation period were sufficient to evaluate constituent concentrations relative to the water quality sustainable management criteria (Section 3.3).

6.3.2.1 Domestic Well Water Quality

The GSP identified the absence of water quality data from domestic wells as a data gap. A voluntary monitoring program for de minimis domestic wells was initiated after GSP adoption, but participation by domestic well owners has been limited. In annual reports, the SCV-GSA has found that the nature of state and county well records makes direct identification of well locations and communication with well owners impractical, which has limited progress. Establishment of this network depends on the availability of volunteer well owners, and the domestic well survey funded under the Sustainable Groundwater Management grant provided tentative locations of private wells that could potentially help improve the identification of candidate wells in the future (GSI, 2024; 2026).

6.3.2.2 Contaminant Monitoring

In response to DWR's RCA 3, SCV-GSA has proposed sustainable management criteria for perchlorate and volatile organic compounds based on the number of production wells that exceed regulatory thresholds (Section 3.3; DWR, 2024). Monitoring for these constituents is conducted at production wells under the requirements of the Division of Drinking Water, and at monitoring wells under the requirements of the Department of Toxic Substances Control. Containment and remediation of the perchlorate and volatile organic compound plumes originating from the Whittaker-Bermite facility are the responsibility of the LARWQCB, DTSC, and DDW. Monitoring wells installed under the Sustainable Groundwater Management grant include locations intended to support delineation of the perchlorate plume, which will improve the ability to evaluate these criteria.

6.4 Land Subsidence Monitoring Network

Land surface elevation is monitored using three data sources. Satellite-based Interferometric Synthetic Aperture Radar (InSAR) data published on the SGMA data viewer provide coverage of the entire Basin. A network of 12 benchmarks, comprising four newly placed benchmarks and eight existing Los Angeles County Department of Public Works benchmarks including one control point, is surveyed semiannually in the spring and fall. The InSAR data is available starting from June 2015. The UNAVCO SKYB continuous global positioning system station provides background information on regional land surface displacement because it lies in a portion of the Basin east of the San Gabriel Fault that is not in hydraulic communication with the area west of the fault where groundwater is pumped from the Saugus Formation (GSI, 2024; 2026). The UNAVCO SKYB data is available starting from March 2001.

6.4.1 Changes to the Land Subsidence Monitoring Network

The benchmark component of the land subsidence monitoring network was established during the evaluation period, addressing the land surface elevation benchmark data gap identified in the GSP. SCV-GSA initially discussed the use of 10 Los Angeles County benchmarks to be surveyed each January and August. The network established in spring 2024 comprises 12 benchmarks, which were first surveyed in May 2024 to establish a baseline elevation and have been surveyed semiannually since then, most recently in September 2025 (GSI, 2024; 2026).

6.4.2 Assessment of Land Subsidence Monitoring Network Function

The land subsidence monitoring network remains suitable for monitoring land surface elevation changes in the Basin. InSAR data provide basin-wide coverage, the benchmark network provides direct measurement of land surface elevation at locations where future groundwater level declines could affect critical infrastructure, and the SKYB station provides a regional reference against which Basin measurements can be compared (GSI, 2026; RC Slade, 2026).

One limitation applies. Because the benchmark baseline was established in May 2024, the benchmark record is short relative to the rates of deformation being evaluated, and continued semiannual data collection will be required to distinguish elastic from inelastic deformation. This limitation did not prevent evaluation of the land subsidence sustainability indicator during the evaluation period, because

InSAR data covering the June 2015 through July 2025 period of record show that no monitoring location exceeded either the single-year or the 5-year minimum threshold (Section 3.5).

6.5 Depletion of Interconnected Surface Water Monitoring Network

The interconnected surface water monitoring network consists of the eight locations identified in Section 7.3.7 of the GSP along the reach of the Santa Clara River where the GSP identified potential GDEs. The network comprises five GDE piezometers (GDE-A through GDE-E) and three former production wells owned by FivePoint (NLF-E, NLF-G3, and NLF-W5). Groundwater levels are monitored using data loggers and manual measurements at GDE-A and GDE-B, which have recorded groundwater level and temperature since March 2022, and using manual measurements at the remaining locations. Habitat and biological surveys along the river corridor supplement the groundwater level data (GSI et al., 2022; GSI, 2026).

6.5.1 Changes to the Interconnected Surface Water Monitoring Network

Establishment of this network during the evaluation period addressed the most pronounced data gap identified in the GSP, which was the lack of monitoring locations for shallow groundwater in the GDE areas. The GSP provided for the installation of up to five new monitoring wells adjacent to the Santa Clara River and selected tributaries. FivePoint installed piezometers GDE-C, GDE-D, and GDE-E on its property west of Interstate 5 in 2021, and SCV Water installed piezometers GDE-A and GDE-B during the first quarter of 2022 (GSI, 2023; 2024).

Piezometers GDE-D and GDE-E were destroyed by flooding on the Santa Clara River in January 2023 and 2025, respectively. Additionally, at the time of GSP development NLF-G3 was inactive and suitable for use as an Alluvial Aquifer monitoring well in the vicinity of GDE downgradient of I-5. NLF-G3 was reactivated for use as an irrigation well during water year 2025. Because of this well's current operating status, replacement with a dedicated piezometer in a similar location is warranted. SCV-GSA has been working with FivePoint to identify locations for the replacement piezometers and plans to replace GDE-D, GDE-E, and NLF-G3 wells in fiscal year 2027/2028.

Lastly, flooding also has eroded the Santa Clara River channel banks at GDE-A and the well is at risk of being destroyed in a future flooding event. SCV-GSA anticipates proactively decommissioning this well under a Los Angeles County permit and replacing it in fiscal year 2027/2028.

6.5.2 Assessment of Interconnected Surface Water Monitoring Network Function

The interconnected surface water monitoring network was substantially expanded as part of GSP implementation. Groundwater elevation measurements at the five new GDE wells enabled evaluation of shallow groundwater conditions in the GDE areas for the first time and supported the biological GDE evaluations conducted during the evaluation period (Section 3.6).

Due to flooding, channel migration, and reactivation of an irrigation well, the network requires refinement, however (GSI, 2026). SCV-GSA is proactively planning for the construction of new GDE piezometers. Baseline data collected from these new wells will be used to reconsider site-specific sustainable management criteria.

7.0 GSA Authorities and Enforcement Actions [Article 5, § 356.4(g), (h)]

§ 356.4

(g) *A description of relevant actions taken by the Agency, including a summary of regulations or ordinances related to the Plan.*

(h) *Information describing any enforcement or legal actions taken by the Agency in furtherance of the sustainability goal for the basin.*

7.1 Actions Taken by SCV-GSA

Table 7-1 summarizes actions taken by the Board since GSP adoption related to GSP implementation. Regularly scheduled meetings that were cancelled or postponed, meetings at which the only Plan-related business was a quarterly status update, and/or meetings at which Annual Reports were adopted are not listed.

Table 7.1. Actions Taken by SCV-GSA Since Adoption of the GSP Relevant to Plan Implementation

Date	Action	Description
October 3, 2022	Authorization of the Sustainable Groundwater Management grant application	The Board authorized the application for the Proposition 1 Sustainable Groundwater Management grant that was subsequently awarded in 2024 (grant number 4600015406).
March 6, 2023	Adoption of the water year 2022 annual report	The Board adopted the annual report. At the same meeting the GDE Monitoring Protocol was presented to the Board but was not adopted by motion.
July 27, 2023	Adoption of the New or Replacement Well Review Process required by Executive Order N-3-23	The Board adopted the well review process. The process requires a property owner to submit a New or Replacement Groundwater Production Well Form with each well permit application to the County of Los Angeles or the County of Ventura. Wells that are not exempt require a hydrogeologic report prepared by the property owner and a deposit of funds for SCV-GSA review, which in most cases includes simulation of the proposed well in the Basin groundwater flow model. The Board makes the final consistency determination, and a determination is valid for 12 months. The form requires the property owner to acknowledge SCV-GSA's authority under SGMA to limit extractions, to impose a fee, to inspect the well, and to impose additional monitoring requirements. For non-de minimis wells, the form also imposes flowmeter installation within six months of county approval, semiannual extraction reporting, flowmeter recalibration every five years, and annual water quality reporting.

Date	Action	Description
September 2024	Termination of well review authority under Executive Order N-3-23	Executive Order N-3-24 terminated the conditions of Executive Order N-3-23. SCV-GSA no longer had authority under the executive order to review proposed extraction well permits.
June 2, 2025	Authorization of the completion of the Upland Monitoring Initiative	The Board authorized completion of the upland GDE verification and assessment effort. The assessment did not identify upland GDEs other than isolated pools in Placerita Canyon that are not affected by groundwater extraction.
Water years 2024 and 2025	Non-De Minimis Groundwater Extraction Reporting Program	SCV-GSA developed the reporting policy approach, outreach process, and administrative forms during water year 2024 and enrolled non-de minimis well owners during water year 2025, consistent with Section 10725.8 of the Water Code.
Water years 2025 and 2026	Non-De Minimis Well Metering and Reporting Program requirements	SCV-GSA published program requirements applicable to all wells producing more than 2 acre-feet per year within the SCV-GSA boundary. Existing wells must be registered by June 30, 2026, and new wells within 30 days of completion of drilling. Each well must be equipped with a flowmeter accurate to within ±2 percent of actual flow that reports flow rate and cumulative volume, calibrated at least every three years. Extractions are reported annually, prior to October 31, for the preceding October 1 through September 30 period. Wells reviewed under Executive Order N-3-23 are subject to additional conditions imposed at the time of review, as described in Section 7.1.2.
Water years 2024 and 2025	Voluntary De Minimis Domestic Well Water Quality Monitoring Program	SCV-GSA developed and distributed outreach materials describing a voluntary groundwater quality monitoring program for de minimis domestic well owners. The program had not been finalized as of the end of water year 2025.

7.1.1 Well Permit Review Under the Drought Executive Orders

Executive Order N-3-23 temporarily modified SCV-GSA's authorities related to the review of proposed groundwater extraction wells by prohibiting a county, city, or other public agency from approving a permit for a new well, or for the alteration of an existing well, in a medium- or high-priority basin without first obtaining written verification from the groundwater sustainability agency that extraction by the proposed well would not be inconsistent with the applicable Plan and would not decrease the likelihood of achieving the basin's sustainability goal.

The Basin lies almost entirely within the County of Los Angeles, with approximately 70 acres within the County of Ventura, and both counties issue well permits. SCV-GSA adopted its well review process on July 27, 2023 and coordinated with both counties so that well permit applications would be directed to SCV-GSA for the determination required by paragraph 4.a of the order, with the counties performing the evaluation required by paragraph 4.b. Five proposed wells were processed under the adopted procedures, as summarized in Table 7-1.

Executive Order N-3-24 then terminated the relevant conditions of Executive Order N-3-23 in September 2024, and SCV-GSA no longer had authority under the executive order to review proposed extraction well permits.

7.1.2 Groundwater Extraction Reporting and Metering

The GSP identified the absence of extraction data for wells other than municipal wells as a data gap and provided for a program requiring all non-de minimis extractors to report extractions annually. SCV-GSA developed the reporting policy, outreach process, and administrative forms during water year 2024 and enrolled non-de minimis well owners during water year 2025. Information collected through this program is expected to address data gap, as described in Section 6.2.1.

The program applies to any well producing more than 2 acre-feet per year within the SCV-GSA boundary, including agricultural wells, golf course wells, and other non-municipal supply wells. Extraction data are to be reported annually, prior to October 31, for the preceding October 1 through September 30 period. SCV-GSA may require flowmeter verification and may conduct audits or on-site inspections to confirm the accuracy of reported data.

A parallel voluntary program for de minimis domestic wells was developed during the evaluation period. Outreach materials were prepared during water year 2024 and distributed during water year 2025. Progress has been limited by the nature of state and county well records, which makes direct identification of well locations and communication with well owners impractical, as described in Section 6.3.2.

7.2 Enforcement and Legal Actions Taken by SCV-GSA

SCV-GSA has not taken any enforcement action, and has not been party to any legal action, in relation to the GSP. Groundwater conditions have remained at or above the sustainable management criteria at the representative monitoring sites used to evaluate the sustainability indicators, no undesirable results have been identified, and no circumstance has arisen that required enforcement.

8.0 Outreach, Engagement, and Coordination With Other Agencies [Article 5, § 356.4(j)]

> ***§ 356.4 (j)*** *Where appropriate, a summary of coordination that occurred between multiple Agencies in a single basin, Agencies in hydrologically connected basins, and land use agencies.*

8.1 Outreach and Engagement

Section 11 of the GSP describes SCV-GSA's approach to notice and communication, including its decision-making process, the opportunities available for public engagement, the manner in which SCV-GSA encourages the active involvement of diverse social, cultural, and economic elements of the population within the Basin, and the methods by which SCV-GSA informs the public about progress implementing the Plan (GSI et al., 2022). Those methods are the SCV-GSA website, Board meetings at which information is presented and public comment is invited, the annual reports, and the periodic evaluation submitted to DWR every five years. Each has been maintained since adoption of the Plan. This section addresses the period from adoption of the Plan in January 2022 through adoption of this periodic evaluation, which is a shorter period compared to water years 2020 through 2025 evaluation period used elsewhere in this document.

Since adoption of the Plan, SCV-GSA has continued to conduct public Board meetings, has expanded its outreach to private well owners in connection with the extraction reporting and voluntary water quality monitoring programs, has coordinated with DWR in the response to specific RCAs, and has conducted a series of public workshops for the development of this periodic evaluation. Table 8-1 lists the outreach, engagement, and coordination activities undertaken since adoption of the Plan, and the activities scheduled to complete the adoption of this periodic evaluation. Specific activities are described in the subsections that follow.

Table 8.1. Outreach, Engagement, and Coordination Activities Since Adoption of the GSP

Period	Activity	Description and Participation
Quarterly, 2022 through 2026	Board of Directors meetings	Quarterly meetings open to the public, with agendas posted in advance, written comments distributed to the Directors and posted, opportunity for public comment on agenda and non-agenda items, and recordings, minutes, and presentations archived on the SCV-GSA website. Quarterly status updates on Plan implementation were provided as part of this.
January 25, 2024	Press release announcing DWR approval of the GSP	Issued following DWR's January 18, 2024, approval of the Plan, and posted to the SCV-GSA website.
Water year 2025	Distribution of outreach materials to well owners	Outreach materials describing the voluntary de minimis groundwater quality monitoring program were distributed, and non-de minimis well owners were enrolled in the groundwater extraction reporting process.

Period	Activity	Description and Participation
Water year 2025	Outreach on data sharing and GDE monitoring	Work focused along the perennial reach of the Santa Clara River and was conducted by biological consultants for SCV-GSA and for FivePoint, the primary landowner along the river corridor west of Interstate 5.
December 31, 2025	Press release announcing the first periodic evaluation workshop	Issued in advance of the January 7, 2026 workshop and posted to the SCV-GSA website.
January 7, 2026	Public Workshop 1	Introduction to the periodic evaluation, including the regulatory requirements, the expected contents, and the topics to be addressed. A recording was posted to the SCV-GSA website.
January through March 2026	Website updates and review of the outreach contact lists	A periodic evaluation page and a schedule of workshops, Board meetings, and deadlines were added to the SCV-GSA website. The existing outreach lists were reviewed, and gaps were identified in the representation of disadvantaged communities, property management and homeowner organizations, agricultural groups, and land use agencies. Additional organizations were identified and contacted; no organization contacted responded to the offer of inclusion.
February 4, 2026	Public Workshop 2	DWR recommended corrective actions related to groundwater quality and the proposed approach to the water quality sustainable management criteria. Held in hybrid format with 1 in-person and 6 virtual attendees. Attendees were polled on how to reach and encourage the participation of private well owners and on the proposed approach to the criteria. A recording was posted to the SCV-GSA website.
March 5, 2026	Public Workshop 3	DWR recommended corrective actions related to the chronic lowering of groundwater levels and interconnected surface water. Four virtual attendees participated and were polled on what undesirable results for chronic lowering of groundwater levels mean in practical terms and on how those results should be described.
May 2026	Meeting with DWR	Discussion of progress addressing DWR's recommended corrective actions. DWR advised SCV-GSA to communicate with the downstream Piru and Fillmore basins agency and identified its interests regarding interconnected surface water guidance and water quality.
August 11, 2026	Public Workshop 4	Revised groundwater level sustainable management criteria (RCA 2) and the updated groundwater flow model (RCA 1), in hybrid format with registration through the SCV-GSA website.

Period	Activity	Description and Participation
August 31, 2026	Special Board meeting	Presentation of the public draft periodic evaluation. SCV-GSA Board of Directors authorized release of public draft on September 10, 2026, a public hearing on the draft periodic evaluation on December 7, 2026, and consideration of approval on December 21, 2026.
September 10- October 24	Public Review	Public notice issued and the draft periodic evaluation released for a 45-day public comment period.
Early November	Board meeting	Summary of the public comments received on the draft periodic evaluation.
Early December	Special Board meeting	Presentation of the final draft periodic evaluation and public hearing
Mid/late December	Public hearing and Board adoption	Public hearing, Board adoption of the final periodic evaluation, and submittal to DWR.

8.1.1 Periodic Evaluation Outreach

SCV-GSA initiated development of this periodic evaluation with a public workshop on January 7, 2026, and has held a series of workshops through 2026 addressing the major technical topics under evaluation. Workshops have been conducted in hybrid format, allowing both in-person and virtual attendance, and recordings have been posted to the SCV-GSA website. To facilitate engagement with both in-person and virtual audience members, SCV-GSA integrated interactive mobile polling activities to solicit feedback on materials presented. The workshops appear in Table 8-1 together with the Board meetings and public review steps that complete the adoption process.

In support of the workshop series, SCV-GSA added a periodic evaluation page to its website describing the background of the GSP, the purpose and objectives of the periodic evaluation, and the topics to be addressed, and added a schedule of workshops, Board meetings, and deadlines to the main page. Further, to ensure that the public and interested parties remain appraised of SCV-GSA's activities related to the periodic evaluation, the agency completed a GSA contact list gaps analysis and expanded the GSA's outreach to disadvantaged communities, property and/or business owners, and agricultural operators (Woodard & Curran, 2026b).

8.1.2 GSP Implementation Engagement and Coordination

Outreach to private well owners has been a major engagement activity undertaken to implement the Plan, and it supports two of the management actions described in Section 4. Candidate domestic wells for the voluntary water quality monitoring program were identified in 2022, SCV Water reviewed its data management system and other data sources during 2022 and 2023, outreach materials were developed during water year 2024, and those materials were distributed during water year 2025. Outreach materials, an outreach process, and administrative forms for the non-de minimis extraction reporting program were developed during water year 2024, and non-de minimis well owners were enrolled during water year 2025 (GSI, 2025; 2026).

Outreach regarding data sharing and GDE monitoring has also continued. Work during water year 2025 focused along the perennial reach of the Santa Clara River and was conducted by biological consultants for SCV-GSA and for FivePoint. SCV-GSA has coordinated with FivePoint throughout the evaluation period regarding the GDE piezometers installed on its property, access for monitoring, and the identification of replacement piezometer locations (GSI, 2024; 2026).

8.1.3 Public Meetings and Notice

The SCV-GSA Board of Directors holds regular scheduled quarterly meetings and periodic special meetings, all of which are noticed and open to the public. Agendas are posted on the SCV-GSA website in advance of each meeting, and written comments received before the stated deadline on the day of a meeting are distributed to the Directors and posted on the website. Meetings are conducted in person with a call-in number and web conference option provided as a convenience to the public, and recordings are posted to the SCV-GSA website. Opportunity for public comment is provided both on items not on the agenda and on each agenda item as it is considered. Agendas, packets, approved minutes, and the presentations delivered at each meeting are archived on the website.

Importantly, these Board meetings provide recurring opportunities to comment on GSP Annual Reports, monitoring results, implementation activities, RCA responses, and the development of this periodic evaluation.

8.1.4 Coordination with State and Federal Agencies

SCV-GSA has coordinated with DWR throughout implementation of the Plan. DWR approved the GSP on January 18, 2024 and issued recommended corrective actions with that approval. SCV-GSA presented a proposed workplan and timeline for responding to those actions to its Board in October 2024, met with DWR in May 2026 to discuss progress, and has coordinated with DWR on the formatting and updating of the Plan's projects and management actions for DWR's SGMA portal. SCV-GSA also submitted comments on DWR's earlier draft guidance papers on interconnected surface water, and DWR has advised that it is primarily interested in seeing progress and, where practical, seeing agencies consider the draft guidance in ongoing evaluations.

SCV Water, on behalf of SCV-GSA, coordinates with the LARWQCB, DTSC, and DDW regarding the perchlorate and VOC contamination originating from the Whittaker-Bermite facility, which those agencies regulate. Coordination with the LARWQCB also occurs through the Upper Santa Clara River Salt and Nutrient Management Program, which is updated annually.

Under Executive Order N-3-23, SCV-GSA coordinated with the County of Los Angeles and the County of Ventura, the two well permitting agencies with jurisdiction in the Basin, so that well permit applications would be directed to SCV-GSA for a consistency determination. That coordination is described in Section 7.1.

8.1.5 Disadvantaged Communities

The GSP reported that there are no specific named disadvantaged communities in the Basin with designated representatives, and that SCV-GSA and its member agencies therefore rely on broad outreach together with more targeted efforts, including those conducted through the Proposition 1

Disadvantaged Community Involvement Program. During development of the GSP, a map of disadvantaged communities was prepared and handouts announcing the public draft GSP and upcoming meetings were distributed at locations in and around those areas (GSI et al., 2022).

During the evaluation period, the Sustainable Groundwater Management grant awarded in 2024 included approximately $95,000 dedicated to a domestic well survey and to using the results to address the needs of disadvantaged and severely disadvantaged communities, as described in Section 4. As part of this periodic evaluation, SCV-GSA contacted disadvantaged community representatives (Woodard & Curran, 2026). SCV-GSA will continue to encourage participation from members of disadvantaged communities through these outreach efforts.

9.0 Other Information [§356.4(k)]

§ 356.4 (k) *Other information the Agency deems appropriate, along with any information required by the Department to conduct a periodic review as required by Water Code Section 10733.*

9.1 Consideration of Adjacent Basins

The Santa Clara River Valley East Subbasin is the uppermost of the subbasins that make up the Santa Clara River Valley Groundwater Basin. It is bounded on the west by the Modelo Formation, the Saugus Formation, and a thinning of the alluvium near the adjoining Piru Subbasin (Basin No. 4-004.06), which lies immediately downstream in Ventura County and is managed by the Fillmore and Piru Basins Groundwater Sustainability Agency. The Fillmore Subbasin (Basin No. 4-004.05) lies downstream of the Piru Subbasin and is managed by the same agency. No other groundwater sustainability agency manages any part of the Santa Clara River Valley East Subbasin, and a coordination agreement under Section 357.4 of the SGMA regulations is therefore not required (GSI et al., 2022).

Groundwater and surface water leave the Basin at its western boundary near the Los Angeles and Ventura county line and enter the Piru Subbasin. Groundwater underflow occurs through a relatively thin veneer of alluvium present on top of the Pico Formation. The GSP water budget accounts for both surface and subsurface outflow at the western boundary as basin outflow terms (GSI et al., 2022).

In approving the GSP on January 18, 2024, DWR found that it did not appear at that time that the Plan would adversely affect the ability of adjacent basins to implement their plans or impede achievement of their sustainability goals (DWR, 2024). Groundwater conditions encountered over the evaluation period support that finding:

- Groundwater levels at the representative monitoring sites ended the evaluation period generally higher than at its start and minimum thresholds were not exceeded
- Groundwater in storage increased
- No undesirable results were identified for any indicator.

Based on groundwater conditions observed during WYs 2020–2025 and the information currently available, the basin conditions do not indicate any new adverse effect on the downstream subbasins.

9.2 Challenges Not Previously Discussed

A primary challenge for GSP implementation over the next five years is continued uncertainty regarding methods and metrics for evaluating significant and unreasonable effects associated with depletion of interconnected surface water. GDEs and the Santa Clara River remain important resources in the Basin, and SCV-GSA has substantially improved its understanding and characterization of groundwater, surface-water, and ecological conditions since GSP adoption. However, the absence of final DWR guidance currently limits SCV-GSA's ability to develop a long-term monitoring and evaluation approach consistent with statewide expectations. SCV-GSA will review DWR's guidance when available, evaluate its applicability to Basin conditions, and determine whether refinements to the monitoring program, analytical methods, sustainable management criteria, and/or sustainable yield are warranted.

While final guidance is still under development, SCV-GSA will continue to improve characterization and management of environmental resources in the Basin through its expanded monitoring efforts (Section 3.6), well-replacement activities (Section 6.5), and model refinement (Section 5.4).

10.0 Summary of Proposed or Completed Revisions to Plan Elements [§356.4(c),(i)]

> **§ 356.4**
> ***(c)*** *Elements of the Plan, including the basin setting, management areas, or the identification of undesirable results and the setting of minimum thresholds and measurable objectives, shall be reconsidered and revisions proposed, if necessary.*
> ***(i)*** *A description of completed or proposed Plan Amendments.*

As part of this periodic evaluation, SCV-GSA has assessed elements of the GSP, including the Basin setting, definition of undesirable results, sustainable management criteria, monitoring networks, and projects and management actions. The evaluation identified targeted revisions and clarifications based on information developed since GSP adoption and DWR's recommended corrective actions. These are summarized below:

- **Basin Setting (RCA 1)**. New geophysical data, well information, and three-dimensional geologic and hydrostratigraphic modeling have improved SCV-GSA's understanding of the hydrogeologic conceptual model. The updated information refines the geometry of the principal aquifers but does not materially change the understanding of the Basin setting. Additionally, the land subsidence potential evaluation continues to support the GSP's interpretation of low subsidence potential in the Basin (RC Slade, 2026).
- **Chronic Lowering of Groundwater Levels and Reduction of Groundwater in Storage (RCA 2).** SCV-GSA has revised the minimum thresholds for chronic lowering of groundwater levels using a well-impact analysis that more directly relates the criteria to the protection of municipal and agricultural water supplies. SCV-GSA has also clarified the qualitative definition of the undesirable result to identify the specific effects that the minimum thresholds are intended to avoid.
- **Degraded Water Quality (RCA 3).** SCV-GSA has revised the sustainable management criteria for salts and nutrients by establishing minimum thresholds for individual representative monitoring sites, rather than applying management-zone-scale ambient water quality concentrations directly to individual wells. The definition of an undesirable result was also clarified so that minimum threshold exceedances are evaluated across the representative monitoring network within each principal aquifer. SCV-GSA has also established sustainable management criteria and a corresponding undesirable result definition for perchlorate and VOCs and has identified an associated management action.
- **Depletion of Interconnected Surface Water (RCA 4).** SCV-GSA has corrected the sustainable management criteria for the GDE monitoring network using surveyed land-surface and Santa Clara River thalweg elevations. SCV-GSA has not revised the definition of an undesirable result. Criteria at GDE-A, GDE-D, GDE-E and NLF-G3 will be reconsidered following construction of replacement monitoring wells and collection of sufficient baseline data.
- **Monitoring Networks**. SCV-GSA has updated the status and composition of the monitoring network to reflect new wells, GDE piezometers, and subsidence monitoring since GSP adoption. Planned monitoring well construction, replacement of damaged or otherwise unsuitable GDE

monitoring wells, domestic well outreach, and continued technical studies have been incorporated into the monitoring program.

SCV-GSA has not identified a need to amend the GSP at this time. The revisions documented through this periodic evaluation refine the technical information and quantitative criteria used to evaluate Basin conditions but do not change the Basin's sustainability goal, overall management strategy, or the types of significant and unreasonable effects that the GSP is designed to avoid. SCV-GSA will continue to evaluate the revised criteria and determine whether future conditions, monitoring results, DWR guidance regarding depletion of interconnected surface water, or other new information warrant a formal GSP amendment during the next five years of GSP implementation.

11.0 References and Technical Studies [§354.4(b)]

Bieger, K., Arnold, J., Rathjens, H., White, M., Bosch, D., Allen, P., Volk, M, and Srinivasah, R. 2017. Introduction to SWAT+, a Completely Restructured Version of the Soil and Water Assessment Tool. *Journal of American Water Resources Association*. DOI: 10.1111/1752-1688.12482

CH2M Hill. 2004. Regional Groundwater Flow Model for the Santa Clarita Valley, Santa Clarita, California. Prepared for Upper Basin Water Purveyors: Castaic Lake Water Agency, Newhall County Water District, Santa Clarita Water Division of CLWA, and Valencia Water District. April 2004.

DWR. 2023. A Guide to Annual Reports, Periodic Evaluations, and Plan Amendments. California Department of Water Resources (DWR). October 2023. Available online at: https://resources.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Sustainable-Groundwater-Management/Best-Management-Practices-and-Guidance-Documents/Files/GSP-Implementation-Guidance-Report.pdf

DWR. 2024. RE: Santa Clara River Valley – Santa Clara River Valley East Subbasin- 2022 Groundwater Sustainability Plan. https://sgma.water.ca.gov/portal/gsp/assessments/131. January 18, 2024.

EKI. 2023. Updated and Amended Interim Remedial Action Plan. Prepared for Santa Clarita Water Agency (SCV Water). Prepared by EKI ENVIRONMENT & WATER, Inc. (EKI). May 2023.

ESA. 2023. Santa Clarita Valley Groundwater Sustainability Plan Groundwater Dependent Ecosystem Monitoring Protocol. Prepared for Santa Clarita Valley Groundwater Sustainability Agency. Prepared by Environmental Science Associates (ESA) and Santa Clarita Water Agency (SCV Water). February 22, 2023.

ESA. 2024a. 2023 Annual GDE Monitoring Report for the Santa Clara River Valley East Subbasin Assessment of Groundwater Data and Habitat Conditions. Prepared for Santa Clarita Valley Groundwater Sustainability Agency. Prepared by Environmental Science Associates (ESA). March 6, 2024.

ESA. 2024b. 2024 Annual GDE Monitoring Report for the Santa Clara River Valley East Subbasin Assessment of Groundwater Data and Habitat Conditions. Prepared for Santa Clarita Valley Groundwater Sustainability Agency. Prepared by Environmental Science Associates (ESA). December 30, 2024.

ESA. 2026. 2025 Annual GDE Monitoring Report for the Santa Clara River Valley East Subbasin Assessment of Groundwater Data and Habitat Conditions. Prepared for Santa Clarita Valley Groundwater Sustainability Agency. Prepared by Environmental Science Associates (ESA). January 16, 2026.

Geosyntec. 2025. SCV Water 2025 Geologic Model Update. Prepared for Santa Clarita Valley Water Agency (SCV Water). Prepared by Geosyntec Consultants, Inc. (Geosyntec). December 5, 2025.

GSI Water Solutions, Inc. and Luhdorff & Scalmanini Consulting Engineers (GSI and LSCE). 2013. Calibration Update of the Purveyors' Regional Groundwater Flow Model through 2011 (Santa

Clarita Valley, California). Technical Memorandum prepared for Valencia Water Company and Castaic Lake Water Agency. December 2013.

GSI, LSCE, ESA, Geosyntec, GHD, KJ, and RCS. 2022. Santa Clara River Valley East Groundwater Subbasin Groundwater Sustainability Plan. Prepared for Santa Clarita Valley Groundwater Sustainability Agency. Prepared by GSI Water Solutions, Luhdorff & Scalmanini, Consulting Engineers (LSCE), Environmental Science Associates (ESA), Geosyntec Consultants, GHD, Kennedy Jenks, and Richard C. Slade & Associates LLC. January 2022.

GSI. 2022. 2021 Annual Report for the Santa Clara River Valley East Groundwater Subbasin Groundwater Sustainability Plan. Prepared for Santa Clarita Valley Groundwater Sustainability Agency (SCV GSA). Prepared by GSI Water Solutions, Inc. (GSI). March 2022.

GSI. 2023. 2022 Annual Report for the Santa Clara River Valley East Groundwater Subbasin Groundwater Sustainability Plan. Prepared for Santa Clarita Valley Groundwater Sustainability Agency (SCV-GSA). Prepared by GSI Water Solutions, Inc. (GSI). February 2023.

GSI. 2023b. Draft Groundwater Model Updates and Refinements (Santa Clara River Valley East Subbasin, Los Angeles County, California). Prepared for Santa Clarita Valley Water Agency (SCV Water). Prepared by GSI Water Solutions, Inc. June 2023.

GSI. 2024. 2023 Annual Report for the Santa Clara River Valley East Groundwater Subbasin Groundwater Sustainability Plan. Prepared for Santa Clarita Valley Groundwater Sustainability Agency (SCV-GSA). Prepared by GSI Water Solutions, Inc. (GSI). March 2024.

GSI. 2025. 2024 Annual Report for the Santa Clara River Valley East Groundwater Subbasin Groundwater Sustainability Plan. Prepared for Santa Clarita Valley Groundwater Sustainability Agency (SCV-GSA). Prepared by GSI Water Solutions, Inc. (GSI). February 2025.

GSI. 2026. 2025 Annual Report for the Santa Clara River Valley East Groundwater Subbasin Groundwater Sustainability Plan. Prepared for Santa Clarita Valley Groundwater Sustainability Agency (SCV-GSA). Prepared by GSI Water Solutions, Inc. (GSI). March 2026.

GSSI. 2016. Final Salt and Nutrient Management Plan, Santa Clara River Valley East Subbasin. Volumes 1 and 2. Prepared for Castaic Lake Water Agency and Santa Clara River Valley East Subbasin Salt and Nutrient Management Plan Task Force by GEOSCIENCE Support Services, Inc. (GSSI). December 8, 2016.

HGI. 2025. Santa Clarita Valley Water Agency Hydrogeophysical Investigation – Valencia, California. Prepared for Santa Clarita Valley Water Agency. Prepared by HGI Hydrogeophysics (HGI). August 2025.

Kennedy Jenks. 2021. Santa Clarita Valley Water Agency 2020 Urban Water Management Plan Final. Prepared for SCV Water. June 2021.

Langevin, C. D., Hughes, J. D., Provost, A. M., Russcher, M. J., Morway, E. D., Reno, M. J., Bonelli, W. P., Niswonger, R. G., Panday, S., Titus, S., Merrick, D., and Banta, E. R. 2026. MODFLOW 6 Modular Hydrologic Model version 6.7.0: U. S. Geological Survey Software Release, February 6, 2026. DOI: https://doi.org/10.5066/P1IJAXDZ

LARWQCB. 1994. Water Quality Control Plan, Los Angeles Region, Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties. Adopted by the California Regional Water Quality Control Board, Los Angeles Region.

LARWQCB. 2016. Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties. Los Angeles Regional Water Quality Control Board (LARWQCB). September 11, 2014. Available at: https://www.waterboards.ca.gov/losangeles/water_issues/programs/basin_plan/basin_plan_documentation.html.

LARWQCB. 2019. Chapter 3, Water Quality Objectives, of the May 6, 2019 Update of the Water Quality Control Plan, Los Angeles Region, Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties. Adopted by the California Regional Water Quality Control Board, Los Angeles Region. Available online at: https://www.waterboards.ca.gov/losangeles/water_issues/programs/basin_plan/2020/Chapter_3/Chapter_3.pdf.

Melton, F., Huntington, J, Grimm, R, Herring, J., Hall, M., Rollison, D., Erickson, T., Allen, R., Anderson, M., Fisher, J., Kilic, A., Senay, G., Volk, J., Hain, C., Johnson, L., Ruhoff, A., Blankenau, P., Bromley, M., Carrara, W., Daudert, B., Doherty, C., Dunkerly, C., Friedrichs, M., Guzman, A., Halverson, G., Hansen, J., Harding, J., Kang, Y., Ketchum, D., Minor, B., Morton, C., Ortega-Salazar, S., Ott, T., Ozdogan, M., Revelle, P., Schull, M., Wang, C., Yang, Y., and Anderson, R. 2021. OpenET: Filling a Critical Data Gap in Water Management for the Western United States. November 2021. DOI: 10.1111/1752-1688.12956

Panday, S., Langevin, C. D., Niswonger, R. G., Ibaraki, M., and Hughes, J. D., 2017. MODFLOW-USG version 1.4.00: An unstructured grid version of MODFLOW for simulating groundwater flow and tightly coupled processes using a control volume-finite difference formulation: U. S. Geological Survey Software Release, October 27, 2017, DOI: https://dx.doi.org/10.5066/F7R20ZFJ

RC Slade. 2026. Additional E-log Review and Interpretation and Assessment of Subsidence Potential based on Projected Future Saugus Formation Pumping. Prepared for SCV Water. Prepared by Richard C. Slade & Associates, LLC. September 2026.

White, J. T., Hunt, J. R., Fienen, M. N., and Doherty, J. E. 2020. Approaches to Highly Parameterized Inversion: PEST++ Version 5, Software Suite for Parameter Estimation, Uncertainty Analysis, Management Optimization, and Sensitivity Analysis. U. S. Geological Survey Techniques and Methods. DOI: 10.3133/tm7C26.

Woodard & Curran. 2026a. 2025 Urban Water Management Plan. Prepared for SCV Water. June 2026.

Woodard & Curran. 2026b. Recommendations to Expand GSA Contact List. Prepared for SCV Water. February 18, 2026.