

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

Groundwater Basin Name: Gilroy-Hollister Valley – Llagas (Basin No. 3-003.01)
Submitting Agency: Santa Clara Valley Water District
Recommendation: Approve
Date Issued: July 17, 2019

I. Summary

The Santa Clara Valley Water District (District) submitted an alternative (Llagas Alternative or Alternative) to the Department of Water Resources (Department) for evaluation and assessment as provided by the Sustainable Groundwater Management Act (SGMA).¹ The District submitted an existing plan, which relies primarily on the 2016 Groundwater Management Plan (Groundwater Management Plan or Plan).²

The District was formed in 1929, following enactment of the first voter-approved groundwater protection law in Santa Clara County. The law charged the District with the responsibility of stopping groundwater overdraft and subsidence in accordance with the Santa Clara Valley Water District Act (District Act).³ The District manages water resources for the entire County, which includes two groundwater subbasins, the Santa Clara Subbasin of the Santa Clara Valley Groundwater Basin and the Llagas Subbasin of the Gilroy-Hollister Valley Groundwater Basin (Llagas Subbasin or Subbasin). While the District Act was primarily a result of adverse conditions in the Santa Clara Subbasin, it provided direction for the District to manage water resources County wide and, therefore, the Groundwater Management Plan includes both subbasins.⁴

The Alternative demonstrates a long history of implementing the requirements of the District Act. The District has done this by developing a good understanding of the hydrogeologic conditions of the Subbasin, establishing significant water imports, and

¹ Water Code § 10720 *et seq.*

² Water Code § 10733.6(b)(1)

³ Water Code, App. § 60-1 *et seq.* (Stats.1951, c. 1405, p. 3337)

⁴ The District submitted the 2016 Groundwater Management Plan as an Alternative for both the Santa Clara and Llagas subbasins. This assessment is specifically related to the Department's review for the Llagas Subbasin.

managing those resources to meet the demands of the beneficial uses and users. The District has conducted numerous studies to identify appropriate actions to capture surface water runoff and store it for the purposes of replenishment of the groundwater. The quantification of required volumes, timing, and distribution of recharge have resulted in management of the Subbasin that has avoided overdraft and subsidence. The District's Groundwater Management Plan has established objectives to maintain the avoidance of adverse groundwater conditions in the Subbasin and documents specific plans and management actions to achieve those objectives. These plans and management actions are based on proven technologies, are reasonable and feasible, and present solutions to meet the objectives of the District Act.

Based on review of the Plan, other related documents, and consideration of public comments, Department staff believe the Llagas Alternative satisfies the objectives of SGMA for the Llagas Subbasin and recommends approval of the alternative. Staff consider the information provided by the District to be sufficient and credible, and that implementation of the Groundwater Management Plan is reasonably likely to lead to sustainable groundwater management of the Subbasin.⁵ In addition, staff have identified recommended actions that are designed to facilitate the Department's ongoing evaluation and assessment of the Plan including implementation and a determination of whether the Plan continues to satisfy the objectives of SGMA or adversely affects an adjacent basin.

The remainder of this assessment is organized as follows:

- **Section II. Review Principles** describes legal and other considerations regarding the Department's assessment and evaluation of alternatives.
- **Section III. Alternative Materials** describes materials (i.e., plans, reports, data, and other information) submitted by the Agency that, collectively, the Department staff considered as the Alternative.
- **Section IV. Required Conditions** describes whether the Alternative satisfies each of the four conditions required for the Department to review an alternative.
- **Section V. Alternative Contents** describes the information contained in the Alternative submittal.
- **Section VI. Assessment** describes Department staff's evaluation of the Alternative, whether it satisfies the objectives of SGMA, and, if applicable, describes recommended actions proposed for the first five-year update.

⁵ Water Code § 10721(v). See also discussion in Section II. Review Principles. Sustainable groundwater management is achieved by meeting the basin's sustainability goal.

II. Review Principles

The District submitted an alternative based on a groundwater management plan to the Department for evaluation and assessment to determine whether it satisfies the objectives of SGMA for the Llagas Subbasin. To satisfy the objectives of SGMA, an alternative based on a groundwater management plan prepared pursuant to Part 2.75 of Division 6 of the Water Code⁶ or a plan developed pursuant to another law authorizing groundwater management must demonstrate that implementation of the plan has led to or will lead to sustainable groundwater management, which means the management and use of groundwater in a manner that can be maintained during the planning and implementation horizon without causing undesirable results.⁷ Undesirable results are defined quantitatively by the managing agency.⁸

An alternative, to be evaluated by the Department, must be submitted by the statutory deadline and be within a basin that complies with Part 2.11 of Division 6 of the Water Code.⁹ The submitted alternative must also be complete and must cover the entire basin.¹⁰ The Groundwater Sustainability Plan (GSP) Regulations¹¹ require the Department to evaluate an Alternative “in accordance with Sections 355.2, 355.4(b), and Section 355.6, *as applicable*, to determine whether the Alternative complies with the objectives of the Act”.¹² The elements of the cited sections are not all applicable to alternatives. Some provisions apply to GSPs and alternatives alike, to alternatives only prospectively, or do not apply to alternatives at all.¹³ Ultimately, the purpose of the evaluation is to determine whether an alternative satisfies the objectives of SGMA.¹⁴ The agency must explain how the elements of an alternative are “functionally equivalent” to

⁶ Water Code § 10750 *et seq.*

⁷ Water Code 10721(v)

⁸ 23 CCR § 354.26

⁹ Water Code § 10733.6(c)-(d)

¹⁰ 23 CCR § 358.4(a)

¹¹ 23 CCR § 350 *et seq.*

¹² 23 CCR § 358.4(b) (emphasis added)

¹³ Procedural requirements, including submissions by the agency, posting by the Department, and the public comment period, apply equally to plans and alternatives (23 CCR § 355.2(a)-(c)). The periodic review of Plans (23 CCR § 355.6(a)) applies to alternatives prospectively but does not apply to initial submissions. Other regulatory provisions are inapplicable to alternatives, including the two-year review period (23 CCR § 355.2(e)), which is based on the statutory time-frame that applies to Plans but not alternatives (Water Code § 10733.4(d)); the “incomplete” status that allows the agency to address “one or more deficiencies that preclude approval, but which may be capable of being corrected by the Agency in a timely manner” (23 CCR § 355.2(e)(2)), which applies to plans undergoing development, but not alternatives that purportedly satisfy the objectives of SGMA at the time of their submission (Water Code § 10733.6(a)); and, for the same reason, corrective actions to address deficiencies in plans (23 CCR § 355.4(a)(4)), which applies to plans developed after the adoption of SGMA, but is inapplicable to alternatives that predate SGMA.

¹⁴ 23 CCR § 358.2(d), based on the statutory threshold of “whether the alternative satisfies the objectives of [SGMA] for the basin” (Water Code § 10733.6(a)).

the elements of a GSP required by Articles 5 and 7 of the GSP Regulations and are sufficient to demonstrate the ability of an alternative to achieve the objectives of SGMA.¹⁵ The explanation by the agency that elements of an alternative are functionally equivalent to elements of a GSP furthers the objective of demonstrating that an alternative satisfies the objectives of SGMA. Alternatives based on groundwater management plans or historical basin management practices that predate the passage of SGMA or adoption of GSP Regulations, although required to satisfy the objectives of SGMA, are not necessarily expected to conform to the precise format and content of a GSP. The Department's assessment is thus focused on the ability of an alternative to satisfy the objectives of SGMA as demonstrated by information provided by the agency; it is not a determination of the degree to which an alternative matched the specific requirements of the GSP Regulations.

When evaluating whether an alternative satisfies the objectives of SGMA and thus is likely to achieve the sustainability goal for the basin, staff review the information provided by and relied upon by the agency for sufficiency, credibility, and consistency with scientific and engineering professional standards of practice.¹⁶ The Department's review considers whether there is a reasonable relationship between the information provided and the assumptions and conclusions made by the agency, whether sustainable management criteria and projects and management actions described in an alternative are commensurate with the level of understanding of the basin setting, and whether those projects and management actions are feasible and likely to prevent undesirable results.¹⁷ Staff will recommend that an alternative be approved if staff believe, in light of these factors, that alternative has achieved or is likely to achieve the sustainability goal for the basin.¹⁸

An alternative that relies on an existing plan may be approved based on information that demonstrates the basin is being or will be managed sustainably based on groundwater management pursuant to that plan, including any related projects and management actions, as necessary. Even when staff review indicates that an alternative will satisfy the objective of SGMA, the Department may recommend actions to facilitate future evaluation of that alternative and to allow the Department to better evaluate whether an alternative adversely affects adjacent basins. DWR proposes that recommended actions be addressed by the submission date for the first periodic evaluation.

Staff assessment of an alternative involves the review of information presented by the agency, including models and assumptions, and an evaluation of that information based

¹⁵ 23 CCR § 358.2(d)

¹⁶ 23 CCR § 351(h)

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

¹⁸ 23 CCR § 355.4(b)

on scientific reasonableness. The assessment does not require Department staff to recalculate or reevaluate technical information provided in an alternative or to perform its own geologic or engineering analysis of that information. The staff recommendation to approve an alternative does not signify that Department staff, were they to exercise the professional judgment required to develop a plan for the basin, would make the same assumptions and interpretations as those contained in an alternative, but simply that Department staff have determined that the assumptions and interpretations relied upon by the submitting agency are supported by adequate, credible evidence, and are scientifically reasonable.

III. Alternative Materials

The District submitted an alternative based on a groundwater management plan pursuant to Water Code Section 10733.6(b)(1). The Alternative thus relies primarily upon the following document:

- Santa Clara Valley Water District 2016 Groundwater Management Plan, November 2016 (Groundwater Management Plan *or* Plan).

The District submitted the following additional plans, reports, and other documents prepared prior to the implementation of SGMA that the Department has determined to be sufficiently related to the Groundwater Management Plan to warrant their consideration as part of the Alternative:

- Santa Clara Valley Water District, 2016, Annual Groundwater Report for Calendar Year 2015 (2015 Annual Report).
- Santa Clara Valley Water District, December 2014, Final Salt and Nutrient Management Plan – Llagas Subbasin (Salt and Nutrient Management Plan).
- Santa Clara Valley Water District, 2016, 2015 Urban Water Management Plan (2015 Urban Water Management Plan).
- Santa Clara Valley Water District, Online – Historical Groundwater Elevation Data, <https://gis.valleywater.org/groundwaterelevations/map.php>.
- Santa Clara Valley Water District Act (District Act), <https://www.valleywater.org/how-we-operate/about-the-water-district/district-act>.

The District submitted a Groundwater Management Plan Appendix B - Demonstration of Functional Equivalency of the Alternative to address the required Alternative Elements Guide. The District has also submitted Annual Reports.¹⁹ Other material submitted by the District, public comments, other documents submitted by third parties, correspondence,

¹⁹ The Annual Report is not part of the Alternative and was not reviewed by the Department for the purpose of approving the Alternative.

and other information provided to or relied upon by the Department have been posted on the Department's web site.

IV. Required Conditions

An alternative, to be evaluated by the Department, must be submitted by the statutory deadline and be within a basin that complies with Part 2.11 of Division 6 of the Water Code.²⁰ The submitted alternative must also be complete and must cover the entire basin.²¹

A. Submission Deadline

SGMA requires that an alternative for a Basin categorized as high- or medium-priority as of January 31, 2015, be submitted no later than January 1, 2017.²²

The Santa Clara Valley Water District submitted its Alternative on December 21, 2016, before the statutory deadline.

B. Part 2.11 (CASGEM) Compliance

SGMA requires that the Department assess whether an alternative is within a basin that is in compliance with Part 2.11 of Division 6 of the Water Code,²³ which requires that groundwater elevations in all groundwater basins be regularly and systematically monitored and that groundwater elevation reports be submitted to the Department.²⁴ To manage its obligations under this law, the Department established the California Statewide Groundwater Elevation Monitoring (CASGEM) Program. The acronym CASGEM is used in this document to denote both the program and the groundwater monitoring law.²⁵

SGMA specifies that an alternative does not satisfy the objectives of SGMA if the Basin is not in compliance with the requirements of CASGEM.²⁶ The Department confirmed that the Llagas Subbasin was in compliance with the requirements of CASGEM prior to evaluating the Alternative and confirmed that the Subbasin remained in compliance with CASGEM through the last reporting deadline prior to issuing this assessment.

²⁰ Water Code § 10733.6(c)-(d)

²¹ 23 CCR § 358.4(a)

²² Water Code § 10733.6(c). Pursuant to Water Code § 10722.4(d), a different deadline applies to a Basin that has been elevated from low- or very low-priority to high- or medium-priority after January 31, 2015.

²³ Water Code § 10733.6(d)

²⁴ Water Code § 10920 *et seq.*

²⁵ Stats.2009-2010, 7th Ex.Sess., c. 1 (S.B.6), § 1

²⁶ Water Code § 10733.6(d)

C. Completeness

GSP Regulations specify that the Department shall evaluate an alternative if that alternative is complete and includes the information required by SGMA and the GSP Regulations.²⁷ An alternative submitted pursuant to Water Code Section 10733.6(b)(1) must include a copy of the groundwater management plan and an explanation of how the elements of the Alternative are functionally equivalent to the elements of a Plan required by Articles 5 and 7 of the GSP Regulations and are sufficient to demonstrate the ability of the Alternative to achieve the objectives of SGMA.²⁸

The District submitted a completed and final 2016 Groundwater Management Plan for the Llagas Subbasin, complementary documents, as indicated above, and other materials as required. Department staff found the Alternative to be complete and containing the required information, sufficient to warrant an evaluation by the Department.

D. Basin Coverage

An alternative must cover the entire basin.²⁹ An alternative that is intended to cover the entire basin may be presumed to do so if the basin is fully contained within the jurisdictional boundaries of the submitting agency.

The jurisdictional boundaries of the Santa Clara Valley Water District cover the entire Llagas Subbasin.³⁰ The Districts' authority aligns with Santa Clara County's jurisdictional boundaries and wholly cover the Llagas Subbasin.

V. Alternative Contents

GSP Regulations require the submitting agency to explain how the elements of an alternative are functionally equivalent to the elements of a GSP as required by Article 5 of the GSP regulations³¹ and are sufficient to demonstrate the ability of an alternative to achieve the objectives of SGMA.³²

As stated previously, alternatives based on historical basin management practices that predate the passage of SGMA or adoption of GSP Regulations, although required to satisfy the objectives of SGMA, are not necessarily expected to conform to the precise

²⁷ 23 CCR § 358.4(a)(3)

²⁸ 23 CCR § 358.2(c)-(d)

²⁹ 23 CCR § 358.4(a)(4)

³⁰ SGMA Alternative Portal, Attachment B-3 (<https://sgma.water.ca.gov/portal/alternative/print/20>)

³¹ 23 CCR § 354-354.44

³² 23 CCR § 358.2(d). The requirements pertaining to Article 7 of the GSP Regulations (23 CCR § 356-356.4) relate to annual reports and periodic evaluation and are not applicable to review of the initial alternative.

format and content of a GSP, and the criteria for adequacy of an alternative is whether the Department is able to determine that an alternative satisfies the objectives of SGMA. Department staff rely on the submitting agency's determination of functional equivalence of alternative elements to facilitate its evaluation and assessment of an alternative (see Assessment, below). Although the exact components of a GSP are not required for an alternative, for organizational purposes the discussion of information contained in the Groundwater Management Plan and related documents provided by the District generally follows the elements of a GSP provided in Article 5 of the GSP Regulations. The reference to requirements of the GSP Regulations at the beginning of each section is to provide context regarding the nature of the element discussed but is not meant to define a strict standard applicable to alternatives.

A. Administrative Information

GSP Regulations require information identifying the submitting agency, describing the plan area, and demonstrating the legal authority and ability of the submitting agency to develop and implement a plan for that area.³³

The Groundwater Management Plan contains information describing the history, governance structure, and financial capabilities for the Santa Clara Valley Water District.³⁴ The Plan describes the structure that the District, a water wholesaler, uses to engage with the various water retailers; land use agencies; local, state, and federal agencies; and other stakeholders. A discussion and supporting documentation of the specific public outreach that was conducted as part of the Plan development is provided.³⁵

The District Act, established in 1929 to address the primary objectives of overdraft and subsidence, provides the District with the statutory authority to manage groundwater in the county, identifies the consideration of all beneficial uses and users, and defines the primary objectives for the Subbasin.³⁶ The description of the administration and groundwater management associated with the District Act implementation includes an overview of decades of engagement by a public agency responsible for managing the groundwater and surface water resources of the Subbasin. The District determined that, to meet water demand in the Subbasin and avoid adverse conditions, additional supply was necessary and developed agreements to receive surface waters from the San Francisco Public Utility Commission and the Central Valley Project through a series of projects to store and distribute these waters.³⁷ The Plan also describes the District's

³³ 23 CCR § 354.2 et seq.

³⁴ Groundwater Management Plan, Section 1-4, pp. 1-3

³⁵ Groundwater Management Plan, Appendix A

³⁶ District Act, Section 5(5)

³⁷ Groundwater Management Plan, Section 1.4.1, p. 1-8

ability to adapt to changing demands and conditions in the Subbasin, such as the evolution of land use from agricultural to urban and industrial, with concomitant changes to water quality protection efforts including hazardous materials storage permit requirements.³⁸ Other examples include conservation programs, recycled water programs, and cooperative engagement with the Regional Water Quality control boards to address point source contaminants from leaky underground storage tank sites and other significant industrial contaminant release sites.³⁹

B. Basin Setting

GSP Regulations require information about the physical setting and characteristics of the basin and current conditions of the basin, including a hydrogeologic conceptual model, a description of historical and current groundwater conditions, and an assessment of the water budget.⁴⁰

1. Hydrogeologic Conceptual Model

The GSP Regulations require a descriptive hydrogeologic conceptual model of the basin that includes a written description supported by cross sections and maps.⁴¹

The Groundwater Management Plan includes a hydrogeologic conceptual model that describes the lateral and vertical extents of the Basin, recharge areas, principal aquifers and aquitards, and significant faults within the Basin.⁴² The Plan describes the Subbasin as unconsolidated alluvial material with two main aquifers generally dipping to the southeast toward the Pajaro River. The Plan identifies “shallow aquifer zones” as those aquifer zones less than 150 below ground surface and “principal aquifer zones” as aquifer zones occurring generally at depths greater than 150 feet below ground surface.⁴³ The northwestern and margins of the Subbasin are largely unconfined and serve as recharge areas, while in the central and southeastern portions of the Subbasin the principal aquifer zone is confined and the shallow aquifer zone is unconfined.⁴⁴ The Subbasin ranges in thickness from a few feet on the eastern and western margins to about 500 feet in the middle of the northwestern end of the Subbasin and over 1,000 feet thick in the central southeastern end of the Subbasin.⁴⁵

³⁸ Groundwater Management Plan, Section 1.4.1, p. 1-9

³⁹ Groundwater Management Plan, Section 1.4.1, p. 1-9

⁴⁰ 23 CCR § 354.12 *et seq.*

⁴¹ 23 CCR § 354.14(a)

⁴² Groundwater Management Plan, Section 3.1, pp. 3-1 to 3-7

⁴³ Groundwater Management Plan, Section 3.1.3, p. 3-2

⁴⁴ Groundwater Management Plan, Figure 3-3, p. 3-3

⁴⁵ Groundwater Management Plan, Figures 3-3 to 3-6, pp. 3-3 to 3-6

2. Groundwater Conditions

The GSP Regulations require a description of historical and current groundwater conditions in the basin that includes information related to groundwater elevations, groundwater storage, seawater intrusion, groundwater quality, subsidence, and interconnected surface water, as applicable. The GSP Regulations also require an identification of groundwater dependent ecosystems.⁴⁶

The Groundwater Management Plan characterizes current and historical groundwater conditions in the Llagas Subbasin, including groundwater elevations, land subsidence, surface water and groundwater interactions, and water quality.⁴⁷ Additional or supporting information regarding groundwater conditions in the Basin are provided in the District's 2015 Annual Report, online historical groundwater elevation data, Salt and Nutrient Management Plan, and the 2015 Urban Water Management Plan which were submitted to the Department as part of the Alternative.

The District provides information about current groundwater elevations in contour maps representing spring and fall conditions from its most recent annual report,⁴⁸ and provides maps from 2012 in the Plan, which the District describes as characterizing "typical" Subbasin conditions.⁴⁹ These maps illustrate the general groundwater flow directions and the change in seasonal flow patterns associated with recharge operations and typical pumping conditions and depressions. The Plan provides a hydrograph from an "index well" that illustrates periods of drawdown during droughts in the late 1970s and late 1980s/early 1990s followed by subsequent recovery, as well as drawdown beginning in 2011 following the recent drought. Historical Groundwater Elevation Data, showing groundwater elevation trends for wells monitored in the Subbasin, is made available online for public review.⁵⁰

The District estimated the operational storage in the Subbasin to range between 152,000 to 165,000 acre-feet based on estimated aquifer properties of specific yield, area, and groundwater elevation changes.⁵¹ The range was based on a high and low water elevation for years 1982-1983 and 1976-1977, respectively. The District does not provide an estimate of the total Subbasin storage but states that the operational range of storage was set to be less than total Subbasin storage to avoid adverse impacts.⁵² The Groundwater Management Plan presents a graphical representation of the annual

⁴⁶ 23 CCR § 354.16

⁴⁷ Groundwater Management Plan, Section 3.2, p. 3-8

⁴⁸ 2015 Annual Groundwater Report, Figures 14, 15, 16, pp. 21-23

⁴⁹ Groundwater Management Plan, Section 3.2.1, p. 3-8

⁵⁰ Historical Groundwater Elevation Data, <https://gis.valleywater.org/GroundwaterElevations/map.php>

⁵¹ Groundwater Management Plan, Section 4.4.2.3, p. 4-16

⁵² Groundwater Management Plan, Section 4.4.2.3, p. 4-16

change in storage from 1987 to 2016.⁵³ The Plan described that numerical modeling estimations of operational storage will be evaluated to determine if refinement of the operational storage estimate is necessary.

The Plan describes that a 2005 study by researchers from University of California, Berkeley, found no evidence of long-term subsidence.⁵⁴ The study evaluated InSAR satellite imagery from the period from 1992 to 2000 and, while elastic subsidence was observed during seasonal wet and dry conditions, no inelastic subsidence was found.⁵⁵

The Plan identifies the Llagas Subbasin as an interior subbasin that is not located near any saltwater bodies and, therefore, the Subbasin is not vulnerable to seawater intrusion (see Seawater Intrusion, below).⁵⁶

The Groundwater Management Plan describes and characterizes water quality conditions within the Llagas over the period of 2006 to 2015 and states that the District has monitored water quality conditions regularly since the 1980's.⁵⁷ The District maintains a water quality monitoring network of 36 wells in the Subbasin, but also includes water quality data from public water supply wells, domestic well testing, recycled water monitoring programs, and from other regulatory agencies (see Monitoring Networks, below).⁵⁸ The Groundwater Management Plan includes maps showing the distribution of key constituents with respect to maximum contaminant levels (MCL) and secondary maximum contaminant level (SMCL).⁵⁹ The Plan states that the groundwater in the Subbasin is generally of good quality and does not require treatment beyond disinfection at public water supply wells.⁶⁰ However, the Plan identifies that nitrate and perchlorate detections in domestic wells presents an "ongoing groundwater protection challenge".⁶¹ Perchlorate is noted to be from a former highway safety flare plant and the Plan states that the District's recharge activities, removal of perchlorate from the source area, and other remediation efforts have combined to reduce the occurrence in the Subbasin, with fewer than 10 domestic wells requiring treatment or replacement water sources.⁶² Nitrate in the Subbasin is attributed to man-made sources including application of fertilizers and from septic systems. A map of nitrate concentrations in the Plan indicates that elevated concentrations occur

⁵³ Groundwater Management Plan, Figure 4-13, p. 4-16

⁵⁴ Bürgmann and Johanson, South County Subsidence Study – Phase I and Phase II, University of California, Berkeley, 2005.

⁵⁵ Groundwater Management Plan, Section 3.2.2, p. 3-10

⁵⁶ Groundwater Management Plan, Section 3.2.5, p. 3-19

⁵⁷ Groundwater Management Plan, Section 3.2.4, p. 3-12

⁵⁸ Groundwater Management Plan, Section 7.3.1.1, p. 7-9

⁵⁹ Groundwater Management Plan, Figures 3-14 and 3-15, pp. 3-15 to 3-16

⁶⁰ Groundwater Management Plan, Section 3.2.4, p. 3-12

⁶¹ Groundwater Management Plan, Section 3.2.4, p. 3-12

⁶² Groundwater Management Plan, Figure 3-13, p. 3-14

throughout the Subbasin.⁶³ The District has a nitrate treatment system rebate program to promote the purchase and installation of nitrate treatment systems for domestic well owners.⁶⁴

In association with the Districts' recycled water program, a detailed analysis of the Subbasin-wide salt and nutrient loading was presented in the Salt and Nutrient Management Plan. The Salt and Nutrient Plan was prepared with respect to the Central Coast Regional Water Quality Control Board's Basin Plan water quality objectives for identified beneficial uses and users. The Salt and Nutrient Management Plan presents additional information regarding the existing and projected trends of total dissolved solids and nitrates associated with additional salt and nutrient loading within the Basin using an assimilative capacity analysis.⁶⁵ The Groundwater Management Plan provides a map of locations of known contaminated sites managed by other regulatory agencies.⁶⁶

As described in the Groundwater Management Plan, the District utilizes the creeks and streams as part of its management practices to recharge groundwater in the Subbasin.⁶⁷ The District describes that its recharge activities are an important factor in maintaining flows in the surface water bodies in the Subbasin, many of which would only flow intermittently in the absence of that recharge.⁶⁸ Surface water bodies are described as being generally disconnected from groundwater and the District states they are not aware of any areas where groundwater pumping has a significant or unreasonable effect on interconnected surface water.⁶⁹

The Plan describes two prominent wetlands along the southern Subbasin boundary. The Uvas-Carnadero wetlands are located in the southwestern corner of the Subbasin and represent an area of groundwater upwelling as it flows south into San Benito County. The Soap Lake area wetlands are located along the southeastern boundary and their source of water is believed to be from flooding and poorly draining soils.⁷⁰ The District provides a historical ecology map to serve as an indicator of historic stream conditions and vegetation types that may have once been associated with shallow groundwater.⁷¹ The Plan presents a map of depth to first groundwater based on leaking underground storage

⁶³ Groundwater Management Plan, Figure 3-14, p. 3-15

⁶⁴ Groundwater Management Plan, Section 6.2.4, p. 6-12

⁶⁵ Salt and Nutrient Management Plan, Section 4.3, p. 20

⁶⁶ Groundwater Management Plan, Figure 6-2, p. 6-17

⁶⁷ Groundwater Management Plan, Section 2.2.3, p. 2-17

⁶⁸ Groundwater Management Plan, Section 2.2.3, p. 2-14

⁶⁹ Groundwater Management Plan, Section 3.2.3, p. 3-10

⁷⁰ Groundwater Management Plan, Section 3.2.3, p. 3-10

⁷¹ Groundwater Management Plan, Figure 3-11, p. 3-11

tank sites, indicating where shallow groundwater may occur and be associated with surface water.⁷²

3. Water Budget

GSP Regulations require a water budget for the basin that provides an accounting and assessment of the total annual volume of groundwater and surface water entering and leaving the basin, including historical, current and projected water budget conditions, and the change in the volume of water stored, as applicable.⁷³

The Groundwater Management Plan provides a description of countywide water supply, demand, and management for both the Santa Clara and the Llagas subbasins.⁷⁴ The Plan provides a quantification of the groundwater budget summarizing natural and managed inflows and outflows for a period of 2003 through 2012. This 10-year period was selected due to a representative distribution of dry, wet, and normal years, without incorporating periods of exceptionally dry years.⁷⁵ Over that period, the Llagas Subbasin had a total inflow of approximately 47,000 acre-feet per year, with 24,000 acre-feet per year coming from managed recharge sources, and a total outflow of 47,000 acre-feet per year, with 44,000 acre-feet per year attributed to groundwater pumping and 3,000 acre-feet per year discharging to the adjacent basin. The average change in storage over that time period was zero.⁷⁶ The Plan notes that the groundwater budget was developed through use of a groundwater flow model, which is briefly described in the Plan.⁷⁷ Additional detail on the model as it was originally developed in 2005 was found in the consultant report, although the Plan indicates the model has been updated since that time.⁷⁸

Anticipated future demands are described in the Plan and the 2015 Urban Water Management Plan. The Plan describes that municipal demand is projected to increase from the “current long-term average” of 44,000 acre-feet per year to 47,000 acre-feet per year by 2020 and then to 53,000 acre-feet per year by 2040; no change is expected for agricultural and “independent (non-retailers)” pumpers.⁷⁹ The 2015 Urban Water Management Plan provides descriptions of projected water demand through 2040 for various water use sectors which, consistent with the descriptions in the Groundwater

⁷² Groundwater Management Plan, Figure 3-12, p. 3-12

⁷³ 23 CCR § 354.18

⁷⁴ Groundwater Management Plan, Sections 4.1 to 4.3, pp. 4-1 to 4-6

⁷⁵ Groundwater Management Plan, Section 4.4, p. 4-7

⁷⁶ Groundwater Management Plan, Table 4-6, p. 4-17

⁷⁷ Groundwater Management Plan, Section 7.6.2, p. 7-32

⁷⁸ CH2MHill, Llagas Basin Numerical Groundwater Model Report, 2005 – Entire Report

⁷⁹ Groundwater Management Plan, Section 4.5, p. 4-18

Management Plan, indicates an anticipated steady increase in population and water demand by water retailers.⁸⁰

4. Management Areas

GSP Regulations authorizes, but does not require, an agency to define one or more management areas within a basin if the agency has determined that creation of management areas will facilitate implementation of the GSP.⁸¹

The District did not identify any specific management areas for the Llagas Subbasin in its Groundwater Management Plan.

C. Sustainable Management Criteria

GSP Regulations require a sustainability goal that defines conditions that constitute sustainable groundwater management for the basin, the characterization of undesirable results, and establishment of minimum thresholds and measurable objectives for each applicable sustainability indicator, as appropriate.⁸²

1. Sustainability Goal

GSP Regulations require that sustainable management criteria include a sustainability goal that culminates in the absence of undesirable results within the appropriate timeframe, and includes a description of the sustainability goal, describes information used to establish the goal for the basin, describes measures that will be implemented to ensure the basin operates within its sustainable yield, and contains an explanation of how the sustainability goal will be met.⁸³

The Groundwater Management Plan describes the correlation of the sustainable management criteria defined in SGMA with the driving principles of the District Act.⁸⁴ The Plan identifies two sustainability goals: (1) “groundwater supplies are managed to optimize water supply reliability and minimize subsidence”, and (2) “groundwater is protected from contamination, including salt water intrusion”.⁸⁵ The implementation of groundwater management activities associated with the District Act resulted in establishing organizational terminology and policy to implement the necessary actions to

⁸⁰ 2015 Urban Water Management Plan, Section 4.2, p. 4-2

⁸¹ 23 CCR § 354.20

⁸² 23 CCR § 354.22

⁸³ 23 CCR § 354.24

⁸⁴ Groundwater Management Plan, Section 5.1, p. 5-1

⁸⁵ Groundwater Management Plan, Section 5.2, p. 5-2

achieve these objectives. Figure 5-1 and 5-2 of the Plan illustrate the policy framework and definitions of the sustainability goals down to specific measurable outcomes.⁸⁶

2. Sustainability Indicators

GSP Regulations specify that an agency define conditions that constitute sustainable groundwater management for a basin, including the characterization of undesirable results and the establishment of minimum thresholds and measurable objectives for each applicable sustainability indicator.⁸⁷

Sustainability indicators are defined as any of the effects caused by groundwater conditions occurring throughout the basin that, *when significant and unreasonable*, cause undesirable results.⁸⁸ Sustainability indicators thus correspond with the six undesirable results – chronic lowering of groundwater levels indicating a depletion of supply if continued over the planning and implementation horizon, reduction of groundwater storage, seawater intrusion, degraded water quality, including the migration of contaminant plumes that impair water supplies, land subsidence that substantially interferes with surface land uses, and depletions of interconnected surface water that have adverse impacts on beneficial uses of the surface water⁸⁹ – but refer to groundwater conditions that are not, in and of themselves, significant and unreasonable. Rather, sustainability indicators refer to the effects caused by changing groundwater conditions that are monitored, and for which criteria in the form of minimum thresholds are established by the agency to define when the effect becomes significant and unreasonable, producing an undesirable result.

This section thus consolidates three facets of sustainable management criteria: undesirable results, minimum thresholds, and measurable objectives. Information pertaining to the processes and criteria relied upon to define undesirable results applicable to the basin, as quantified through the establishment of minimum thresholds, are addressed for each sustainability indicator. However, a submitting agency is not required to establish criteria for undesirable results that the agency can demonstrate are not present and are not likely to occur in a basin.⁹⁰

⁸⁶ Groundwater Management Plan, Section 5.1, pp. 5-1 to 5-2

⁸⁷ 23 CCR § 354.22

⁸⁸ 23 CCR § 351(ah)

⁸⁹ Water Code § 10721(x)

⁹⁰ 23 CCR § 354.26(d)

a. Chronic Lowering of Groundwater Levels

GSP Regulations specify that the minimum threshold for chronic lowering of groundwater levels be based on groundwater elevations indicating a depletion of supply that may lead to undesirable results.⁹¹

The District does not manage the Subbasin to specific groundwater-level thresholds. Instead, the District uses a threshold for end-of-year groundwater storage (see Reduction of Groundwater Storage, below). However, water levels are monitored throughout the year to “support groundwater supply assessment and forecasting, recharge operations, efforts to monitor concentrated pumping and land subsidence, and other purposes.”⁹²

b. Reduction of Groundwater Storage

GSP Regulations specify that the minimum threshold for reduction of groundwater storage shall be a total volume of groundwater that can be withdrawn from the basin without causing conditions that may lead to undesirable results.⁹³

The Groundwater Management Plan describes an end-of-year groundwater storage target of 17,000 acre-feet for the Llagas Subbasin.⁹⁴ The District’s Functional Equivalency Report cites the sections of the Plan describing the storage targets as being equivalent to the minimum thresholds required in a GSP.⁹⁵ The storage targets were derived from the District’s 2015 Urban Water Management Plan, which identified a combined storage target of 300,000 acre-feet for the Santa Clara and Llagas subbasins as the bottom of the “normal” range where no contingency actions are needed.⁹⁶ The Urban Water Management Plan provides additional details of the storage analysis and describes subsequent contingency actions to be taken if the end-of-year storage targets are not met.⁹⁷ The 2015 Annual Groundwater Report describes that the end-of-year storage volumes were not met in 2015 (a drought year), when a total of approximately 13,900 acre-feet of groundwater was in storage.⁹⁸ This condition triggered a countywide water use reduction of 30 percent in 2015, which was reduced to a 20 percent reduction in 2016; the water use reduction triggers were described as being consistent with District’s Water Shortage Contingency Plan.⁹⁹

⁹¹ 23 CCR § 354.28(c)(1)

⁹² Groundwater Management Plan, Section 7.1.1, p. 7-1

⁹³ 23 CCR § 354.28(c)(2)

⁹⁴ Groundwater Management Plan, Section 5.4.1, p. 5-6

⁹⁵ Groundwater Management Plan, Appendix B, p. B-13

⁹⁶ Groundwater Management Plan, Section 5.4.1, p. 5-6

⁹⁷ 2015 Urban Water Management Plan, Table 8-1, p. 8-3

⁹⁸ 2015 Annual Groundwater Report, Section 3.2, p. 24

⁹⁹ 2015 Annual Groundwater Report, Section 3.2, p. 19

c. Seawater Intrusion

GSP Regulations specify that the minimum threshold for seawater intrusion be defined by a chloride concentration isocontour for each principal aquifer where seawater intrusion may lead to undesirable results.¹⁰⁰

As noted above (see Groundwater Conditions), the District identified that the Llagas Subbasin is not vulnerable to seawater intrusion due to the landlocked, interior location of the subbasin and no criteria for this sustainability indicator were provided in the Plan.

d. Degraded Water Quality

GSP Regulations specify that the minimum threshold for degraded water quality shall be the degradation of water quality, including the migration of contaminant plumes that impair water supplies or other indicator of water quality as determined by the agency that may lead to undesirable results.¹⁰¹

The Plan describes two water quality outcome measures for the plan area, which covers both the Santa Clara and Llagas subbasins. The first outcome measure is that at least 95 percent of countywide water supply wells meet primary drinking water standards and 90 percent of wells in the “South County” area (comprised of the Llagas Subbasin and the adjacent Coyote Valley management area of the Santa Clara Subbasin) meet agricultural objectives defined in the Regional Water Quality Control Board’s Basin Plan.¹⁰² The Plan describes that this outcome measure is primarily related to groundwater that is used (i.e., extracted) and, because most groundwater is extracted from the principal aquifer zone, only wells in that zone are tracked for this measure.¹⁰³ The 2015 Annual Report describes that the drinking water component of this outcome measure was not met in 2015, when 84 percent of wells met primary drinking water standards.¹⁰⁴ The 2015 Annual Report explained that all of the instances where drinking water standards were not met were due to nitrate detections in domestic wells located in the “South County” area. The agricultural water quality component of the outcome measure was met in 2015, with 98 percent of wells meeting agricultural water quality objectives.

The second outcome measure is that at least 90 percent of wells county-wide in both the shallow and principal aquifer zones have stable or decreasing concentrations of nitrate, chloride, and total dissolved solids.¹⁰⁵ The 2015 Annual Report describes that the nitrate and total dissolved solids components of this outcome measure were met in 2015, but

¹⁰⁰ 23 CCR § 354.28(c)(3)

¹⁰¹ 23 CCR § 354.28(c)(4)

¹⁰² Groundwater Management Plan, Section 5.4.3, p. 5-7

¹⁰³ Groundwater Management Plan, Section 5.4.3, p. 5-7

¹⁰⁴ 2015 Annual Groundwater Report, Section 5, p. 34

¹⁰⁵ Groundwater Management Plan, Section 5.4.3, p. 5-8

that it was not met for chloride, when 84 percent of wells showed stable or decreasing chloride concentrations.

e. Land Subsidence

GSP Regulations specify that the minimum threshold for land subsidence shall be the rate and extent of subsidence that substantially interferes with surface land uses and may lead to undesirable results.¹⁰⁶

The District has not provided sustainable management criteria for subsidence in the Llagas Subbasin. As noted above (see Groundwater Conditions), the Plan states that technical studies support that there is no evidence for long-term inelastic subsidence in the Subbasin.¹⁰⁷

f. Depletion of Interconnected Surface Water

GSP Regulations specify that the minimum threshold for depletions of interconnected surface water shall be the rate or volume of surface water depletions caused by groundwater use that has adverse impacts on beneficial uses of the surface water and may lead to undesirable results.¹⁰⁸

The Plan does not identify any management criteria related to depletions of interconnected surface water in the Llagas Subbasin. The District notes that streams and creeks in the Subbasin are largely disconnected and that flows in those surface water bodies would only occur intermittently if not for the District's recharge activities.¹⁰⁹ The Plan identifies that interconnected surface water potentially only occurs in a discrete southwestern wetland area of the Llagas Subbasin associated with the area where groundwater discharges south into San Benito County (see Groundwater Conditions, above).

D. Monitoring Networks

GSP Regulations require that each basin be monitored, and that a monitoring network include monitoring objectives, monitoring protocols, and data reporting requirements be developed that shall promote the collection of data of sufficient quality, frequency, and distribution to characterize groundwater and related surface water conditions in the basin and evaluate changing conditions.¹¹⁰

¹⁰⁶ 23 CCR § 354.28(c)(5)

¹⁰⁷ Groundwater Management Plan, Section 3.2.2, p. 3-10

¹⁰⁸ 23 CCR § 354.28(c)(6)

¹⁰⁹ Groundwater Management Plan, Section 3.2.3, p. 3-10

¹¹⁰ 23 CCR § 354.32

The District describes the groundwater level, water quality, and surface water (flow and quality) monitoring programs in place to measure progress or maintenance of the District's outcome measures and sustainability goals.

Groundwater level monitoring includes a network of 58 wells distributed throughout the Subbasin and monitored directly by the District.¹¹¹ The District provides descriptions of the monitoring well network including total depth, screen interval (provided for less than half of the monitoring wells), well type, monitoring frequency, and other details.¹¹² Nearly all of the District monitoring wells are monitored no less frequent than monthly. The Groundwater Management Plan provides a description of the accuracy associated with various methods used to determine wellhead elevation (i.e., wellhead survey, interpolation from topographic maps, or interpolation from lidar data).¹¹³ The Plan notes that wellhead elevations for approximately half of the wells monitored by the District were determined by surveying, which is the method associated with the highest accuracy, and that the District is working to survey the remaining wells as resources allow.¹¹⁴

The District maintains a water quality monitoring network of 36 wells¹¹⁵ (15 in the shallow aquifer zone and 21 in the principal aquifer zone) that are sampled annually for trace elements, ions, nutrients, and field parameters (e.g., pH, specific conductance, and temperature), and every three years for volatile organic compounds.¹¹⁶ The District also obtains water quality sampling results from public water supply wells,¹¹⁷ domestic wells tested as part of the District's free basic water quality testing program,¹¹⁸ recycled water monitoring programs,¹¹⁹ and groundwater quality data from other regulatory agencies (including the Water Board's Groundwater Ambient Monitoring and Assessment and Irrigated Lands Regulatory Program).¹²⁰

Surface water monitoring described by the District includes the evaluation of water quality and discharge of surface waters within the Subbasin to properly manage recharge efforts.¹²¹ The District identifies the sampling locations for water quality and discharge

¹¹¹ Groundwater Management Plan, Section 7.1.1, pp. 7-1 to 7-3

¹¹² Groundwater Management Plan, Appendix E, p. E-13

¹¹³ Lidar (or LiDAR) refers to "light detection and ranging", a laser-based remote-sensing technology that is capable of penetrating overlying vegetation and forest canopies. (Arlen F. Chase, et al., Geospatial revolution in Mesoamerican archaeology, Proc. Nat. Acad. Sciences, Aug 2012, 109 (32) 12916-12921; DOI: 10.1073/pnas.1205198109x)

¹¹⁴ Groundwater Management Plan, Section 7.1.2.1, p. 7-3

¹¹⁵ Groundwater Management Plan, Section 7.3.1.1, p. 7-9

¹¹⁶ Groundwater Management Plan, Section 7.3, p. 7-9

¹¹⁷ Groundwater Management Plan, Section 7.3.2, p. 7-13

¹¹⁸ Groundwater Management Plan, Section 7.3.3, p. 7-14

¹¹⁹ Groundwater Management Plan, Section 7.3.4, p. 7-15

¹²⁰ Groundwater Management Plan, Section 7.3.5, pp. 7-19 to 7-20

¹²¹ Groundwater Management Plan, Section 7.4.1, p. 7-23

locations throughout the Subbasin.¹²² Water quality samples are collected at six stream recharge system sites on a triennial rotating basis during both dry and wet seasonal conditions with 90 samples being collected in total over the three-year period (District wide).¹²³ In addition to collecting surface water quality and discharge data, the District coordinates and incorporates data from other agencies and programs including the Central Coast Regional Water Quality Control Board's Ambient Monitoring program.

Data collected as part of the District's monitoring programs are stored in databases and are largely available on the District's websites. The monitoring data is incorporated into various reporting structures that regularly inform management actions by the District, these include: Water Tracker (monthly), Monthly Groundwater Condition Report, Protection and Augmentation of Water Supplies Report (annual), and the Annual Groundwater Report.¹²⁴ These data and reports support ongoing modelling efforts to support the District's forecasting ability and ongoing evaluation of conditions in the Subbasin.

E. Projects and Management Actions

GSP Regulations require a description of the projects and management actions the submitting agency has determined will achieve the sustainability goal for the basin, including projects and management actions to respond to changing conditions in the basin.¹²⁵

The Groundwater Management Plan provides a portfolio of projects and management actions that are currently being implemented by the District or other agencies to address County-wide sustainability goals. The District also explains that the District Act provides the authority to advance additional projects on an as-needed basis through the capital improvement program.¹²⁶ The Plan organizes these projects and management actions into three primary categories: projects supporting groundwater reliability, groundwater quality, and surface water - groundwater interactions.

Programs to maintain reliable groundwater supply include managed aquifer recharge, in-lieu recharge, protection of natural recharge, groundwater production management, water accounting, groundwater level and storage assessments, and asset management.¹²⁷ Programs to protect groundwater quality include a well ordinance program, domestic well testing program, salt and nutrient management, nitrate treatment system rebate program,

¹²² Groundwater Management Plan, Figure 7-14, p. 7-25

¹²³ Groundwater Management Plan, Section 7.4, p. 7-23

¹²⁴ Groundwater Management Plan, Section 7.5, p. 7-28

¹²⁵ 23 CCR § 354.44

¹²⁶ Groundwater Management Plan, Section 6.0, p. 6-1

¹²⁷ Groundwater Management Plan, Section 6.1, p. 6-1

vulnerability assessment studies, coordination with land use agencies, coordination with regulatory agencies, and public outreach.¹²⁸ Programs related to surface water - groundwater interaction provide ongoing integrated management of these resources serve to address both reliability and quality needs of the beneficial uses and users in the Basin and include the managed in-stream releases of surface water, stormwater management, prevention of salt water intrusion, and watershed management.¹²⁹

VI. Assessment

The following describes the evaluation and assessment of the Alternative for the Llagas Subbasin as determined by Department staff. In undertaking this assessment, Department staff do not conduct geologic or engineering studies, although Department staff may rely on publicly available geologic or engineering or other technical information to verify claims or assumptions presented in the Alternative.¹³⁰ As discussed above, Department staff have determined that the Llagas Alternative satisfied the conditions for submission of an alternative.¹³¹ The Alternative was submitted within the statutory period, the Subbasin was found to be in compliance with the reporting requirements of CASGEM, and staff find the Alternative to be complete and to cover the entire basin (see Required Conditions, above). Based on its evaluation and assessment of the Llagas Alternative, as discussed below, Department staff find that the Alternative satisfies the objectives of SGMA.¹³²

A. Evaluation of Alternative Contents

The District describes in sufficient detail its authority to manage groundwater within its statutory boundaries, which encompasses the Llagas Subbasin. The Groundwater Management Plan and the District Act document the legal authority and describe past and planned future authority to implement and finance necessary projects. The District describes the evolution of the District dating back to 1929 with the Santa Clara Valley Water Conservation District charged with the initial mission of stopping groundwater overdraft and subsidence. Since that time the District has grown through consolidation and annexation of other flood control and water districts. The District has demonstrated implementation of numerous projects and management actions to address the primary drivers of flood control, water reliability, and water quality conditions in the County. The District has funded and cooperated with numerous studies to characterize groundwater

¹²⁸ Groundwater Management Plan, Section 6.2, p. 6-9

¹²⁹ Groundwater Management Plan, Section 6.3, p. 6-18

¹³⁰ Instances where the Department review relied upon publicly available data that was not part of the Alternative are specifically noted in the assessment.

¹³¹ 23 CCR § 358.4(a)

¹³² Water Code § 10733.6(a); and 23 CCR § 358.4(b)

conditions in the County for a variety of factors to inform management strategies. That history of management in the County provides a reasonable level of confidence that the District can continue implementation of the Groundwater Management Plan to meet its sustainability goals.

The Groundwater Management Plan and associated technical studies and plans demonstrate a sufficient understanding of the basin setting, including the geology and groundwater conditions of the Llagas Subbasin. The Plan and supporting technical studies, including the 2015 Annual Report, 2015 Urban Water Management Plan, and the Salt and Nutrient Management Plan appear to rely on best available information and best available science, and their conclusions are consistent with the Department's understanding of conditions in the Llagas Subbasin. The hydrogeologic conceptual model described in the Plan incorporates the relevant hydrologic processes in the entire basin to support analysis presented. The use of numerical models in the Basin to support operational and long-term planning decisions also provide support for water budget estimates. The District's numerical models are used to provide on-going estimates of groundwater storage to support management actions of required replenishment activities. The District's understanding of the basin setting is adequate to develop and implement a plan for sustainable groundwater management. However, Department staff recommend the District address identification of groundwater dependent ecosystems (see Recommended Action 1) and incorporate climate change into its projected water budget (see Recommended Action 2).

The Plan identifies sustainability goals for the County and specific, quantitative outcome measures for groundwater storage in the Llagas Subbasin and water quality in the combined Santa Clara and Llagas subbasins. The District's storage outcome measure is an end-of year storage target of 17,000 acre-feet in the Llagas Subbasin. The District has identified specific actions that occur if that storage target is not met, as defined in the 2015 Urban Water Management Plan. Water quality outcome measures utilize primary drinking water standards and Central Coast Regional Water Quality Control Board Basin Plan agricultural water quality standards. The water quality outcome measure address both the number of detections above the identified thresholds and trends of key constituents identified for the County. Department staff recommend that the water quality outcome measures, which in the Plan are defined County-wide (i.e., they are set based on water quality in both the Santa Clara and Llagas subbasins), be refined in future updates to the Alternative with separate quantitative measures specific to the respective subbasins (see Recommended Action 3). The District already reports water quality detections and trends separately by subbasin but, as presently configured in the Plan, it is not possible to determine whether failure to achieve the outcome measures represents

an undesirable result for both subbasins or whether the undesirable result is applicable to a specific subbasin.¹³³

Additionally, the outcome measures defined by the District are the only quantitative standards outlined in the Plan and, as indicated in the 2015 Annual Groundwater Report, several of those standards were not met in 2015 (e.g., for end-of-year storage). While alternatives are not required to follow the exact format of a GSP, the GSP Regulations do outline a process for GSP development that includes quantitative standards both for measurable objectives, which represent conditions that the basin is operated toward; and minimum thresholds, which represent conditions that generally are to be avoided so as to not cause undesirable results. It was not clear to Department staff whether those outcome measures were generally more equivalent to measurable objectives or minimum thresholds but, in the absence of any other quantifiable standard, the Department's ongoing review of whether the Alternative satisfies the objectives of SGMA will focus on whether the District is able to meet those outcomes to avoid undesirable results in the Subbasin. If the outcome measures are more equivalent to measurable objectives and there is another metric that is generally more representative of conditions that the District intends to avoid in the Subbasin to prevent undesirable results, then the District should provide those metrics in an update to the Alternative (see Recommended Action 4).

The District describes specific monitoring networks that address groundwater levels, groundwater quality, surface water quality, and surface water flows and the data collected from these locations typically represent long periods of observations. The distribution of dedicated monitoring wells and other monitoring sites appears to be reasonable based upon the description of the hydrogeologic system. The data provide an adequate and reasonable distribution of direct observations of conditions within the Basin to allow for informed decisions and planning for sustainable groundwater management. The frequency of data collected from the monitoring networks is adequate to characterize the seasonal variability and management-action based variability of the groundwater and related systems.

The District's management actions and projects related to groundwater management, which include direct managed recharge, in-lieu recharge, protection of natural recharge, management of groundwater production, water accounting, groundwater storage assessments, and asset management (i.e., maintenance of infrastructure) appear to have resulted in significant progress in meeting County-wide sustainability goals and toward meeting the outcome measures for storage and water quality applicable to the Llagas Subbasin. The groundwater conditions described in the Plan illustrate the maintenance of the targeted conditions, with exception of drought periods where additional prescribed

¹³³ 2015 Annual Groundwater Report, Table 8, p. 37

actions were implemented, such as water conservation and withdrawal of banked water. Continued implementation of planned projects, programs, and coordinated effort on water quality objectives will likely result in continued progress toward meeting the goals and outcome measures. The District describes a clear process for development, funding, and implementation of necessary projects to support the sustainability goals.

The Groundwater Management Plan for the Llagas Subbasin is specifically designed to manage groundwater supplies to optimize water supply reliability and to protect the basin against undesirable results including overdraft and groundwater contamination, and so appears consistent with Water Code Section 106.3, which establishes the state policy that “every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes.” Department staff consider that the Groundwater Management Plan, which utilizes natural waterways in the basin to recharge the aquifers, appears also to be consistent with the public trust doctrine.

B. Recommended Actions

The following recommended actions include information that the District may wish to include in the first five-year update of the Alternative to facilitate the Department’s ongoing evaluation and assessment of the Alternative as well as recommendations for improvements to the Alternative.

Recommended Action 1.

Staff recommend that the District provide an identification of groundwater dependent ecosystems in the Subbasin.

Recommended Action 2.

Staff recommend that the District provide a projected water budget incorporating climate change over the planning and implementation horizon of 50 years.

Recommended Action 3.

Staff recommend that the District create separate outcome measures related to water quality in the Santa Clara and Llagas subbasins. Separate subbasin-specific criteria will allow for a determination of whether each subbasin, separately, is meeting or making progress toward the outcome measures.

Recommended Action 4.

The District should clarify how meeting its outcome measures relates to the avoidance of undesirable results in the Llagas Subbasin. Specifically, it should clarify whether not meeting the outcome measures represents an undesirable result for the applicable sustainability indicator. If the intent of the outcome measures is not to represent

undesirable results, the District should provide additional clarification about their purpose. In addition, the District should provide metrics that it can use and can be used by the Department to objectively assess the presence or absence of undesirable results.