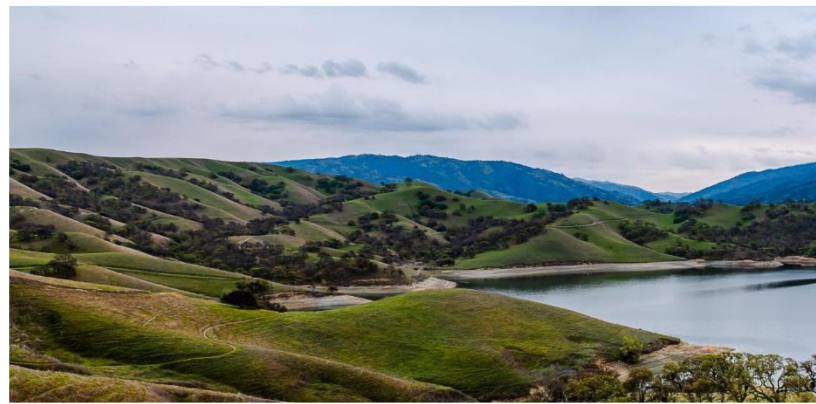
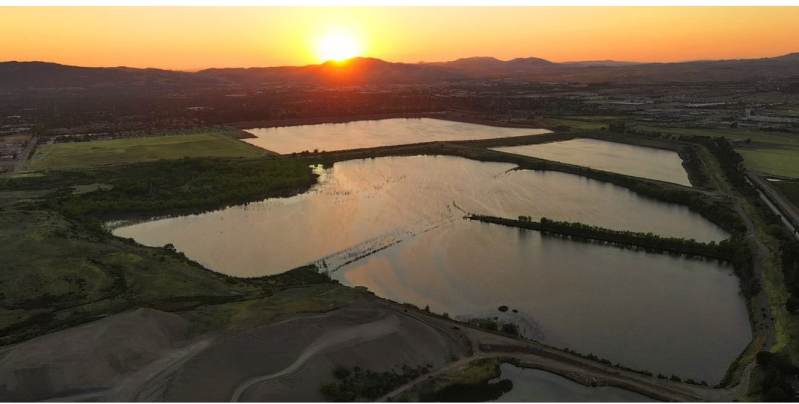


Public Review Draft
November 2021

Alternative Groundwater Sustainability Plan for the Livermore Valley Groundwater Basin

Executive Summary



EXECUTIVE SUMMARY

§ 354.4. Each Plan shall include the following general information:

(a) An executive summary written in plain language that provides an overview of the Plan and description of groundwater conditions in the basin.

☑ 23 CCR § 354.4(a)

ES.1. Introduction

On 16 September 2014, the California legislature enacted the Sustainable Groundwater Management Act (SGMA) to establish a framework to protect groundwater resources within the state's high and medium priority groundwater basins. SGMA empowers certain local agencies to form Groundwater Sustainability Agencies (GSAs) whose purpose are to manage basins sustainably through the development and implementation of Groundwater Sustainability Plans (GSPs). A GSA is able to submit an Alternative GSP (Alt GSP) if it is able to demonstrate that the basin it is responsible for managing has been operating within its Sustainable Yield for at least 10 years.

Under its authority as the exclusive GSA of the Livermore Valley Groundwater Basin (Basin), the Alameda County Flood Control and Water Conservation District, Zone 7 (Zone 7) submitted an Alt GSP for the Basin in December 2016 (see **Figure ES-A** for the Plan Area). The Basin is designated by DWR as a medium-priority basin and is not subject to the critical conditions of overdraft. The California Department of Water Resources (DWR) approved Zone 7's 2016 Alt GSP in July 2019 and provided a list of recommended actions to consider in future updates to the Alt GSP.

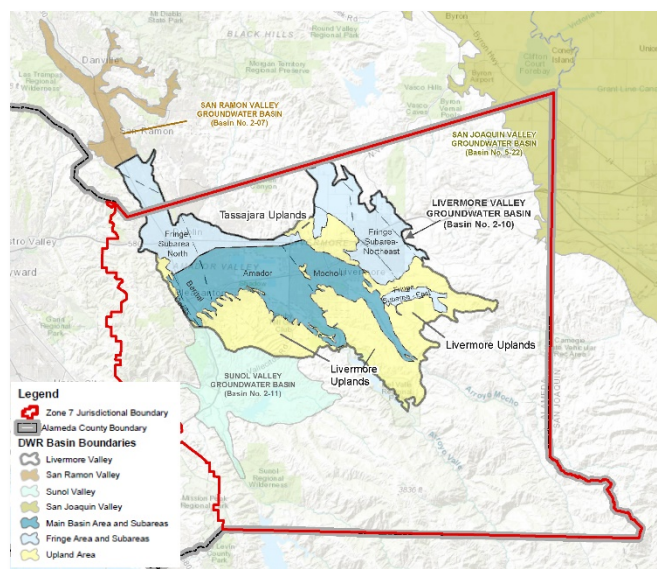


Figure ES-A: Map of Plan Area

Per SGMA requirements, each GSA shall evaluate its GSP or Alt GSP at least once every five years and provide a written assessment to DWR that the basin has continued to operate within its Sustainable Yield and has not experienced Undesirable Results. This 2021 Alt GSP was prepared by Zone 7 in accordance with SGMA regulatory requirements¹ to demonstrate that Zone 7 has continued to operate the Basin within its Sustainable Yield over a period of at least 10 years and is meeting the Sustainability Goal defined for the Basin. The 2021 Alt GSP addresses the recommended actions provided by DWR in its assessment of the 2016 Alt GSP and includes several additional updates to

¹ Regulations for GSP development are contained within Title 23 of the California Code of Regulations (CCR) Division 2 Chapter 1.5 Subchapter 2. https://www.waterboards.ca.gov/laws_regulations/docs/wrregs.pdf

the Basin Setting, Sustainable Management Criteria, Monitoring Network, and Projects and Management Actions sections as further described below.

ES.2. Sustainability Goal

Zone 7 adopted the following Sustainability Goal for the Basin:

Continue to operate the Livermore Valley Groundwater Basin within its Sustainable Yield and to manage the groundwater resources for the prevention of significant and unreasonable: (1) chronic lowering of groundwater levels, (2) reduction of groundwater storage, (3) degradation of groundwater quality, (4) inelastic land subsidence, and (5) depletion of interconnected surface water supplies such that beneficial uses are not adversely impacted.

ES.3. Plan Area

The Plan Area includes the entire Basin, which encompasses 69,600 acres in Alameda and Contra Costa counties. Cities overlying portions of the Basin include San Ramon, Dublin, Pleasanton, and Livermore. The Basin is bordered by the San Ramon Valley Basin on the northwest and the Sunol Valley Basin on the southwest, both of which are designated as very-low priority basins for SGMA compliance purposes. Land uses include urban, agricultural, mining, water bodies, parks, golf courses, and open space (see **Figure ES-B**). Current land use remains similar to that of the mid-2000s.

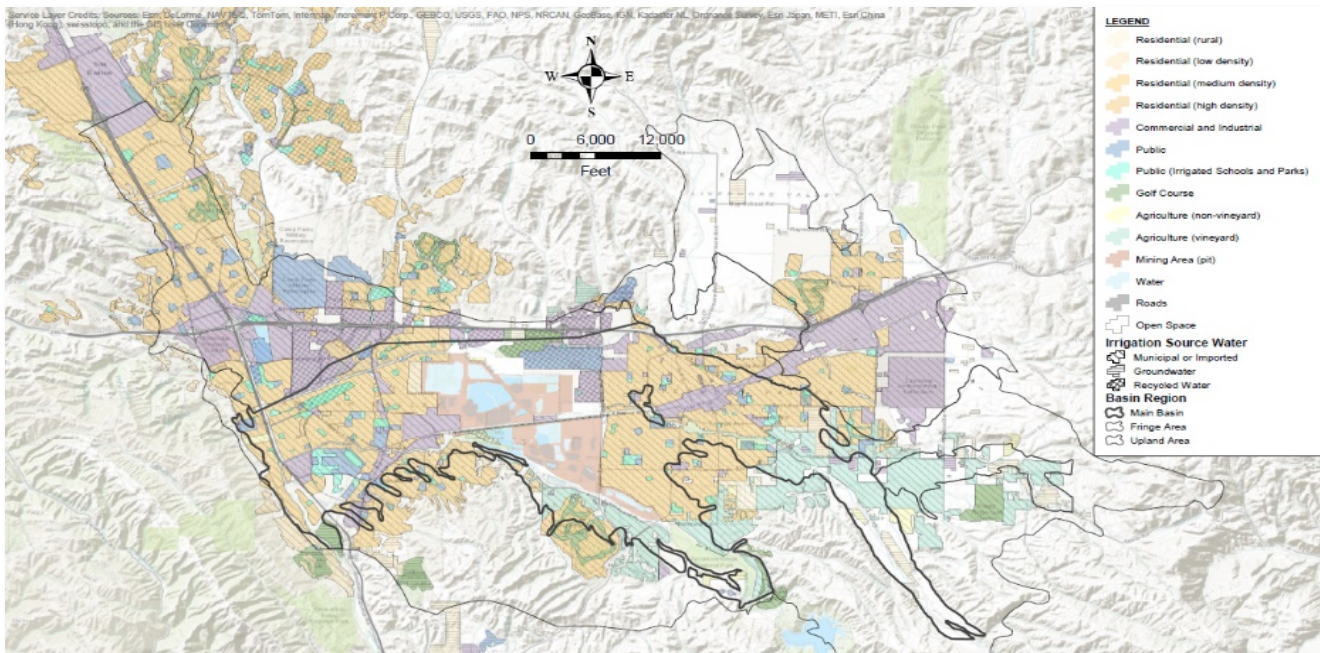


Figure ES-B: Current Land Use

As the sole water wholesaler within the Basin, Zone 7 primarily supplies treated State Water Project water to four local retail water supply agencies: California Water Service Company – Livermore District (Cal Water), Dublin San Ramon Services District (DSRSD), Livermore, and Pleasanton. In addition to the water purchased from Zone 7, Pleasanton and Cal Water operate their own municipal groundwater supply wells



to meet remaining demands. Private wells in the area provide some of the water supply for industrial, agricultural, irrigation, domestic, and undifferentiated uses. DSRSD and Livermore provide recycled water for landscape irrigation.

There are three block groups identified as disadvantage communities (DAC) within the Basin, which contain 2,598 disadvantaged households in the City of Livermore with a total population of 6,678.

There are several areas of California Department of Fish and Wildlife (CDFW) owned and operated lands and conservation easements, Nonprofit California Protected Area (CPA) holdings, and California Conservation Easements (CCE) within the Basin.

Other jurisdictions in the Basin include Camp Parks Military Reservation/Reserve Forces Training Area, located on the northern boundary of the Basin and operated by the Department of Defense/ United States Army. On the southern side of the Basin, the Lake Del Valle State Recreation Area and Shadow Cliffs Regional Recreation Area are operated by East Bay Regional Park District (EBRPD). No California Native American tribal land is known to be located within the Basin.

ES.4. Stakeholder Outreach Efforts

Zone 7 adopted a Stakeholder Communication and Engagement Plan (SCEP) in August 2020 to fulfill SGMA notice and communications requirements and encourage active engagement and input of all beneficial users of groundwater within the Basin. The goal of the outreach efforts described in the SCEP is to ensure that beneficial uses and users of groundwater within the Basin are adequately considered during the 2021 Alt GSP development and implementation process. Venues for stakeholder engagement and input have included stakeholder workshops, Zone 7 Board meetings, direct outreach through Open Houses, E-newsletters about groundwater management efforts, and a dedicated webpage for SGMA compliance activities. Zone 7's website (<https://www.zone7water.com/>) also contains materials presented at meetings, meeting minutes, as well as a schedule for upcoming meetings and other workshops open to the public.

ES.5. Hydrogeologic Conceptual Model

The Basin is an east-west trending, inland structural basin bounded by northwest-southeast trending faults on the east and west, upland bedrock hills of the Diablo Range on the south, and the thrust sheets of Mt. Diablo on the north. For purposes of groundwater management, the Basin has been divided into three Management Areas: The Main Basin, Fringe, and Upland Management Areas.

Principal Aquifer units include the Upper Aquifer and Lower Aquifer within the Main Basin, the Fringe Aquifer within the Fringe Management Area, and the Upland Aquifer within the Upland Management Area. The Upper Aquifer consists of recent (Holocene) alluvial fill materials and extends continually across the Main Basin at depths up to 190 feet below ground surface (ft bgs), containing groundwater typically under unconfined conditions. The Lower Aquifer exists below a confining aquitard with thicknesses ranging from less than 5 feet up to 50 feet in the central and eastern parts of the Main Basin. The Lower Aquifer consists of Quaternary alluvial fill materials and the productive upper portion of the Livermore

Formation, extending to depths of up to 800 ft bgs in the central Main Basin. A large majority of groundwater production occurs within the Lower Aquifer of the Main Basin. The Fringe Aquifer and Upland Aquifer are demonstrated to be of lower productivity and quality than the aquifers of the Main Basin, and groundwater production is limited to domestic and agricultural uses in these areas.

As part of the 2021 Alt GSP update, Zone 7 made several refinements to the Hydrogeologic Conceptual Model (HCM) of the Basin, including migration of all well and borehole construction, geologic, lithologic, stratigraphic, and geophysical data into the Rockworks (2020) three-dimensional (3D) geologic modeling software program, development of a 3D geologic model of the Basin, and development of three novel hydrostratigraphic cross-sections of the Basin that further extend into the Fringe and Upland Management Areas and more accurately delineate the Principal Aquifer units of the Basin. One of the new cross-sections is shown in **Figure ES-C**.

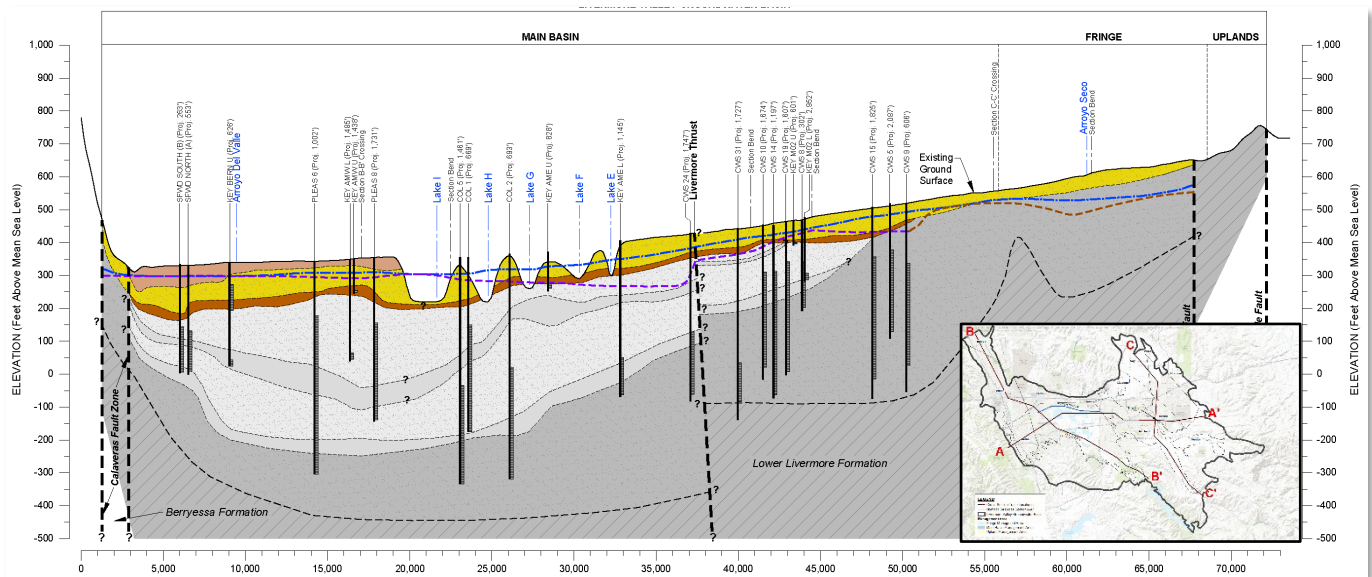


Figure ES-C: Cross Section A-A'

ES.6. Existing Groundwater Conditions

Information on the Basin's current groundwater conditions with respect to the six "Sustainability Indicators" defined under SGMA are presented in this Alt GSP and include the following:

Water Levels: Groundwater levels are presented using contour maps depicting seasonal high (spring) and seasonal low (fall) conditions for the 2020 Water Year (WY), as well as hydrographs from wells located throughout the Basin that have extended historical records (see **Figure ES-D** for an example seasonal high map). Generally, the available data indicates that groundwater levels have remained stable or increased over the past 10 years and have recovered from drought conditions experienced during the 2012–2016 WYs, demonstrating continued sustainable groundwater management practices.

The 2021 Alt GSP includes updates to the groundwater level monitoring program to better assess existing groundwater level conditions throughout the entirety of the Basin. Specifically, as part of this Alt GSP

Executive Summary

Alternative Groundwater Sustainability Plan

Livermore Valley Groundwater Basin



Update, Zone 7 added twenty additional monitoring wells to the monitoring program, including five new wells in the Upland Aquifer and six new wells in the Fringe Aquifer. Additionally, Zone 7 updated the historic low map for the Upper Aquifer and Fringe Aquifer.

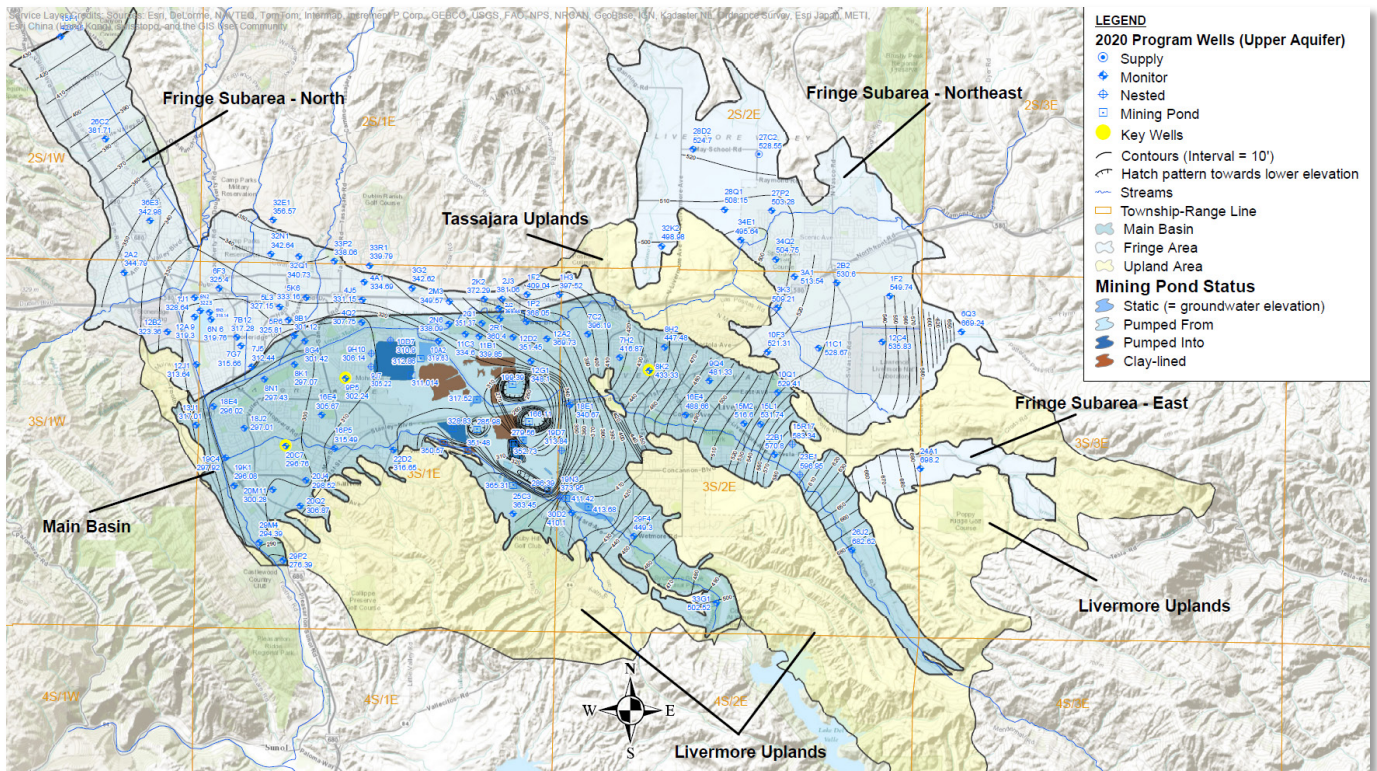


Figure ES-D: Spring 2020 Upper Aquifer Groundwater Gradient Map

Groundwater Storage: Zone 7 operates the Basin such that groundwater storage remains between 254 thousand acre-feet (TAF; full Basin volume) and 128 TAF (historic low volume). Changes in groundwater storage are estimated using both groundwater elevations and the Hydrologic Inventory (HI) (i.e., water budget) method. The available data indicates that groundwater storage has remained stable in the Basin over the past 10 years and has increased by approximately 15 to 40 TAF since the SGMA Baseline date (i.e., 2015 WY), indicating continued sustainable groundwater management practices.

As mentioned above, for the 2021 Alt GSP, Zone 7 employed the Rockworks software platform to create a 3D geologic model of the Basin that more accurately delineates the thickness and extent of Principal Aquifer units. The Rockworks geologic model was also used to develop estimates of total available groundwater storage and groundwater storage changes for the Main Basin and Fringe Management Areas. These Rockworks' estimates were then compared to the current estimates developed using the existing groundwater elevation and HI methods. Additionally, for the 2021 Alt GSP Zone 7 migrated its Aerial Recharge Model (ARM) to DWR's Integrated Water Flow Model Demand Calculator (IDC) platform and extended the IDC model to cover the entire Basin. The IDC model will be used to estimate recharge and runoff rates and to support groundwater storage change evaluations in the HI going forward. Future



SGMA efforts will include additional reconciliation of methods used to estimate groundwater storage in the Basin, including updates to Zone 7's numerical groundwater flow model.

Water Quality: Groundwater quality is highest in the Main Basin and is generally suitable for most urban and agricultural uses. The primary constituents of concern within the Basin include total dissolved solids (TDS), nitrate, boron, and chromium. Continued monitoring and analysis of these constituents indicates generally stable water quality conditions within the Basin over the past 10 years, demonstrating continued sustainable management practices. Additionally, in the 2019 WY Zone 7 began sampling for per- and polyfluoroalkyl substances (PFAS), an Environmental Protection Agency (EPA) "contaminant of emerging concern". This 2021 Alt GSP update includes a summary of a PFAS levels in both the Upper and Lower Aquifers and planned programs to further monitor and characterize PFAS in the Basin.

As part of the 2021 Alt GSP update, Zone 7 updated projections of net annual salt loading, total salts, and average TDS concentrations within the Basin from 2020 to 2081 using long-term supply and demand estimates developed for Zone 7's 2020 Urban Water Management Plan (UWMP). Zone 7 also evaluated the change in nitrate concentrations and loading since 2015 when Zone 7's Nutrient Management Plan (NMP) was published and updated estimates of annual nitrogen loading and removal rates within the Basin under average hydrologic conditions.

Land Subsidence: Continued monitoring of land surface elevations indicates no inelastic land subsidence has occurred within the Basin over the past 60 years. Up until the 2018 WY, land surface elevations in the Main Basin were monitored using benchmark surveys. Beginning in the 2019 WY, Zone 7 has employed the Interferometric Synthetic Aperture Radar (InSAR) dataset provided by the United States Geologic Survey (USGS) and DWR for land subsidence monitoring instead of continuing the land surveying program. The coverage area was expanded to include the entire Basin. Recent InSAR data indicates that changes in land surface elevations changes were within +/- 0.04 feet between March 2015 and September 2020, which is within Zone 7's "elastic deformation" range. Land surface elevations have generally risen by about 0.02 to 0.06 feet since the 2015 WY in the vicinity of the main municipal pumping wells within the Basin, indicating continued sustainable management practices.

Seawater Intrusion: The Basin is located far from coastal areas, and therefore seawater intrusion is not considered to be a threat to groundwater resources.

Interconnected Surface Water (ICSW): At the time of 2016 Alt GSP preparation, guidance on how to identify ICSW bodies and Groundwater Dependent Ecosystems (GDEs) was yet to be developed. Since then, DWR has provided the Natural Communities Commonly Associated with Groundwater (NCCAG) dataset and other tools to assist in GDE and ICSW characterization.

As part of the 2021 Alt GSP update, Zone 7 reviewed the newly available information to identify potential ICSW areas and GDE communities, conducted field visits and statistical analyses to verify their existence, and updated maps and tables of likely ICSW reaches and GDE communities. Likely ICSW reaches have been identified along several surface water features within the Basin, including Arroyo Valle, Arroyo Mocho, Arroyo Las Positas, Altamont Creek, and the Springtown Alkali Sink. Generally, GDE communities were



found in areas where ICSW was also present. In total, the Basin includes approximately 1,052 acres of likely GDEs, approximately 2% of the total Basin area. The Main Basin contains approximately 69% of the total likely GDE communities, the Fringe Management Area contains approximately 20%, and the Upland Management Area contains the remaining 11%.

After identifying likely ICSW/GDE areas, Zone 7 expanded its ICSW/GDE monitoring program to include shallow monitoring wells and coupled streamflow gauging stations nearby each major ICSW/GDE area and defined Sustainable Management Criteria for the Depletions of Interconnected Surface Water Sustainability Indicator.

ES.7. Water Budget

Zone 7 has historically used the HI method to generate a water budget accounting for the volume of groundwater entering and leaving the Basin for historical, current, and projected future conditions. In 1994, Zone 7 developed a soil moisture balance spreadsheet model (i.e., the ARM), to estimate land surface components of the HI. As part of the 2021 Alt GSP update, Zone 7 migrated the existing ARM to DWR's IDC platform and extended the IDC model to cover the entire Basin. The IDC model will be used to estimate recharge and runoff rates and to support ongoing groundwater storage change evaluations in the HI for future Alt GSP updates. A historical water budget period (1974-2020 WYs) shows that long-term sustainability has been maintained in the Basin for at least 45 years, as groundwater storage conditions have remained generally stable to increasing and have shown resilience following dry periods (see **Figure ES-E**). The current water budget period represents conditions for the 2020 WY, and the projected water budget used the Water Supply Risk Model from Zone 7's 2020 UWMP to support water supply sustainability planning through 2081.

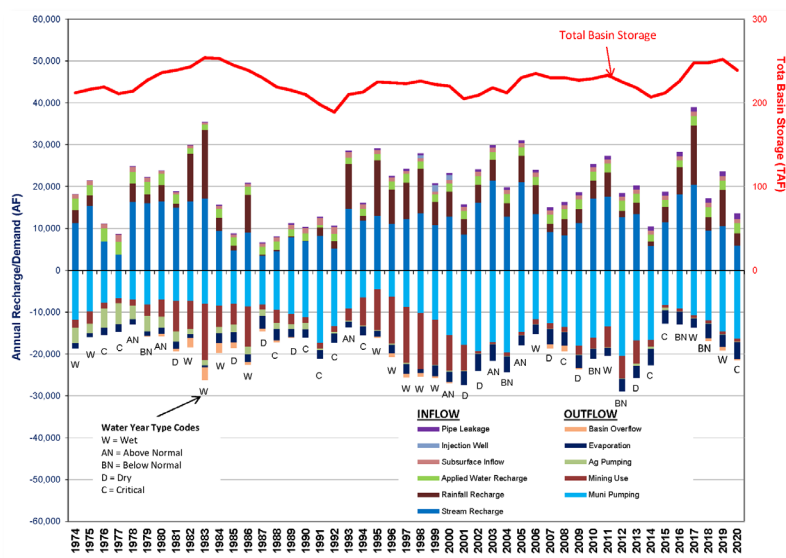


Figure ES-E: 1974-2020 WY Water Budget

A historical water budget period (1974-2020 WYs) shows that long-term sustainability has been maintained in the Basin for at least 45 years, as groundwater storage conditions have remained generally stable to increasing and have shown resilience following dry periods (see **Figure ES-E**). The current water budget period represents conditions for the 2020 WY, and the projected water budget used the Water Supply Risk Model from Zone 7's 2020 UWMP to support water supply sustainability planning through 2081.

The volume of groundwater in storage in the Basin is managed within an operational storage range as the principal means of maintaining the basin water levels above historic lows. Since no Undesirable Results (URs) have been observed while operating within this storage range, average water budget targets are referred to as the Sustainable Yield estimates for the purposes of groundwater management. The Basin's Sustainable Yield was estimated using the sum of two recharge components – “natural” and “artificial” recharge. “Natural” recharge includes groundwater inflows that are not managed by Zone 7 (i.e., those inflows to the Basin that occur naturally or that are managed by entities other than Zone 7). Zone 7 has



managed municipal supply pumping since the early 1990s through a Groundwater Pumping Quota (GPQ) program, whereby pumping from retail water agencies is limited to a portion of the average natural recharge defined for the Basin. “Artificial” recharge includes imported surface water and managed recharge programs conducted by Zone 7, and is measured directly using operations records. The total Sustainable Yield of the Basin is estimated to be 18,700 acre-feet per year (AFY).

ES.8. Sustainable Management Criteria

Sustainable Management Criteria (SMCs) are the metrics by which groundwater sustainability is judged under SGMA. Key terms related to SMCs under SGMA include the following:

Undesirable Results: URs are the significant and unreasonable effects, for any of the six Sustainability Indicators defined under SGMA, caused by groundwater conditions throughout the Basin.

Minimum Thresholds: Minimum Thresholds (MTs) are the numeric criteria for each Sustainability Indicator that, if exceeded in a locally defined set of representative monitoring sites, may constitute an Undesirable Results for that indicator. Where appropriate, and as allowed under the California Code of Regulations Title 23 (23 CCR), the MTs for certain Sustainability Indicators have been set using groundwater levels as a proxy.

Measurable Objectives: Measurable Objectives (MOs) are specific, quantifiable goals for the maintenance or improvement of groundwater conditions. MOs use the same units and metrics as the MTs and are thus directly comparable.

Interim Milestones: Interim Milestones are a set of target values representing measurable groundwater conditions in increments of five (5) years over the 20-year statutory deadline for achieving sustainability.

As part of the 2021 Alt GSP update and to address DWR recommended actions, Zone 7 defined MTs for the Basin at Representative Monitoring Sites for each applicable Sustainability Indicator to facilitate DWR evaluation. This included developing MTs for Chronic Lowering of Groundwater Levels and Reduction of Groundwater Storage for the Fringe and Upland Management Areas to better align with requirements for management areas, adding groundwater level monitoring sites in the Fringe and Upland Management Areas, and identifying the frequency and timing when groundwater levels would be collected at new monitoring sites and other relevant monitoring well construction information.

Based on comparison of Basin conditions for the last ten years (i.e., from 2010 through 2020 WY) relative to the criteria used to identify potential URs, it is evident that Zone 7 has continued to sustainably manage the Basin to avoid URs for at least 10 years. In fact, most of the datasets discussed in this Alt GSP date back to 1974 allowing for a comprehensive, long-term assessment of Zone 7’s sustainable Basin management, including over three major droughts.

Chronic Lowering of Groundwater Levels is arguably the most fundamental Sustainability Indicator, as it can influence several other key Sustainability Indicators, including Reduction of Groundwater Storage, Land Subsidence, and possibly Depletions of Interconnected Surface Water and Degraded Water Quality.

Executive Summary
Alternative Groundwater Sustainability Plan
Livermore Valley Groundwater Basin



As part of the 2021 Alt GSP update, Zone 7 reviewed and updated the existing MOs and MTs for Chronic Lowering of Groundwater Levels for the Main Basin and developed quantitative SMCs in the Fringe and Upland Management Areas as listed in the table below. The SMCs for Chronic Lowering of Groundwater Levels were established at 12 Representative Monitoring Sites for Chronic Lowering of Groundwater Levels (RMS-WLs) based on spatial and temporal analysis of long-term groundwater level data at the RMS-WLs.

Sustainability Indicator	Undesirable Results Definition	Undesirable Results Criteria	MT	MO
Chronic Lowering of Groundwater Levels 	If and when a chronic decline in groundwater levels over the course of the planning and implementation horizon significantly and unreasonably impairs the reasonable and beneficial use of, and access to, groundwater for beneficial uses and users within the Basin.	Water levels in greater than 25% of the RMS-WLs decline below their respective MTs for two consecutive years that are categorized as non-drought years (normal, above-normal, or wet), according to the Sacramento Valley Water Year Hydrologic Classification.	Difference between the historic low water level and maximum annual rate of groundwater change for each RMS-WL, or the historic low if annual groundwater level change data is unavailable.	Historic low water level for each RMS-WL.

Significant **Groundwater Storage** exists within the Basin and is closely correlated to groundwater levels. As part of the 2021 Alt GSP update, Zone 7 updated MOs and MTs for Reduction of Groundwater Storage based on the SMCs defined for Chronic Lowering of Groundwater Levels as shown in the table below. It is estimated that if Basin groundwater levels reached the MTs for Chronic Lowering of Groundwater Levels in all of the RMS-WLs, the usable storage in the Basin would be reduced by approximately 16%. As such, it was determined to be sufficiently protective to define the SMCs for Reduction of Groundwater Storage based on the use of SMCs for Chronic Lowering of Groundwater Levels as a proxy.

Sustainability Indicator	Undesirable Results Definition	Undesirable Results Criteria	MT	MO
Reduction of Groundwater Storage 	If and when a reduction in storage in the Principal Aquifers of the Basin negatively affects the long-term viable access to groundwater for the beneficial uses and users within the Basin. Specifically, significant and unreasonable effects would include an aggregate reduction in usable groundwater storage of more than 50% within the Basin relative to the SGMA Baseline Storage volume for two consecutive non-drought years.	Water levels in greater than 25% of the RMS-WLs decline below their respective MTs for two consecutive years that are categorized as non-drought years (normal, above-normal, or wet), according to the Sacramento Valley Water Year Hydrologic Classification.	Chronic Lowering of Groundwater Levels used as a proxy.	Chronic Lowering of Groundwater Levels used as a proxy.



The SMCs for **Degraded Water Quality** are defined at 12 Representative Monitoring Sites for Degraded Water Quality (RMS-WQ) for TDS, Nitrate, Boron and Hexavalent Chromium. As part of the 2021 Alt GSP update, Zone 7 refined the MOs and MTs for Degraded Water Quality, including for the Fringe and Upland Management Areas, based on newly available data as shown in the table below. The SMCs are developed based on SGMA Baseline concentrations (2015 concentrations) and regulatory water quality standards (i.e., the primary Maximum Contaminant Levels [MCLs] set by the EPA and the State of California Environmental Protection Agency [CalEPA]), when appropriate.

Sustainability Indicator	Undesirable Results Definition	Undesirable Results Criteria	MT	MO
Degraded Water Quality 	If groundwater recharge or extraction causes significant and unreasonable degradation of water quality in the Basin, such that these changes impact to the long-term viability of domestic, agricultural, municipal, environmental, or other beneficial uses over the planning and implementation horizon of this Alt GSP. Significant and unreasonable changes to water quality associated with Undesirable Results would include a significant increase, on a regional basis, in concentrations of identified COCs above applicable state and federal regulatory thresholds, as a result of groundwater recharge or extraction.	If and when MTs are exceeded for any of the identified COCs in greater than 25% the RMS-WQs at least two consecutive non-drought years as a result of groundwater recharge or extraction, such that they cannot be managed to provide drinking water supply (i.e., that treatment or blending is not possible or practicable).	Greater of MCL (or other appropriate regulatory criteria) or the SGMA baseline concentration plus maximum historical range.	<u>TDS</u> : Recommended Secondary MCL (500 mg/L) in the Main Basin, Upper Secondary MCL (1,000 mg/L) or 2015 concentrations (whichever is greater) in the Fringe and Upland Areas <u>Nitrate</u> : Primary MCL (10 mg/L) <u>Boron</u> : Health Risk Limit (HRL; 1,400 µg/L) <u>Hexavalent Chromium</u> : Primary MCL (50 µg/L)

Although no historical record of inelastic **Land Subsidence** has been observed within the Basin, Zone 7 has recognized land subsidence as a potential UR. The 2005 Well Master Plan Environmental Impact Report (WMP EIR) indicated that the potential for inelastic (permanent) subsidence in the Main Basin increases as groundwater levels approach historic lows. Subsidence potential is limited to non-existent in the Upland Management Area given the underlying geology and limited pumping. Therefore, Zone 7 concluded that this Sustainability Indicator only applies to the Main Basin and Fringe Management Area and that groundwater elevations in the Main Basin and Fringe Management Area can be used as a guide for managing subsidence as shown in the table below.

Executive Summary
Alternative Groundwater Sustainability Plan
Livermore Valley Groundwater Basin



Sustainability Indicator	Undesirable Results Definition	Undesirable Results Criteria	MT	MO
Land Subsidence 	If the occurrence of land subsidence substantially interferes with beneficial uses of groundwater and infrastructure within the Basin during the planning and implementation horizon of this Alt GSP.	Water levels in greater than 25% of the RMS-WLs decline below their respective MTs for two consecutive years that are categorized as non-drought years (normal, above-normal, or wet), according to the Sacramento Valley Water Year Hydrologic Classification, that result in a confirmed decrease of 0.4 feet of land surface in any given cycle with a goal of experiencing no inelastic subsidence spatially and temporally.	Main Basin and Fringe Area: Chronic Lowering of Groundwater Levels used as a proxy, with the additional constraint of no more than 0.4 feet of inelastic land subsidence in any year Upland Area: No MTs established.	Main Basin and Fringe Area: Chronic Lowering of Groundwater Levels used as a proxy. Upland Area: No MOs established.

Preliminary SMCs for **Interconnected Surface Water** have been developed as part of this 2021 Alt GSP update. Zone 7 evaluated the seasonal range of depth-to-groundwater measurements in the vicinity of each likely ICSW/GDE area identified from the NCCAG and field investigations and compared the seasonal range of depth-to-groundwater measurements with each GDE's general groundwater requirements (e.g., rooting depth) to determine the maximum depth-to-groundwater conditions that could occur without resulting in long-term negative impacts to GDE health. This depth-to-groundwater analysis was used as the basis to inform quantitative, water-level based SMCs for ICSW as shown in the table below.

Sustainability Indicator	Undesirable Results Definition	Undesirable Results Criteria	MT	MO
Depletions of Interconnected Surface Water 	When groundwater extractions in the Basin cause significant and unreasonable depletions of hydrologically connected surface water, such that beneficial uses and users of the surface water (including the likely GDEs and protected species) are significantly and unreasonably harmed. Specifically, a significant and unreasonable negative effect would be experienced if the health of the GDE areas in the Basin are adversely impacted by mechanisms that can be directly attributed to pumping-related lowering of groundwater levels over time, rather than effects of natural or climactic processes and/or unfavorable hydrologic conditions or land use changes.	If and when Depletions of Interconnected Surface Water occur as a result of unsustainable groundwater extraction such that groundwater levels decline below their MTs in greater than 40% of the Representative Monitoring Sites for Depletions of Interconnected Surface Water (RMS-ICSW) for more than two consecutive non-drought years.	Historic low water levels measured at each RMS-ICSW, or when unavailable, estimated from Zone 7 groundwater elevation rasters.	Minimum water levels measured between 2014 and 2020 at each RMS-ICSW, or when unavailable, estimated from Zone 7 groundwater elevation rasters.

Seawater Intrusion is not considered a threat to groundwater resources within the Basin due to its considerable isolation from any oceans, bays, or other saltwater bodies.

Sustainability Indicator	Undesirable Results Definition
	No Undesirable Results definition. Not applicable to the Basin due to geographic distance from the ocean.

ES.9. Monitoring Network

The objective of the SGMA Monitoring Network is to collect sufficient data for the assessment of the Sustainability Indicators relevant to the Basin and potential impacts to the beneficial uses and users of groundwater. implementation in the Basin. Zone 7's SGMA Monitoring Network (see **Figure ES-F**) was developed to ensure sufficient spatial distribution and spatial density.

The SGMA Monitoring Network consists of 12 RMS-WLs for monitoring groundwater levels, 11 for monitoring groundwater storage (by proxy), and 11 for monitoring land subsidence (by proxy). Further, these 12 RMS-WLs are included in the 237 wells in Zone 7's Water Level Monitoring Program. As part of the 2021 Alt GSP update, Zone 7 added 20 additional wells to the program, mainly in the Fringe and Upland Management Areas, and began collecting water level measurements from those wells.

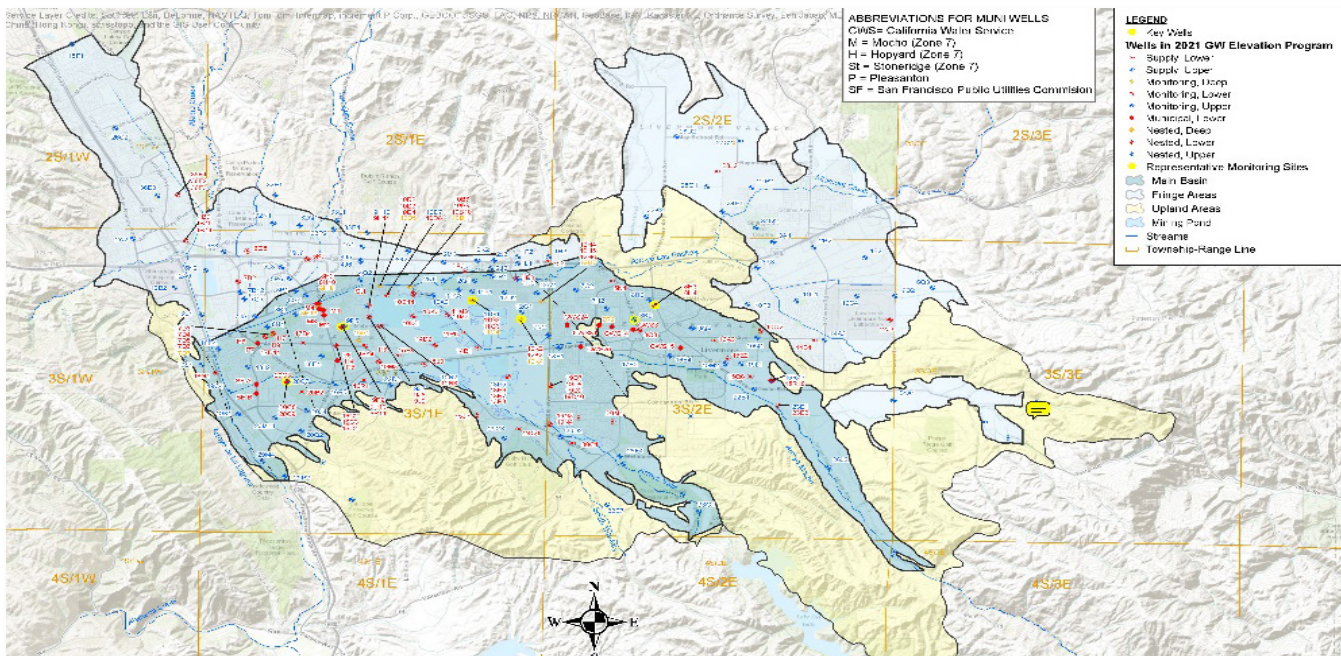


Figure ES-F: SGMA Monitoring Network

Additionally, there are 12 RMS-WQ for monitoring groundwater quality and 24 RMS-ICSWs for monitoring GDEs and ICSW (including 14 wells and 10 streamflow gauging sites). The SGMA Monitoring Network



supplements other monitoring networks and programs in the Basin such as Zone 7's Climatological Monitoring Program, Zone 7's Surface Water Monitoring Program, the Chain of Lakes/Mining Area Monitoring Program, and DWR California Statewide Groundwater Elevation Monitoring (CASGEM) program.

Data collected from the SGMA Monitoring Network (and the additional monitoring sites as applicable) will be stored and managed into HydroGeoAnalyst (HGA), a proprietary environmental database management system. Monitoring data for each WY are presented in Zone 7's Annual Reports for the Alt GSP. Zone 7 has previously uploaded well construction and water level data to the CASGEM website but is currently working with DWR To transfer the data to the SGMA data viewer in accordance with 23 CCR § 354.40.

ES.10. Project and Management Activities

A suite of Project and Management Actions (P/MAs) are currently being implemented or otherwise proposed for future implementation to help Zone 7 continue to meet the Sustainability Goal for the Basin and adaptively manage its groundwater supply. The objectives of the P/MAs are to continue to avoid and/or address any potential URs and to meet the MOs for the relevant Sustainability Indicators. While many existing P/MAs are already in place, future P/MAs will be implemented incrementally on an as-needed basis to achieve this goal. At this time, Zone 7 acknowledges that details pertaining to which P/MAs will ultimately be initiated, P/MA timing, projected benefits, payments and cost allocations, etc. will be considered as part of P/MA and Alt GSP implementation.

Projects within the P/MA portfolio focus on: (1) water supply augmentation, (2) water demand reduction, (3) improvement of groundwater quality, and (4) data gap-filling activities. Most P/MAs have expected benefits related to water quantity and/or water quality, with a direct or indirect benefit to the other Sustainability Indicators. Findings and outcomes from implemented P/MAs will be applied to further improve Zone 7's sustainable management of the Basin. The projected average annual cost for administering the SGMA compliance program and implementing P/MAs over the next five years (2022-2026) is approximately \$2 million per year. Funding sources are anticipated to be a combination of water rates, connection fees, and available State/Federal grants. Implementation of P/MAs will be scheduled and conducted in accordance with priorities and funding availabilities.

Zone 7 involved the public, shareholders, and local agencies throughout P/MA planning and implementation. Continuing stakeholder outreach efforts will be conducted in accordance with the SCEP developed as part of this Alt GSP update.

ES.11. Conclusion

The passage of SGMA in 2014 ushered in a new era of groundwater management in California. The law and regulations emphasize the use of best available science, local control and decision making, and active engagement of affected stakeholders. Maintaining sustainability in the face of uncertain future water supply conditions while addressing and balancing the needs of all beneficial uses and users of groundwater will require significant effort, creative solutions, and unprecedented collaboration. Zone 7 recognizes the

Executive Summary
Alternative Groundwater Sustainability Plan
Livermore Valley Groundwater Basin



importance of maintaining groundwater sustainability for the Basin, and as the implementing agency, is committed to facing these challenges in a manner that upholds the interests of local landowners and constituents. Zone 7 has sustainably managed local surface and groundwater resources in the Basin for beneficial uses for more than 50 years. The 2021 Alt GSP presented herein builds on the approved 2016 Alt GSP towards this end, and serves to demonstrate that Zone 7 has continued to operate the Basin within its Sustainable Yield over the past 10 years and is meeting the Sustainability Goal defined for the Basin.