

ATTACHMENT 3

WORK PLAN

Grant Proposal Title: Five-Year Update: 2022 Alternative Groundwater Sustainability Plan for Livermore Valley Groundwater Basin

Applicant: Zone 7 Water Agency

PROJECT JUSTIFICATION

A. Project Description

Introduction

The Zone 7 Water Agency grant proposal, *Five Year Update: 2022 Alternative Groundwater Sustainability Plan for Livermore Valley Groundwater Basin*, continues Zone 7 Water Agency's history of leadership in groundwater basin management. Zone 7 has managed and imported local surface water and groundwater resources for beneficial uses in the Livermore Valley Groundwater Basin for more than 55 years. Consistent with its management responsibilities, duties, and powers, Zone 7 was designated in the 2014 Sustainable Groundwater Management Act (SGMA) as the exclusive Groundwater Sustainability Agency (GSA) within its jurisdictional boundaries. Comprehending its responsibilities and accomplishments in reversing historical overdraft and maintaining groundwater sustainability, Zone 7 prepared an Alternative Groundwater Sustainability Plan (GSP) for the Livermore Valley Basin, which was accomplished with zero Round 2 funding and submitted on time in December 2015. Since then, Zone 7 has also prepared Annual Reports consistent with SGMA. The Alternative GSP was approved by DWR in July 2019.

In its July 2019 Alternative Assessment Staff Report, DWR provided four recommended actions to Zone 7 for consideration in the Five-Year Update. These are summarized below:

1. Identify those groundwater levels, taken at representative monitoring sites, that are used to define the minimum threshold for the Basin, to facilitate DWR evaluation.
2. Develop quantitative minimum thresholds for lowering of groundwater levels for the Fringe and Upland Management Areas (MAs) to better align with requirements for MAs and definition of minimum thresholds.
3. Develop quantitative minimum thresholds for reduction of groundwater storage for the Fringe and Upland MAs to better align with the requirements for MAs and definition of minimum thresholds.
4. Include monitoring groundwater levels at additional locations in the Uplands MA to monitor changes and manage groundwater resources to prevent undesirable results; identify the monitoring frequency and timing at new stations, and other relevant monitoring well construction information.

In addition, Zone 7 received two comment letters on its Alternative GSP, which recommended inclusion of information regarding beneficial use of water for managed wetlands and native vegetation water use sectors. At the time of Alternative GSP preparation, limited information was available on wetlands and vegetation associated with groundwater. Since then, DWR has provided the Natural Communities Commonly Associated with Groundwater (NCCAG) mapping, which is a useful tool to help in identifying potential Groundwater Dependent Ecosystems (GDEs).

In planning for its Five-Year Update, Zone 7 is responsive to these recommendations. Moreover, Zone 7 staff bring decades of working experience with Livermore Valley Basin management and they have identified technical work needed to reduce data gaps and uncertainty in assessing sustainability criteria and to better evaluate the effectiveness of specific management actions. This technical work includes extension of the Areal Recharge Spreadsheet Model to Fringe and Upland MAs, consideration of PFAS as a constituent of concern, development of InSAR techniques to monitor subsidence over a larger portion of the groundwater basin, and evaluation of management actions taken to reduce high nitrate concentrations in key areas (including Disadvantaged Areas).

Based on the above, the proposed Five-Year Update Project includes the following elements, which have been assigned Budget Categories as listed below and kept consistent throughout this application for Attachments 3 Work Plan, 4 Budget, and 5 Schedule, respectively:

- Category (a) Grant Administration
- Category (b) Stakeholder Engagement/Outreach
- Category (c) Alternative GSP Five-Year Update

Category (a) Grant Administration includes tracking of budget, schedule, and technical progress and provision of invoices and progress reports to DWR. This effort is needed for performance of the cost-effective project. It will provide the tracking to ensure that all aspects of the Project are coordinated and completed as planned.

Category (b) Stakeholder Engagement/Outreach includes a continuation of Zone 7 activities that involve the public, stakeholders and other agencies in its groundwater management planning and programs. This includes development of a communication plan and provision of information, announcements, updates, and reports on the Zone 7 website. This outreach continues information sharing and collaboration among agencies, private organizations (including mining companies), local groundwater users (domestic well owners, landscape and agricultural irrigators), and the community. It also includes presentations at public meetings that provide a forum for stakeholder involvement.

Category (c) Alternative GSP Update involves preparation of the Five-Year Update, including technical work and report preparation to prepare the Five-Year Update. In preparing the Update, Zone 7 will address the DWR recommendations, the recommendations concerning GDEs, and the needs for data and analysis identified by Zone 7 staff. Zone 7 proposes an approach that organizes the update effort around relevant sustainability criteria and regards the document as an *update*. Given that, it will build on and extend the Alternative GSP and subsequent Annual Reports but will not repeat them beyond necessary context. It will be succinct and streamlined.

All three efforts will be implemented by Zone 7 Water Agency and together will provide a 2022 Five-Year Update of the Alternative GSP that is effectively administered, collaborative and transparent, and supportive of continued sustainable management for the Livermore Valley Basin.

Category (d) Monitoring/Assessment is not used for this proposed grant project.

Goals and Objectives

This Project is in accordance with the Goal of the Alternative GSP, summarized as follows:

The sustainable management goal for this Alternative Plan is to 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) lowering of groundwater levels, (2) reduction in basin storage, (3) degradation of groundwater quality, (4) inelastic land subsidence, or (5) depletion of surface water supplies such that beneficial uses are adversely impacted.

Zone 7 also has a stated goal of managing the local groundwater resources to provide a reliable water supply and to protect the resource for all beneficial uses. These goals are complementary and provide the guiding principles for groundwater management of the Livermore Valley Groundwater Basin, including this Project.

The overarching goal of this Project is to prepare a Five-Year Update for the 2016 Alternative GSP that complies with SGMA and GSP requirements and (paraphrasing the above) to continue to operate the Livermore Valley Groundwater Basin within its sustainable yield and to manage the groundwater resources sustainably.

The goal of **Grant Administration** is to ensure compliance with the grant agreement (should it be awarded) and provide regular and timely updates to DWR and Livermore Valley Basin communities. Objectives are to ensure that all tasks are implemented consistent with the work plan, schedule and budget; are mutually coordinated; meet all requirements and standard conditions of the grant agreement; and provide the benefits claimed in the proposal.

The goal of **Outreach** is to enhance open and transparent process and continue collaboration among agencies and private organizations. This is consistent with Zone 7 policy from the 1987 Statement on Groundwater Management, with objectives set forth in the 2005 Groundwater Management Plan (GWMP), and with policies summarized in the 2016 Alternative Plan. Objectives are to create a communications plan, build a GSP webpage, and to provide regular updates and a forum for public comment and input at Zone 7 Board meetings. Collaboration will be continued among Zone 7, public agencies, and stakeholders, (for example: aggregate mining companies, local agriculturalists, landscape irrigators, environmental organizations, and disadvantaged residents); specific objectives are enhanced communication with RWQCB, and with land use planning agencies to continue progress on salt and nutrient loading issues and be aware of other potential water quality issues associated with the different types of development under their purview.

The goal of the **Alternative GSP Five-Year Update** is to provide the first update in a series of five-year reports to continue into the future. This update will be compliant with the requirements of GSP Regulations § 356.4 that describe how Alternative GSP implementation (including implementation of projects and management actions) is meeting the sustainability goal of the Livermore Valley Basin. As described in greater detail below, this first update will build on the Alternative GSP and subsequent Annual Reports to describe current conditions briefly as context but mostly to identify new information, to address newly-identified data gaps (and what to do about them), to discuss changed conditions, to consider if changes are needed for any aspect of the GSP (including sustainability criteria), to describe recent

management actions and GSP amendments (if any), and to summarize current coordination among local agencies, including land use planning agencies. Specific objectives of this Update are to address the DWR recommendations, recommendations concerning GDEs, and needs for data and analysis identified by Zone 7 staff.

Project Description

The following sections describe the three major elements of the Project and how they work together to achieve the goals, objectives, and needs of the proposed Five-Year Update project.

Grant Administration

Zone 7 Water Agency will serve as the grantee and grant administrator for the Round 3 GSP Planning Grant. Zone 7 will administer the funds consistent with DWR's reporting and compliance requirements associated with the grant. Grant administration includes tracking of budget, schedule, and technical progress and provision of invoices and progress reports to DWR. Zone 7 will obtain and retain evidence of compliance if needed (e.g., CEQA/NEPA documents, labor requirements, etc.), obtain data for progress reports, assemble and submit progress reports to DWR, and prepare and submit all invoices.

Grant Administration is needed for performance of the cost-effective project. It will provide the tracking to ensure that all Project tasks are coordinated and completed as planned and that project work and costs are managed and tracked by budget category task to ensure clear delineation of work and costs.

Stakeholder Engagement/Outreach

Zone 7 actively involves the public, stakeholders and local agencies in its planning and programs through meetings, data sharing, and online media. As documented in the Alternative GSP, Zone 7 has established positive ongoing working relationships with numerous other agencies involved in the basin.

For the Five-Year Update, collaboration is expected to involve but not be limited to DWR, RWQCB, and the Water Retailers. Evaluation of GDEs is expected to build on good working relationships with California Department of Fish and Wildlife and U.S. Fish and Wildlife Service, among others. Zone 7 also expects to continue working with Alameda County Environmental Health, Alameda County Community Development Agency, Contra Costa County Department of Conservation and Development, and municipal planning departments, particularly on changing land use and on water quality issues including nitrate and the emerging issue of PFAS. Because aggregate mining is a major land use, Zone 7 will continue to work closely with mining companies on mine reclamation issues as well as monitoring of surface water and groundwater. Groundwater is used for private domestic, golf course irrigation, and agriculture and Zone 7 works with numerous well owners in groundwater monitoring; outreach to such well owners will be useful in any extension of monitoring to Fringe and Upland MAs.

Major aspects of this outreach will include:

- Creation of a Communication Plan describing the outreach components of the Five-Year Update including description of Zone 7's decision making process, maintenance of a stakeholder and interested parties list, a schedule of planned meetings and other public outreach efforts. Development of a SGMA page for the Zone 7 Water Agency website, where announcements, updates, Annual Reports, and the Five-Year Update can be accessed easily.
- Specific outreach to other agencies including RWQCB and land use planning agencies to increase coordination of plan, policies, programs, and projects where the Alternative GSP may affect water supply assumptions of land use planners, and where land use plans may affect the GSP.
- Public presentations on the progress of the Five-Year Update at regular Zone 7 Board of Directors' meetings where stakeholders can participate.

Alternative GSP Update

These tasks provide the technical work and report preparation needed to prepare the Five-Year Update. In preparing the Update, Zone 7 will comply with GSP Regulations and address the DWR recommendations, recommendations concerning GDEs, and needs for data and analysis identified by Zone 7 staff. It builds on and extends the 2016 Alternative GSP and subsequent Annual Reports but does not replace or repeat them. While recognizing the necessity of some context and continuity, this Update will focus on new issues and major changes and revisions, and consistent with DWR recommendations, will include specific efforts directed toward Fringe and Upland Management Areas. Insofar as practical, the Update will be succinct and streamlined.

While the recommendations and data needs involve an array of topics, Zone 7 has developed an approach (embodied in the Scope of Work) that focuses on the five relevant sustainability criteria (e.g., addressing levels, storage, quality,

subsidence, and connected surface water/GDEs). Accordingly, the Five-Year Update includes the following tasks (along with Grant Administration and Outreach):

- The **Groundwater Level Program Update** involves basin-wide work in terms of updating maps and tables, but also has a focus on Upland and Fringe Management Areas (MAs). This update will include identification of data gap areas in the Upland and Fringe MAs, extension of map layers to these areas, and consideration of new monitoring well sites. Measurable Objectives and Minimum Thresholds will be developed for groundwater levels in the Upland and Fringe MAs.
- The Zone 7 cross section network currently includes the Bernal and Amador subbasins, where Zone 7 does its pumping. As part of the **Groundwater Storage Program Update**, cross sections will be extended across the whole Main Basin and extended into the Fringe and Upland MAs. This task also includes selecting and purchasing a new tool—a geologic program for creating cross sections. This task also includes improvement of Zone 7's Areal Recharge Spreadsheet Model and its extension into Upland and Fringe MAs. These will help with the key effort of developing Measurable Objectives and Minimum Thresholds for storage in the Upland and Fringe MAs.
- Key tasks of the **Groundwater Quality Program Update** will provide new information on the salt budget and address new issues, for example, the need to evaluate PFAS. This task also includes evaluation of the effectiveness of the implemented OWTS restrictions/limits to reverse local high nitrate conditions; the latter will directly benefit Disadvantaged Areas (DAs) in Livermore. This task culminates in the development of Measurable Objectives and Minimum Thresholds for quality in the Upland and Fringe MAs.
- Zone 7 recognizes inelastic land subsidence as a potential undesirable result. Because no significant subsidence has occurred for the last 60+ years, the Alternative GSP focused on monitoring and prevention with a goal of no inelastic subsidence. However, the initial program monitored only four transects over the western portions of the Main Basin with spirit-leveling surveys. To ensure that minimum thresholds are not exceeded over the entire Basin, the **Land Subsidence Program Update** will detail Zone 7's program conversion to a satellite-derived interferometric synthetic aperture radar (InSAR)-based method. Accordingly, Measurable Objectives and Minimum Thresholds will be reassessed, and new data protocols and reporting procedures will be developed.
- The 2016 Alternative GSP identified key wetlands (Springtown Alkali Sink) and described its effective monitoring and management. However, guidance was lacking on how to identify groundwater-dependent surface water features with significant habitat and vegetation until DWR provided the Natural Communities Commonly Associated with Groundwater (NCCAG) mapping, which is a useful tool in identifying potential Groundwater Dependent Ecosystems (GDEs). A guidance document also has been published by The Nature Conservancy. Zone 7 has additional resources (e.g., updated special species maps, ecosystem studies, riparian habitat mapping, environmental baseline studies, and updated depth to groundwater maps) that can be used to evaluate GDEs. With this new information, The **Surface Water–Groundwater Interaction/GDE Program Update** will identify potential GDEs not previously recognized, provide field verification, update the GDE inventory, and if new GDEs are identified, develop Measurable Objectives and Minimum Thresholds for them and establish new monitoring locations and protocols.
- The **Updated Alternative GSP Report** will encompass discussion of the above efforts, findings, and recommendations. It is also recognized that this 2022 Update represents the first in a series of updates; accordingly, this report will be outlined to guide update preparation, to ensure compliance with GSP Regulations, and to provide the needed information in a succinct format. Draft and final reports will be prepared.

Needs, Tools, and Implementing Agency

Zone 7 has managed the Livermore Valley Groundwater Basin sustainably for more than 45 years, as acknowledged by DWR approval of the Alternative Plan. However, Zone 7 realizes that sustainability is predicated on vigilance, responsiveness, and adaptability. While the basin has been managed sustainably, it faces current challenges of changes in land use and potential growth in water demand, limited imported water supply, and climate change. With these challenges, Zone 7 needs:

- Regular reporting and updates to assess the sustainability of the basin in the context of change
- Continuing identification of data gaps with evaluation and improvement of monitoring networks
- Assessment, extension, refinement, and adaptation of analytical techniques and tools
- Extension and refinement of the conceptual hydrogeologic model
- Identification of undesirable results, plus development and evaluation of sustainability criteria (e.g., minimum thresholds, measurable objectives) for some of the Fringe and Upland MAs

- Identification, evaluation, and adaptation of management actions and projects
- Continuing collaboration among agencies, including planning agencies as changes in land use are foreseen
- Continuing outreach to stakeholders and beneficial users of groundwater.

Such needs are addressed in the proposed Five-Year Update Project with specific areas and topics identified by DWR, comment letters, and Zone 7 staff. Zone 7 staff (who would conduct the project) have worked together to develop the Scope of Work, Budget, and Schedule. Based on this ongoing work, it is known that the data and information are available to prepare the Five-Year Update within the estimated budget and January 1, 2022 schedule.

While the overall goal of this proposed project is to prepare a Five-Year Update, this update is seen as part of continuing management, the first of successive updates. Given this goal, it is noteworthy that the Five-Year Update project includes evaluation of management actions (e.g., for nitrate management) and development of management tools that will carry on. With regard to tools, the proposed Project includes the evaluation, extension, and refinement of specific tools; these include but are not limited to the following:

- A new geologic program will be evaluated for creating cross sections.
- Zone 7's existing Areal Recharge Spreadsheet Model will be migrated to an off-the-shelf model (e.g., IWFMI/DC, HEC-GMS), and extended to the Fringe and Upland Management Areas for the groundwater storage program update (Task 3.2).
- The current spirit-leveling surveying procedure for the land subsidence program will be replaced with an InSAR-based monitoring system (Task 3.4).

The proposed Project will be implemented by Zone 7 Water Agency, with the assistance as needed from consultants and contractors, which is the same approach used for the 2016 Alternative GSP.

Coordination of the Project

The Grant Administration, Outreach, and Five-Year Update are distinct but complementary parts of the Project. The Grant Administration provides tracking of budget, schedule, and technical progress of all efforts, while the Outreach will support an open and transparent process by providing regular updates on the proposed Project and by continuing the collaboration among Zone 7, public agencies, private organizations and stakeholders. The Five-Year Update includes six major tasks as summarized above. As described in the Scope of Work, and illustrated in the Schedule, each of these tasks will build systematically toward an update on sustainability, consistent with the Goal of the Alternative GSP.

Project Map

Figure 1 (enclosed at the end of this section) shows the location and boundaries of the Livermore Valley Groundwater Basin (DWR No. 2-10 per Bulletin 118) and the service area of Zone 7 Water Agency. As shown, Zone 7 Water Agency's service area overlaps with most of the basin, and therefore, through SGMA, is the designated exclusive GSA for that portion. For the remaining portion of the basin that extends into Contra Costa County, Zone 7 developed a Memorandum of Understanding (MOU) with those agencies having relevant jurisdiction including Contra Costa County, Contra Costa Water Agency, the City of San Ramon, the East Bay Municipal Utility District (EBMUD), and the Dublin San Ramon Services District (DSRSD). The MOU gives Zone 7 the delegated authority to be the GSA for the portion of the Basin outside of Zone 7 jurisdiction and within the jurisdictions of those agencies listed above. With these MOUs and through DWR's GSA regular approval process, Zone 7 was also approved to be the exclusive GSA for the Contra Costa County portion of the Basin. Accordingly, the Alternative GSP addressed the entire area of the Basin, as will the Five-Year Update.

Management Areas (MAs) also are shown on **Figure 1** including the Main, Fringe and Upland Area MAs (also referred to as Main, Fringe and Upland Basins). The entire basin is the area of benefit for the Project; a basic objective is to address the entire extent of the Livermore Valley Basin. Nonetheless, several subtasks are focused on Fringe and Upland MAs. Project benefits accruing to these MAs include but are not limited to the following:

- Assessment of groundwater level data gaps and planning for new monitoring wells
- Improvement of groundwater level monitoring, data compilation, and reporting
- Extension of minimum depth-to-water and historic low map layers and hydrogeologic cross sections
- Extension of areal recharge spreadsheet modeling tool
- Expansion of the Subsidence Monitoring Program
- Development of Measurable Objectives and Minimum Thresholds for groundwater levels, storage, and quality

Figure 1 also shows the Disadvantaged Areas (DAs) in the Livermore Valley Basin. As shown, these include three Disadvantaged Community Block Groups in the City of Livermore (plus one potential DA with no data). These DAs have shared in the overall benefits of Zone 7 water management including provision of reliable water supply, management of groundwater levels, improvement of groundwater quality, and protection of beneficial uses.

These DAs also are benefitting directly from Zone 7 efforts to reduce locally-elevated nitrate concentrations in groundwater. As shown in **Figure 2**, the Disadvantaged Communities are located in an area of historically-elevated nitrate in groundwater dating back to the 1960s that is being addressed by Zone 7 efforts such as the 2015 Nutrient Management Plan. The DAs will benefit directly from the proposed Project, which includes evaluation of the effectiveness of the implemented OWTS (onsite wastewater treatment system) restrictions in reversing high nitrate conditions in the special nutrient management areas identified in the 2015 Nutrient Management Plan. As shown on **Figure 2** some of these nutrient management areas are near the DAs; in fact, with general northwesterly groundwater flow, the DAs are downgradient and affected by the high nitrate sources. At this location, groundwater accounts for a portion of the DA's potable water supply.

Coordination Efforts, Alternative GSP Preparation, and Funding

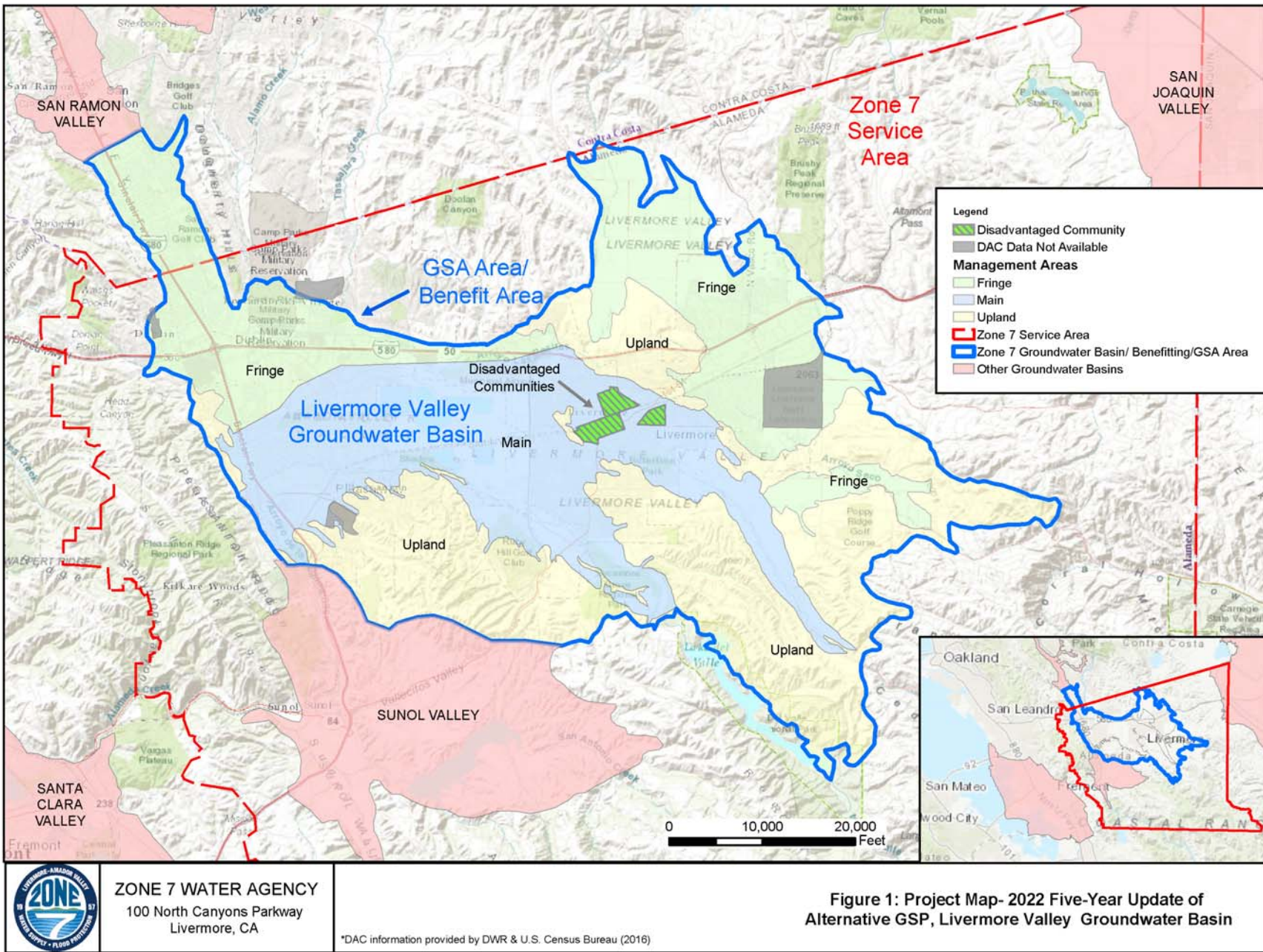
The Five-Year Update is being prepared by Zone 7 Water Agency as the exclusive GSA for the Livermore Valley Groundwater Basin, both within its service area and beyond in accordance with an MOU established with those agencies having relevant land use and water resource jurisdictions for basin areas beyond Zone 7 service areas boundaries. These include Contra Costa County, Contra Costa Water Agency, City of San Ramon, the EBMUD, and DSRSD. For this portion of the basin, the MOU delegates to Zone 7 the administrative functions, powers and duties assigned by SGMA to a GSA to manage and monitor groundwater supplies and use, and report data. Accordingly, Zone 7 is the sole GSA with responsibility to prepare an Alternative GSP and its updates. In response to specific questions posed for this section, there have been, and are, no other GSAs to coordinate with, and Zone 7 already has completed a successful Alternative GSP.

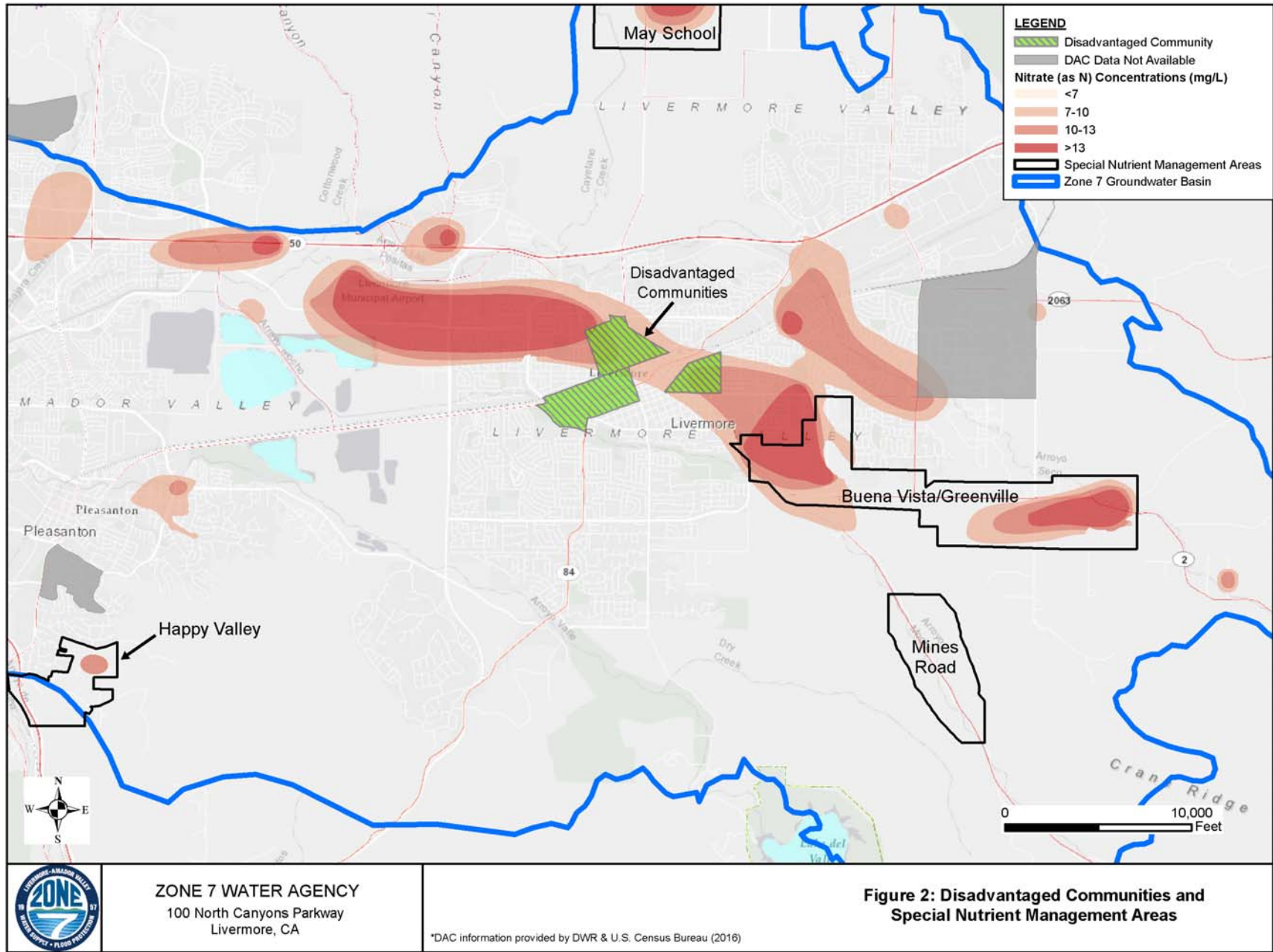
While already having established the authority for GSP preparation and having a successful track record with GSP preparation, Zone 7 is continuing to coordinate with and work actively with other agencies. Such activities are documented in the Annual Reports for the Groundwater Management Program available on the Zone 7 website at

<https://www.zone7water.com/36-public/content/76-groundwater-management-program-annual-report>

As one example, Zone 7 continues to coordinate an extensive groundwater monitoring program, compiling and analyzing data from multiple agencies (and private organizations) including City of Livermore, DSRSD, Alameda County and City of Pleasanton. Other cooperating organizations include Lawrence Livermore National Laboratories, California Water Service, aggregate mining companies (namely CEMEX, Inc., Vulcan Materials Co., and Lehigh Hanson, Inc.), and vineyard and orchard owners, among others.

Zone 7 Water Agency received no funds in Round 2, and accordingly, no issues exist with regard to coordination of Round 2 and Round 3 funding or project completion. It is noteworthy that Zone 7 Water Agency successfully completed its Alternative GSP with a challenging schedule between release of GSP Regulations in May 2016 and the Alternative Plan deadline of January 1, 2017. Zone 7 Water Agency has also completed all its Annual Reports on time.





B. Project Benefits

Benefits of the Five-Year Update Project are to continue managing the local groundwater resources to provide a reliable water supply and to protect the resource for all beneficial uses. These benefits accrue throughout the Livermore Valley Groundwater Basin and through the entire Five-Year Update process. The benefits also accrue to disadvantaged communities. It is recognized that residents of the DAs are financially and socially disadvantaged and thus more vulnerable to challenges of climate change, water quality problems, and any potential disruptions to the local economy. Accordingly, DAs are significant recipients of the overall benefits of Zone 7 water management including provision of reliable water supply, improvement of groundwater quality, and protection of beneficial uses. These DAs also are benefitting directly from Zone 7 efforts to reduce locally-elevated nitrate concentrations in groundwater.

Benefits of **Grant Administration** are mostly assurance of the technical progression of the Five-Year Update within budget and schedule limitations, thereby providing a cost-effective project. Grant Administration also will include preparation and submittal of six (6) Quarterly Progress Reports that provide a brief description of the work performed, milestones achieved, any accomplishments and any problems encountered in the performance of the work under the grant agreement during the quarterly reporting period. Grant Administration also will provide meeting materials from relevant meetings and a draft and final Grant Completion Report.

Outreach will provide the public, stakeholders and local agencies with information and a forum to participate in the Five-Year Update. This will include knowledge of how outreach will occur, enhanced webpage access to information, the opportunity to participate in meetings and hear presentations on Update progress and to engage in the Update preparation process. Measurable benefits of the Project will include the following:

- An Outreach and Communication Plan
- A SGMA/GSP website page, with submittal of a hyperlink
- Summaries from meetings with land use planning agencies and RWQCB (including three (3) or more meetings).
- Presentation materials for three (3) Zone 7 Board meetings and one (1) Water Resources Committee meeting

The benefits of the **Alternative GSP Five-Year Update** are integral to the continuation of successful groundwater basin management into the future. The benefits of this specific 2022 Five-Year Update are encompassed in the following documents and will extend to the next 2027 Five-Year Update:

- Memorandum with outline for Five-Year Update
- Draft 2022 Five-Year Update
- Final 2022 Five-Year Update (uploaded to DWR)

As shown on **Figure 1**, there are three Disadvantaged Community Block Groups in the City of Livermore. These three disadvantaged communities (DACs) are south of Highway 580, in the vicinity of 1st Street and North Livermore Avenue, and include approximately 6,700 people. No Tribes or SDACs have been identified in the Livermore Valley Basin.

These DAs have shared in the overall benefits of Zone 7 water management including provision of reliable water supply, management of groundwater levels, improvement of groundwater quality, and protection of beneficial uses, and will continue to have these benefits. These DAs also are benefitting directly from Zone 7 efforts to reduce locally-elevated nitrate concentrations in groundwater. Located in an area of historically-elevated nitrate dating back to the 1960s, the DAs have benefitted from nitrate reductions resulting from Zone 7 efforts such as the 2015 Nutrient Management Plan. The DAs will benefit from the proposed Project, which includes evaluation of the effectiveness of the implemented OWTS (onsite wastewater treatment system) restrictions in reversing high nitrate conditions in the special nutrient management areas identified in the 2015 Nutrient Management Plan. Some of these are upgradient of and affecting the DAs and will be included in the evaluation of the effectiveness of the OWTS restrictions. If not effective, then recommendations will be developed for additional measures to improve groundwater quality.

Letters of Support

Zone 7 Water Agency received five letters of support for the proposed Five-Year Update project, as listed in in the Miscellaneous Section, Project Support (see table in that section). Of these, one is from the City of Livermore, which encompasses the local Disadvantaged Areas.

As stated in the letter from Livermore, **reliable water supply is an economic pillar** for the City of Livermore and other local communities and the success of the Alternative GSP is fundamental to the economic vitality of the region. The understanding gained through the GSP process will enhance the ability of water purveyors (including those serving Livermore) to continue to supply a reliable source of high quality water to all citizens. **This is especially important to Disadvantaged Communities**, including those identified in the City of Livermore. This recognition of the importance to DAs of Zone 7 sustainable management is echoed in the letters from the City of Pleasanton, DSRSD, and Tri-Valley Conservancy.

C. Technical Expertise

Technical Need for Five-Year Update

Zone 7 Water Agency has conducted groundwater basin management for decades and recognizes the need for adaptive management and the benefits of updates, now formalized and mandated on a five-year basis by SGMA. The need for adaptive management and for updates is particularly meaningful now with the challenges of continuing growth, climate change, and increasing competition for limited surface water supplies. Effective response to these challenges means that conjunctive use of the groundwater basin must be increasingly optimized and yet flexible. That means annual monitoring and regular checking against goals, objectives, and sustainability criteria—minimum thresholds, milestones, and measurable objectives—to gauge the status of the basin and the effectiveness of sustainable management. In brief, the Five-Year Update is needed to keep sustainable management on track; specific needs are summarized below.

- The **Groundwater Level Program Update** is needed to enhance groundwater level management of the Upland and Fringe Basins and more fully integrate that management with management of the Main Basin. The integration is needed to ensure that management activities in respective MAs do not result in undesirable results in other MAs. This update is needed to better identify groundwater level data gaps in the Upland and Fringe MAs, to extend data analysis throughout these areas, and to identify new monitoring well sites. This is needed to respond to DWR Recommended Action 4 to improve the groundwater level monitoring network and protocols and to provide monitoring well information. Also, per DWR Recommended Actions 1 and 2, specific groundwater levels at monitoring sites need to be clearly identified as they relate to minimum thresholds and minimum thresholds need to be defined for groundwater levels across the Upland and Fringe MAs that are better aligned with GSP Regulations §354.20(b)(2) and 354.28(b)(6).
- The **Groundwater Storage Program Update** is needed to enhance management of Upland and Fringe storage and to better integrate that management with Main Basin management. An improved hydrogeologic conceptual model for Fringe and Upland MAs is needed; such improvement can be gained by extending geologic cross sections across the Main Basin and into the Fringe and Upland MAs. For the integrated management of Main, Fringe, and Upland MAs, improvement and extension is needed of Zone 7's Areal Recharge Spreadsheet Model. Responsive to DWR Recommended Action 3, minimum thresholds need to be developed for groundwater storage across the Upland and Fringe MAs that are better aligned with GSP Regulations §354.20(b)(2) and 354.28(b)(6).
- The **Groundwater Quality Program Update** is needed to continue and improve management of groundwater quality (e.g., nutrients) and address new issues, for example PFAS. This task is needed to track the effectiveness of the implemented OWTS restrictions/limits to reverse local high nitrate conditions; the latter will directly benefit DAs in Livermore. Better definition is needed and will be provided of Measurable Objectives and Minimum Thresholds for quality in the Upland and Fringe MAs.
- While no known land subsidence has occurred, it remains a potential undesirable result in the Livermore Valley Basin. With a goal of no inelastic subsidence, accurate monitoring and careful consideration of Minimum Thresholds is needed. The **Land Subsidence Program Update** will provide needed re-evaluation of how Measurable Objectives and Minimum Thresholds are defined and new data protocols and procedures.
- At the time of Alternative GSP preparation, guidance was lacking on how to identify groundwater-dependent surface water and GDEs. Since then, DWR has provided the NCCAG mapping. Consistent with its own practices and responsive to SGMA policy to use best available science, Zone 7 needs to review available information (e.g., NCAAG) to identify connected surface water sources and to evaluate GDEs. The **Surface Water–Groundwater Interaction/GDE Program Update** will provide this evaluation and fill a previously-unrecognized data gap. If potential GDEs are identified, this Update will take the next steps of field verification, a GDE inventory, refinement of Measurable Objectives and Minimum Thresholds, and new monitoring locations and protocols.
- The **Five-Year Update Report** is needed to continue effective Zone 7 Groundwater Management and to comply with the GSP Regulations §356.4.

Technical Need for Outreach

Zone 7 Water Agency has provided outreach to stakeholders and fostered collaboration among agencies for years. This reflects an explicit policy from the 1987 Statement on Groundwater Management and the groundwater management objectives from the 2005 Groundwater Management Plan (GWMP). The outreach has included a range of activities documented in the 2016 Alternative Plan (see Section 1.3.4.2 Zone 7 Coordination with Water Resources by Others and 1.3.5 Cooperation with Other Agencies and Stakeholders). It also has included regular preparation of Annual Reports that are posted on the Zone 7 website going back to 2009 and now including Annual Reports in compliance with SGMA: <https://www.zone7water.com/36-public/content/76-groundwater-management-program-annual-report>.

With a long history of successful groundwater management, Zone 7 already has engaged stakeholders and other agencies and already has established effective means of outreach. However, Zone 7 recognizes the need to update and refresh its public and agency outreach, particularly in light of the transition from the 2005 GWMP to SGMA and the 2016 Alternative GSP. This transition has been a smooth process, but still warrants explanation, particularly in light of Zone 7's ongoing commitment to a transparent process.

The approach to outreach is systematic and provides needed communication with basin stakeholders. As described in the Scope, this will begin with preparation of a guidance document—the Outreach and Communication Plan—and creation of a new, dedicated, and needed webpage that summarizes SGMA and the Zone 7 Alternative Plan and provides information on the Annual Reports and on the Five-Year Update process, including announcements and access to presentation materials and the draft Update document. The Outreach task also will support continuing collaboration with land use planning agencies and with RWQCB; this is needed, for example, for the continuing success of programs addressing groundwater quality issues. The Outreach task also provides opportunities for stakeholders to participate; presentations will be provided at Board meetings with question and answer sessions. The draft Update document also will be available for public review.

Technical Need for Grant Administration

Grant Administration is needed to ensure compliance with all grant conditions and requirements. The Grant Administration work will include oversight of the project activities to ensure they are completed consistent with the grant workplan, delivering the benefits claimed, being completed consistent with the budgets and schedules, and all work is being reported and invoiced on a quarterly basis as required by the grant agreement.

Experience, Knowledge, and Skills

Preparation of the Five-Year Update is being conducted by Zone 7 Water Agency, as exclusive GSA for the basin within its jurisdiction. For the basin area in Contra Costa County, Zone 7 has a MOU with Contra Costa County, Contra Costa Water Agency, City of San Ramon, EBMUD and DSRSD. The MOU gives Zone 7 the delegated authority to be the GSA for the basin outside of its jurisdiction and within the jurisdictions of agencies listed above. While Zone 7 is the GSA leading the GSP process, these agencies are actively engaged. Selected examples include:

- Zone 7 has continued to implement its Nutrient Management Plan (NMP). The NMP was developed with support and input from the RWQCB, ACEH, Alameda County Community Development Agency, Zone 7 Retailers, and other stakeholders and interested public. For nutrient management, Zone 7 cooperates with the other agencies with its role in managing On-Site Wastewater Treatment System (OWTS) densities through issuance of non-residential (e.g. commercial and industrial) use permits.
- Zone 7 has been part of a joint effort by the Tri-Valley water agencies to study the technical feasibility of potable reuse to enhance long-term water supply reliability. In May 2018, the Tri-Valley water agencies completed the Joint Tri-Valley Potable Reuse Technical Feasibility Study, which showed that potable reuse was indeed technically feasible.
- Zone 7 participates in *Tri-Valley Water* along with California Water Agency, DSRSD, City of Livermore Water Resources, and the City of Pleasanton in a collaborative outreach and educational effort that provides workshops.

Zone 7 Water Agency has successfully completed projects that were funded at least in part by water bond grants. The following are representative projects that involve groundwater basin management.

Grant Name	Project Name	Awarded	Amount	Completed
DWR Proposition 50	Mocho Groundwater Demineralization Plant Project	April 2007	\$ 740,000	December 2009
DWR Local Groundwater Assistance Program	Hydrostatic Investigation of Aquifer Recharge Potential for Lakes C and D	May 2010	\$ 250,000	May 2011
DWR Proposition 84	Zone 7 Water Supply Drought Preparedness Project	July 2015	\$ 3,000,000	January 2015*
DWR Local Groundwater Assistance Program	Upgrades, Calibration, and Application of the Groundwater Model for Groundwater and Salt Management in Livermore Valley Groundwater Basin	December 2013	\$ 200,000	March 2017

* Grant was awarded after project was completed.

Zone 7 Water Agency has a successful track record in completing large-scale planning documents. Key planning documents relative to groundwater sustainability and their outcomes are described below.

- 2004 Salt Management Plan (SMP). Implementation of the SMP has included modifications to existing conjunctive use programs, plus development of the Zone 7 Mocho Groundwater Demineralization Plant that strips salts from produced groundwater and discharges them to a wastewater export pipeline, helping to manage salt loading.
- 2005 Groundwater Management Plan (GWMP). The GWMP and subsequent Annual Reports were developed through an open and collaborative process, presented documentation of groundwater conditions and provided the groundwater management objectives, policies, and programs that guided management of the Livermore Valley Basin until preparation of the Alternative GSP in December 2015.
- 2015 Nutrient Management Plan (NMP). The NMP supported improved monitoring of nitrate in groundwater and provided coordination with land use agencies to develop best management practices and a Local Agency Management Program for onsite wastewater treatment systems, which addresses high nitrate areas-of-concern.
- 2015 Urban Water Management Plan (UWMP). The UWMP reports on and helps guide conjunctive use of water supplies and water demand management for Zone 7 and its retailers.
- 2016 Alternative Groundwater Sustainability Plan (GSP). The Alternative GSP was prepared in accordance with SGMA and GSP Regulations; it provided institutional information, a hydrogeologic conceptual model, description of groundwater conditions, and definition of undesirable results, minimum thresholds, and measurable objectives. It also identified management actions and monitoring that have guided groundwater management since then, with annual reporting.

Documentation of Certified Professionals

The proposed project will be conducted by Zone 7 Water Agency. The Zone 7 Water Agency team comprises the following professionals who are listed below along with a link to the California Board for Professional Engineers, Land Surveyors, and Geologists where licenses can be verified, https://www.bpelsg.ca.gov/consumers/lic_lookup.shtml:

Matt Katen, Professional Geologist, No. 5167, Certified Hydrogeologist, No. 336
Colleen Winey, Professional Geologist, No. 7476
Tom Rooze, Professional Geologist, No. 6039, Certified Engineering Geologist, No. 1918
Carol Mahoney, Professional Geologist, No. 7389, Certified Hydrogeologist, No. 769

This is the same Zone 7 team that prepared the Alternative GSP in December 2016.

Compliance with SGMA and GSP Regulations

Zone 7 Water Agency successfully prepared an Alternative GSP in compliance with SGMA and GSP Regulations. Even through GSP Regulations became available only in May 2016, Zone 7 staff and consultants were able to prepare a comprehensive and meaningful Alternative GSP by December 2016, meeting a challenging deadline. The Alternative Plan was thoroughly reviewed by DWR, finding that it satisfied the objectives of SGMA and successfully demonstrated sustainable management. While providing four recommendations, DWR has formally approved the Alternative GSP (as of July 2019), one of only two that were able to document sustainable management over more than 10 years; Zone 7 Water Agency was able to demonstrate such management over more than 40 years. Since then, Zone 7 has also prepared Annual Reports consistent with SGMA and has submitted those reports within SGMA deadlines. Zone 7 will provide a Five-Year Update that supports its management and complies with GSP Regulations including §356.4.

As summarized in the previous section, Zone 7 Water Agency has maintained positive working relationships with other organizations and has received letters of support from five (5) representatives for agencies. Letters of support are provided as an Exhibit to Section C of this Attachment. Letters of support from other GSAs within or surrounding the basin are not possible because there are no eligible GSAs. The Livermore Valley Groundwater Basin shares its southern boundary with the Sunol Basin (No. 2-11), for which Zone 7 Water Agency would be the GSA, and a portion of its northern boundary with the very-low priority basin San Ramon Valley (Basin No. 2-07), which does not have an exclusive GSA.

Zone 7 staff have been actively managing and identifying data gaps and considering ways to strengthen sustainability planning in accordance with SGMA. The following Scope of Work for the Five-Year Update (plus the schedule and budget in Attachments 4 and 5) have been developed by Zone 7 staff and the needed information and tools are in place to proceed with the Update tasks. Moreover, the tasks identified by Zone 7 staff and the recommendations of DWR are consistent and complementary. Given the above, everyone can be assured that Zone 7 Water Agency knows what is needed to meet SGMA requirements and GSP regulations and will have a completed Five-Year Update by the due date.

D. Scope of Work and Deliverables

a. Scope of Work

Category (a): Grant Administration

Grant Administration includes tracking by Zone 7 staff of the schedule and budget on a monthly basis and providing quarterly updates to the Zone 7 GSA Board and to DWR. Project labor and expense will be checked against budget spreadsheets and grant eligibility criteria for reimbursement. Consultant progress and charges will be checked at least monthly in terms of the Alternative Groundwater Sustainability Plan (Alternative GSP) Update schedule and budget. Zone 7 Water Agency has supported successful DWR grant-funded projects in the past and is familiar with DWR progress report formats and content.

Grant Administration will begin with review and execution of the Grant Agreement, including all Exhibits, and submittal to DWR of the executed agreement and any additional requested documentation. This task also includes provision of miscellaneous administrative and project management efforts, such as coordinating tasks and facilitating administrative meetings.

Invoices from consultants will be checked and incorporated into monthly invoices that clearly show team members, hours, costs, and progress on tasks. A monthly progress report will be prepared for each invoice showing progress made during the month, next steps for the following billing cycle, and status of both schedule and budget.

Quarterly Progress Reports will be prepared describing work completed during each quarter and will be submitted to DWR along with quarterly invoices for reimbursement. The quarterly invoices will include sufficient backup documentation for the DWR Project Manager to determine whether the project costs are eligible for reimbursement.

At the completion of the Five Year Update Alternative GSP, a Draft Grant Completion Report will be submitted to the DWR Project Manager for comment and review; this will occur no later than 60 days after completion of the Five Year Update report. A Final Completion Report addressing the DWR Project Manager's comments will be prepared and submitted to DWR.

Category (b): Stakeholder Engagement/Outreach

This is an update of the Zone 7 public and agency outreach that focuses on SGMA, the Alternative GSP, and the Five-Year Update; it supports a transparent process. It includes preparation of an Outreach and Communication Plan, provision of a dedicated SGMA/GSP webpage, collaboration with other agencies including land use planning agencies and RWQCB, and engagement of stakeholders through provision of presentations at public meetings that provide a forum for stakeholder involvement. The following tasks are planned specifically for the development and communication of the Five-Year Update of the Alternative GSP.

Task 1 Prepare Outreach and Communication Plan

To ensure a transparent and systematic process, this task provides an Outreach and Communication Plan. This Plan will incorporate aspects of ongoing Zone 7 outreach with a focus on the Five-Year Update process. The Outreach and Communication Plan will be developed with reference to GSP Regulations § 354.10 as applied to Zone 7 Alternative GSP planning. It will briefly describe Zone 7's decision making through its Board of Directors, maintenance of an interested parties list, relevant collaboration with agencies as part of the Five-Year Update, and opportunities for stakeholder engagement including identification of planned meetings (i.e., Board of Directors meetings) and other public outreach efforts. This Outreach and Communication Plan will be presented to the public at a Zone 7 Board meeting and uploaded to the Zone 7 website (see Tasks 2 and 3) so that they know how they can participate in the Update.

Task 2 Create Webpage

This task will develop a new, dedicated webpage that briefly summarizes SGMA, the Zone 7 Alternative Plan, Annual Reporting, and Five-Year Update process. The new webpage will be developed to share information about the Update project with the public and other agencies. To support public involvement, it will include the Outreach and Communication Plan and announcements of public meetings. It will provide access to Five-Year Update presentation materials and the draft Update document. This task will result in a new webpage on the Zone 7 website; a screenshot and hyperlink will be presented to the Board of Directors at a public meeting. It is intended to be renewed in the future as part of the ongoing GSP process.

Task 3 Provide Outreach to Agencies

This task provides specific needed outreach and collaboration with RWQCB and land use planning agencies on salt and nutrient loading issues. The objectives are twofold; to ensure that Zone 7 is appropriately informed of current land use plans, goals, objectives, policies and programs when considering groundwater management, and to ensure that land use

planning agencies are informed about groundwater sustainability when reviewing and permitting development plans over or adjacent to the groundwater basin. This task includes a series of meetings (as many as four) to review respective goals, objectives, concerns, restrictions, and relevant actions with land use planning (e.g., Alameda County, cities of Dublin, Livermore and Pleasanton) and with RWQCB. The RWQCB review is intended to keep the RWQCB informed of basin conditions and to ensure compliance with RWQCB plans, policies and programs. The progress of meetings will be summarized to the Board of Directors (see Task 4).

Task 4 Inform and Engage Stakeholders

This task builds on Task 1 Prepare Outreach and Communication Plan to support engagement of stakeholders in the Update process. It also utilizes the Task 2 Webpage to inform and engage stakeholders. While pending completion of Task 1, the Task 4 is anticipated to include provision of presentations at public meetings of the Zone 7 Board of Directors; this is a recognized and established forum for stakeholder involvement and is televised. Three presentations are planned; two of these are linked generally with completion of Annual Reports to make best use of available information and are planned for June 2020 and April 2021. The first will introduce the Update process and the second will be a status report. Another presentation is planned to present the draft Five-Year Update to the Water Resources Committee at its public meeting. The final presentation (the third to the Board) is slated for November 2021 and will present the draft Five-Year Update. The presentations will include PowerPoint slides describing the project and its status, presenting any new issues that may have developed along the way, and soliciting input and questions from the Board and the public. The presentations will be uploaded to the new webpage; the draft Update document also will be available for public review.

Category (c): Alternative GSP Update (0% complete)

DWR's approval letter of the Alternative GSP included several recommended actions that Zone 7 "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." The tasks and subtasks in this category are designed to address these DWR recommendations, especially those related to the Fringe and Upland Basin Management Areas (also referred to as Fringe Basin and Upland Basin, respectively), and to build on, extend, and improve other components of the Alternative GSP. The five year update will also incorporate the findings of five years of monitoring since the Alternative GSP into a succinct and streamlined document that provides context as needed, but will avoid repetition from previous work. The following proposed Tasks 1 to 5 are organized by the sustainable management criteria relevant to the Livermore Valley Groundwater Basin, while Task 6 consists of the preparation of the Alternative GSP report.

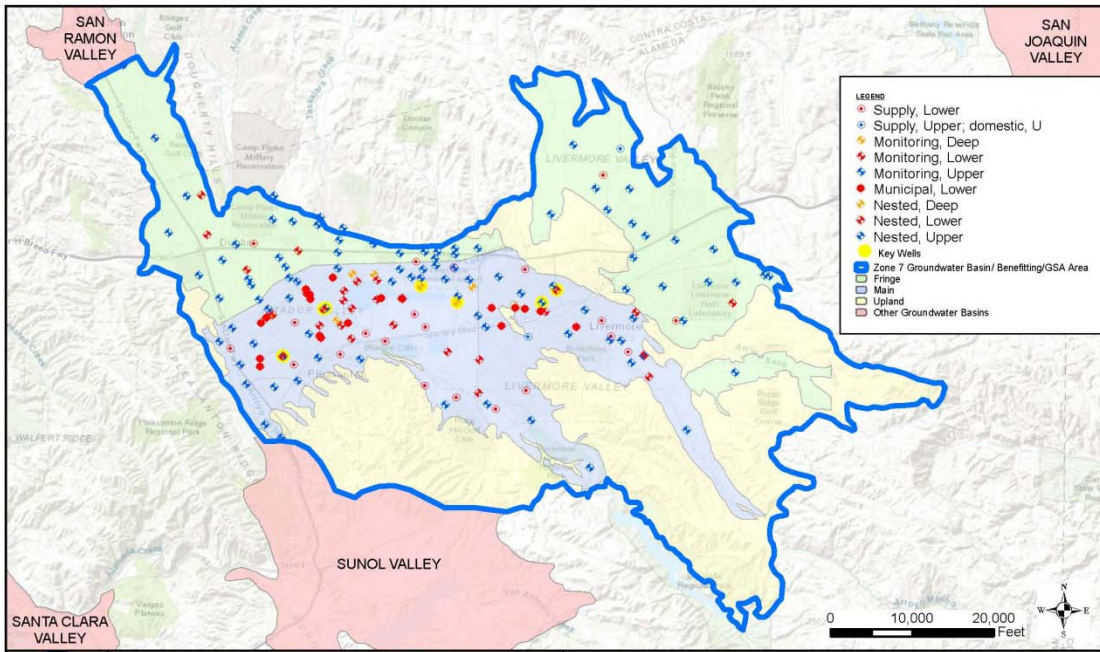
Task 1 Groundwater Level Program Update

Zone 7's existing groundwater monitoring program focuses primarily on the Main Basin and Fringe Basin where groundwater is pumped for municipal, industrial and agricultural uses; Zone 7 monitors very few wells in the Upland Basin as low well yields in this portion of the basin limit the larger scale pumping. This task addresses the following two DWR recommended actions:

- (1) "to include monitoring groundwater levels at additional locations in the Uplands Management Area to monitor changes in groundwater conditions and manage the groundwater resources to prevent undesirable results in future updates to the Alternative Report" (Recommended Action #4).
- (2) "to develop quantitative minimum thresholds for the chronic lowering of groundwater levels for the Fringe and Upland management areas to better align with the requirements for management areas and definition of minimum thresholds" (Recommended Action #2).

1.1 Address Data Gaps

The figure below shows the existing wells in Zone 7's groundwater monitoring program. This subtask is designed to address data gaps in the program, especially those in the Fringe and Upland Basins. This subtask includes reviewing existing data, identifying data gaps, identifying existing wells that may fill those data gaps, contacting well owners to obtain permission to monitor those wells, selecting some of those wells to be added to the program, and taking water level measurements from those wells. Wells built most recently will take priority in the selection process.



1.2 Revise Depth to Water and Historic Low Maps

This subtask includes revising Zone 7's existing depth-to-water map to include the data obtained in Subtask 1.1 above. The subtask also includes extending Zone 7's historic low map layer to the Fringe Basin and, if possible, to the Upland Basin.

1.3 Review/Develop Measurable Objectives and Minimum Thresholds

This subtask includes a review of existing measurable objectives and minimum thresholds (e.g., for the Main Basin) and developing quantitative minimum thresholds in the Fringe and Upland Basins, as appropriate, based on the data collected in Subtask 1.2 above. Measurable objectives and minimum thresholds will be defined with specific reference to groundwater levels at representative monitoring sites, will be aligned with DWR regulations, and will be defined for operation of management areas without causing undesirable results in other management areas.

1.4 Update Monitoring Network

This subtask includes updating groundwater monitoring program maps and tables to include the information collected in Subtasks 1.1 and 1.2 above. The monitoring program will be developed to track conditions relative to the minimum thresholds and measurable objectives defined in Subtask 1.3. If necessary, Zone 7 will also initiate plans to construct new monitoring wells in data gap areas that could not be addressed in Subtask 1.1. This subtask will describe the monitoring frequency and timing at new stations and document relevant monitoring well construction information.

Task 2 Groundwater Storage Program Update

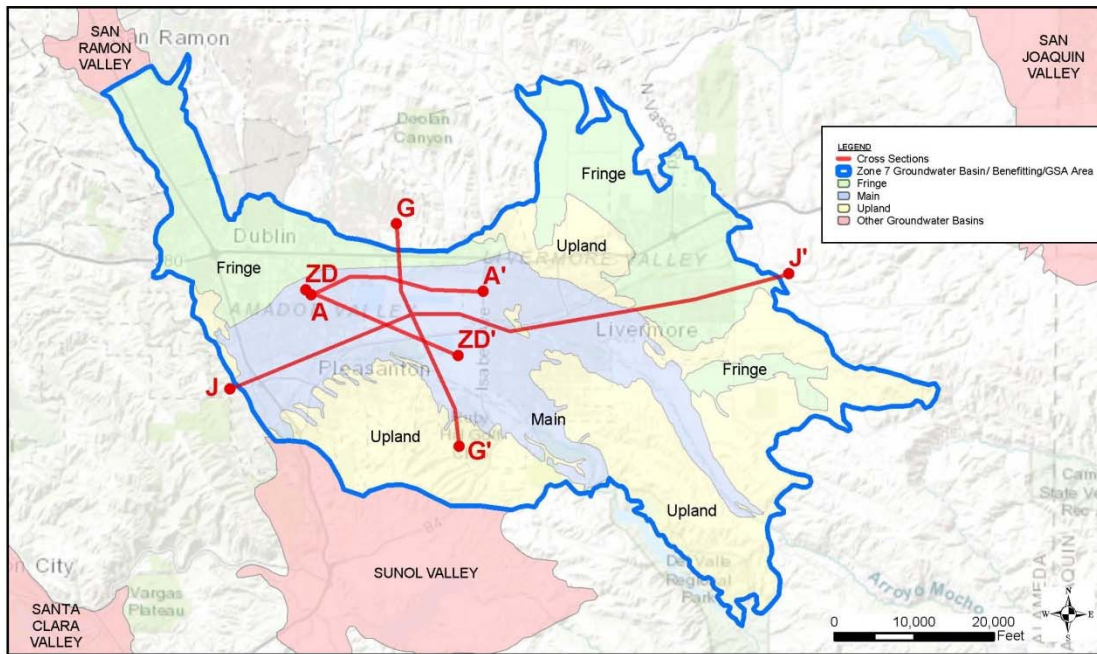
Zone 7's closely monitors groundwater storage relative to minimum thresholds in the Main Basin, where groundwater is pumped for municipal, industrial and agricultural uses. In the Alternative GSP, Zone 7 also included estimates for groundwater storage in the Fringe Basin, where low well yields limit the larger scale pumping. This task addresses DWR's recommended action to "develop quantitative minimum thresholds for reduction of groundwater storage for the Fringe and Upland management areas" (Recommended Action #3). This task will also improve some of the tools that Zone 7 uses to manage Main Basin groundwater storage.

2.1 Extend Existing Hydrogeologic Framework

While several cross sections have been developed over the Livermore Valley Groundwater Basin (e.g., DWR Sections G-G' and J-J' in the figure below, which were included in the Alternative GSP), most of these were developed several decades ago primarily using lithology from geologic boring logs. Since 2004, Zone 7 has developed more detailed cross sections based on electric log (elog) data (mostly from gamma and resistivity). Zone 7's cross section network focuses primarily on the Amador sub-basin (e.g., Sections A-A' and ZD-ZD' in the figure below, which were also included in the Alternative GSP), from where Zone 7 primarily pumps and from where quarry mining occurs. These cross sections were the basis for revising Zone 7's groundwater model from 3 layers to 10 layers. This subtask would extend the elog-based cross section network to cover other subbasins within the Main Basin (Bernal and Mocho II), the Fringe Basin, and portions of the Upland Basin. The number and locations of these sections will be determined based on the available

borehole data, however Zone 7 estimates that at least three cross sections will be created, one of which will be extend East-West across the Main and Fringe Basins roughly in the same vicinity as DWR Section J-J' (see figure below).

This subtask includes selecting and purchasing an appropriate geology program (e.g., Rockworks), software installation and preparation, searching for other logs not currently in Zone 7's database, data entry, creating a representative log curve for each borehole that represents grain size (usually from the gamma, short normal, or long normal curves), and generating cross sections using the geology program.



2.2 Migrate and Extend Areal Recharge Model (ARM)

Zone 7 has developed an Areal Recharge Model (ARM) that simulates the root zone moisture content. The ARM is a Microsoft Excel/VBA spreadsheet model that uses the same cell grid as that used for Zone 7's groundwater model, which currently only covers the Main Basin and the Fringe Basin Northwest. The ARM uses soil type, root zone depth, rainfall, evaporation, and land use to calculate daily agricultural pumping demand, rainfall recharge, applied water (i.e., irrigation) recharge, and rainfall runoff to streams.

While the ARM has worked well, it has a few disadvantages: (1) it takes several hours to run, (2) it is difficult to calibrate, (3) it requires VBA coding to modify and update, and (4) it does not cover the entire groundwater basin. Therefore, this subtask consists of upgrading to an off-the-shelf program (e.g., IDC/IWFM, HEC-HMS, or MODFLOW OHWM) that calculate the same datasets. This subtask includes selecting and purchasing the program, software installation and preparation, creating and calibrating the model, comparing the calibrated model to the existing ARM, running the model to regenerate monthly datasets that cover the last 10 years, modifying the existing values in Zone 7's database, if necessary, and revising Zone 7's existing groundwater storage calculations as appropriate.

2.3 Review/Develop Measurable Objectives and Minimum Thresholds

This subtask includes creating a GIS layer that represents the basin bottom(s) of the Fringe Basin and, if appropriate, the Upland Basin, using the cross sections generated in Subtask 2.1. Then, the minimum thresholds for groundwater elevation created in Task 1 will be used to calculate quantitative minimum thresholds for groundwater storage in the Fringe Basin, and Upland Basin as appropriate. Minimum thresholds will be aligned with the definition of management areas and minimum thresholds as provided in the GSP Regulations § 354.28.

Task 3 Groundwater Quality Program Update

This task addresses and updates components of Zone 7's groundwater quality program, that, even though not specifically addressing a DWR recommended action, will address continuing and emerging groundwater quality concerns in the basin and will gauge how GSP implementation is meeting sustainability objectives. The task includes updating previous projections of Main Basin salt and nitrate concentration, reviewing information and effects from constituents of concern including Per- and polyFluoroAlkyl Substances (PFAS), and updating minimum thresholds if necessary. This task also

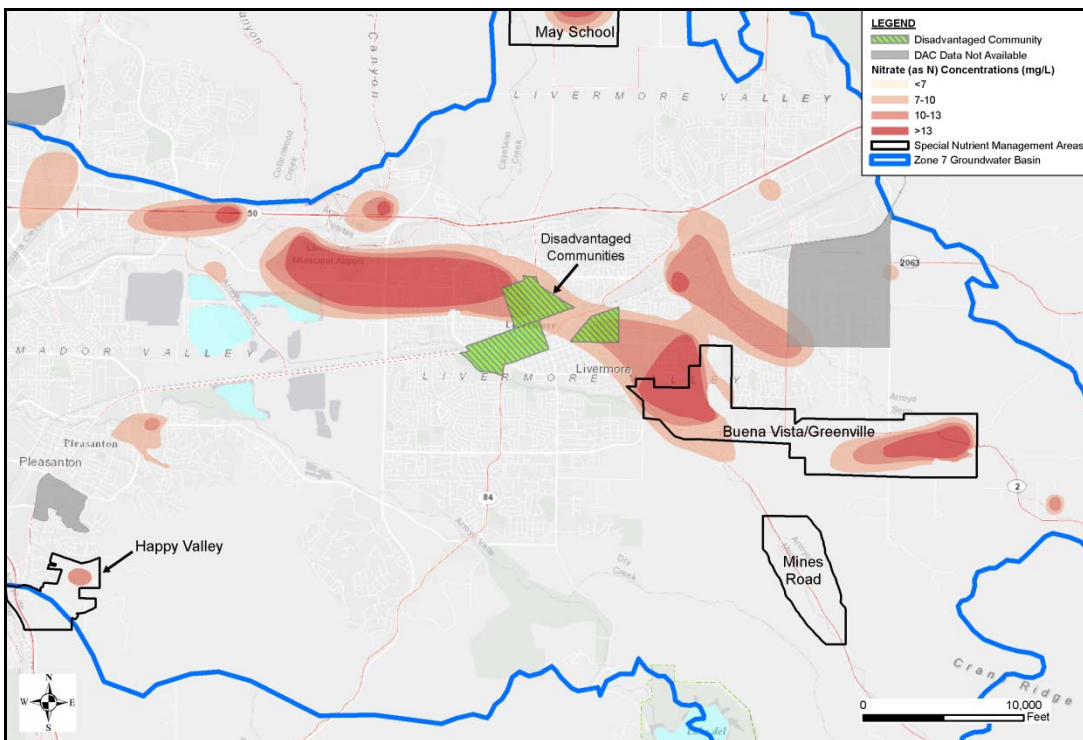
includes evaluating the effectiveness of previously-implemented Onsite Wastewater Treatment Systems (OWTS) restrictions/limits to reverse local high nitrate conditions.

3.1 Update TDS and Nitrate Projections

For the Salt and Nutrient Management Plan updates (in 2013 And 2015, respectively), Zone 7 generated graphs that estimated future Main Basin salt concentrations (as Total Dissolved Solids, or TDS, from 2011 to 2050) and nitrate concentrations (from 2013 to 2050). These graphs were used to evaluate and develop long term plans (e.g., installing a second demineralization plant) for managing salt and nitrate in the Main Basin. This subtask consists of updating these graphs to include recent salt and nitrate datasets, possible climate change effects, revised mining completion date estimates, and recent Delta Fix projections. This is important to evaluating how GSP implementation is meeting sustainability goals and objectives.

3.2 Evaluate Effectiveness of NMP Strategies

The 2015 Nutrient Management Plan recommended implementing OWTS restrictions and limits in “Areas of Concern” (see figure below) to minimize nitrate loading to the groundwater basin. This subtask will evaluate the effect of those restrictions and limitations. This subtask includes creating and comparing “before” and “after” nitrate concentration maps and/or preparing nitrate concentration graphs in the “Areas-of-Concern”, some of which have plumes that extend down-gradient underneath Disadvantaged Areas (DAs) in Livermore (also shown in the figure below).



3.3 Review Constituents of Concern (COCs), Including PFAS

This subtask includes reviewing recent research and guidelines for COCs including PFAS that may affect the groundwater basin. If appropriate, the subtask also includes the updating or creating of representative groundwater concentration maps for these COCs.

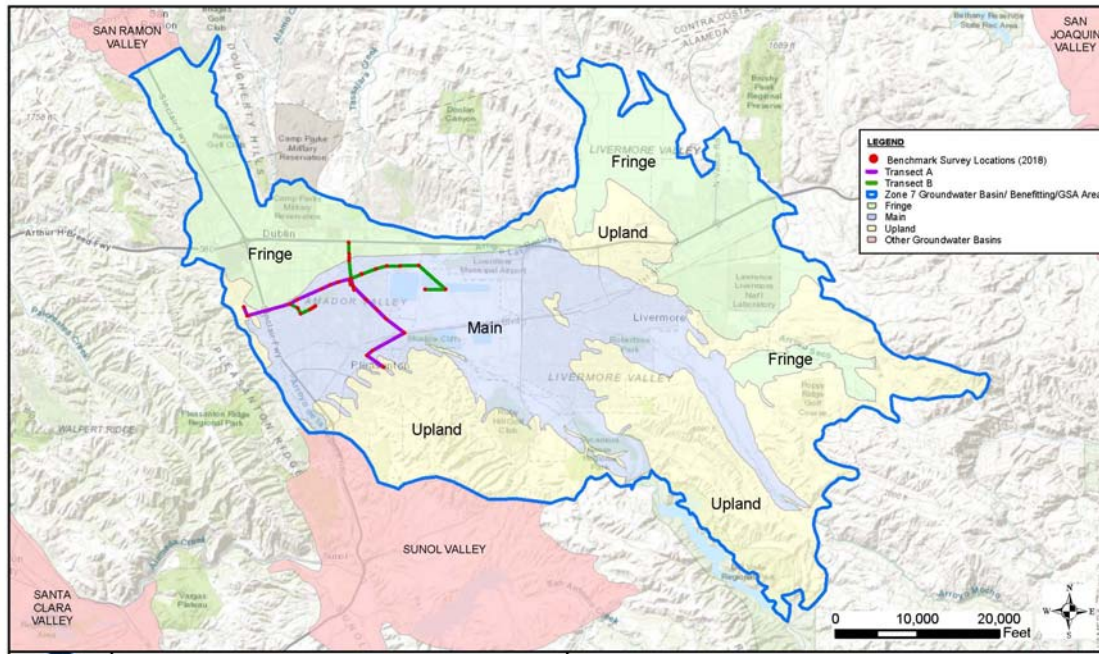
3.4 Review/Develop Measurable Objectives and Minimum Thresholds

This subtask includes reviewing GSP performance relative to established measurable objectives and minimum thresholds for groundwater quality. It also includes reviewing and/or developing measurable objectives and/or minimum thresholds for groundwater quality for the Fringe and Upland Basins, based on the data collected in Subtasks 3.1 to 3.3, as appropriate.

Task 4 Land Subsidence Program Update

The Alternative GSP describes how Zone 7 uses spirit-level line surveys over the western portions of the Main Basin (see figure below) to monitor land subsidence. In 2016 TRE-Altamira, an international firm dedicated to measuring ground and structural movement from space, conducted a study that evaluated land subsidence over much of the groundwater basin using Interferometric Synthetic Aperture Radar (InSAR). The study confirmed that InSAR produces results with similar

resolution as the spirit-leveling surveys, but over a much larger area (i.e., most of the groundwater basin), with a higher density of monitoring points, and potentially for a slightly lower annual cost. This task consists of evaluating the use of InSAR on an annual basis, in lieu of the spirit-level land surveys, to evaluate land subsidence over the entire groundwater basin.



4.1 Convert to InSAR Methodology

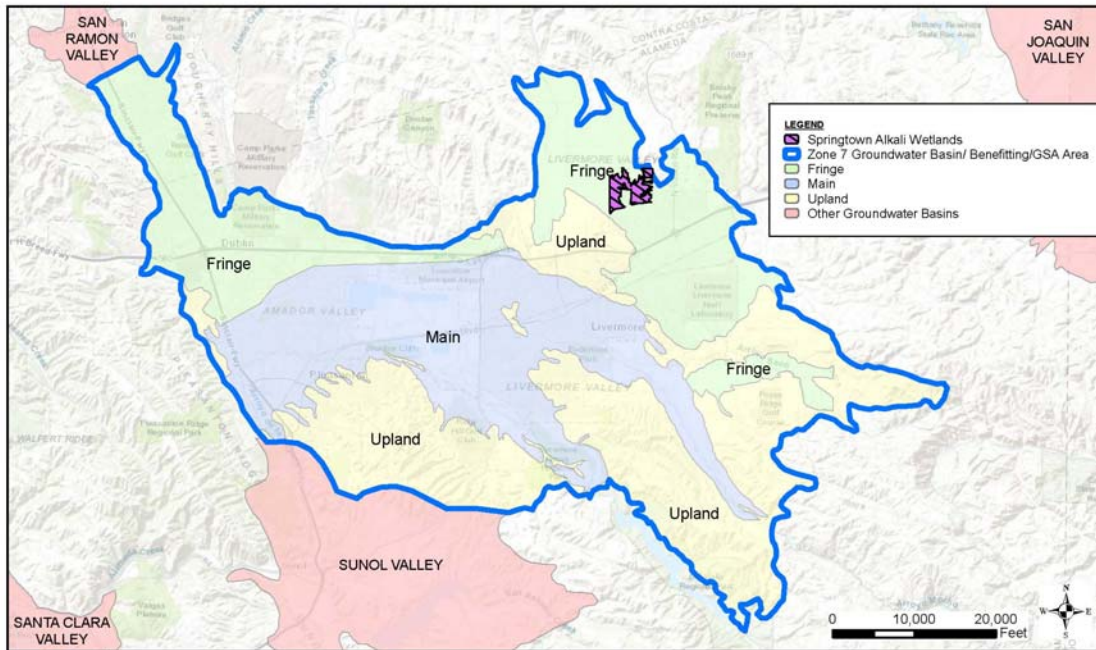
Starting in 2019 Zone 7 plans to pilot an annual monitoring program using InSAR. For the Alternative GSP Update, Zone 7 will use the results of the pilot program to develop a monitoring routine that analyzes the ground movement and displays the results graphically.

4.2 Review/Develop Measurable Objectives and Minimum Thresholds

This task includes evaluating how GSP implementation is meeting sustainability objectives for land subsidence. It also includes reviewing and/or developing measurable objectives and/or minimum thresholds for land subsidence for the Fringe and Upland Basins, based on the InSAR data collected in Subtask 4.1, as appropriate.

Task 5 Surface Water–Groundwater Interaction/Groundwater Dependent Ecosystems (GDE) Program Update

Zone 7’s Alternative GSP identified one GDE (Springtown Alkali Sink, see figure below) in the Livermore Valley Groundwater Basin and described measurable objectives and minimum thresholds to maintain the GDE. However, when the Alternative GSP was written, limited information was available on wetlands and vegetation associated with groundwater. This task will reevaluate potential GDEs in the Livermore Valley Groundwater Basin using newly-available datasets such as DWR’s Natural Communities Commonly Associated with Groundwater (NCCAG) maps, a GDE guidance document published by The Nature Conservancy, and other local and regional environmental studies and maps.



5.1 Identify Groundwater Dependent Ecosystems (GDEs)

This subtask includes identifying potential GDEs that were not recognized in the original Alternative GSP, field-verifying their existence, and adding appropriate ones to the GDE inventory list. Zone 7 will use a consultant with expertise in habitat identification for help with this task. Potential GDEs will be identified using DWR’s Natural Communities Commonly Associated with Groundwater (NCCAG) maps with reference to the guidance document published by The Nature Conservancy, and additional local resources (e.g., updated special species maps, ecosystem studies, riparian habitat mapping, environmental baseline studies, mapping of areas such as agricultural fields, quarries, flood control channels, recharge facilities, etc.).

5.2 Revise Tables and Maps

This subtask includes revising and updating existing maps and tables of potential GDEs using the information collected in Subtask 5.1 to identify significant GDEs.

5.3 Assess Groundwater Needs for Sustainability

Following Subtask 5.2, Zone 7 will evaluate the seasonal range of depth-to-groundwater for each potential GDE area using data collected from Zone 7’s semi-annual groundwater elevation program, which includes groundwater levels measurements once in the spring when the depth to water is highest, and again in the fall when the depth to water is lowest. Zone 7 will then compare the seasonal range of depth-to-groundwater with each GDE’s general groundwater requirements (e.g., rooting depth) to refine the identification of GDEs and to provide a preliminary evaluation for defining minimum thresholds.

5.4 Review/Develop Measurable Objectives and Minimum Thresholds

Based on the information collected during Subtask 5.2, Zone 7 will then review and develop preliminary measurable objectives and minimum thresholds for interconnected surface water supporting significant GDEs. With reference to GSP Regulations § 354.28 for depletion of interconnected surface water, these will be defined as a rate or volume of surface water depletion that may result in adverse impacts and undesirable results. Additional analysis may be needed, including numerical modeling; if so, these next steps will be identified.

5.5 Evaluate the Need for New Monitoring Locations and Protocol

Once significant potential GDEs are identified, Zone 7 will evaluate the need for additional monitoring locations and protocols, if appropriate, to adequately monitor groundwater elevations in the vicinity of the GDEs relative to development of minimum thresholds.

Task 6 Prepare Alternative GSP Update Report

The goal of this project is to provide the first update in a series of five-year reports that will guide sustainable management into the future. This task incorporates information from the Annual Reports discussion of the above efforts, findings, and

recommendations. It will result in an Update Report that presents what is new, what has changed, how Alternative GSP implementation is meeting the sustainability goal, and how to maintain and improve management.

6.1 Prepare Outline

This 2022 Update is the first in a series of updates; accordingly, Task 6 begins with an outline of the Update Report to guide preparation, ensure compliance with GSP Regulations, and provide needed information in a succinct format. This subtask will involve review of the GSP Regulations (§ 356.4), the management actions and projects described in the Alternative GSP, and the monitoring and implementation described in subsequent Annual Reports (including recent management actions, GSP amendments, and coordination among local agencies). This outline will be a working document (e.g., draft memorandum) that will be presented to the Board of Directors and used to guide Update development.

6.2 Prepare Draft Five-Year Update

In this subtask, a draft Update Report will be prepared. This will involve incorporation of new materials generated during Tasks 1 through 5 of the GSP Development, including brief text, updated maps, graphs, and tables. In response to recommendations for the Alternative GSP Update, key sections will address extension of tools and analyses to Fringe and Upland Basins, enhance monitoring, evaluation of potential GDEs and development of quantitative minimum thresholds. The Draft Update Report will be presented for review and commentary at a public meeting of the Water Resources Committee of the Board of Directors. Comments will be addressed and the Draft Update will be posted on the Zone 7 website.

6.3 Prepare Final Five-Year Update

The Draft Five-Year Update will be presented to the Board of Directors and comments on will be incorporated into the Final Five-Year Update. The Final Update will be uploaded onto the Zone 7 webpage and submitted to DWR through its Alternative GSP web portal for additional public review and DWR evaluation.

Category (d): Monitoring/Assessment

Not Used

b. Project Deliverables

As outlined in the Scope of Work, the project deliverables will include the following:

Grant Administration

Quarterly Reports - Given the expected project schedule of roughly 24 months, six quarterly progress reports will be prepared and submitted. The reports will demonstrate that the project is proceeding as planned, and that the grant funding is being expended in accordance with the grant requirements. The reports will include a description of progress made for the reported quarter, an update on the budget, an update on the status of each project task, and a description of work expected to be completed by the end of next quarter.

Specific deliverable items from Categories (a) Grant Administration and (b) Stakeholder Engagement / Outreach are listed in the table below (except for the Executed Grant Agreement); these also will be included in the quarterly reports. Such deliverables, including the hyperlink to the new webpage) will allow DWR to effectively track the progress of the Project.

Draft and Final Completion Report - The draft completion report, which will be submitted to DWR for review in early 2022, will document the completion of the final Alternative GSP Update report. The report will include final invoices, a description of progress made since the final quarterly report, and the final budget for the project. The Final Completion Report, which will incorporate any DWR comments, will be submitted by April 1, 2022.

Alternative GSP Five-Year Update

Alternative GSP Five-Year Update – The final Alternative GSP Update will be submitted to DWR on or before December 30, 2021.

The draft Five-Year Update will be available on the webpage and will include specific items listed in the table below. These include the Category (b) Outreach and Communication Plan that will be included as an Appendix. Technical items (e.g., cross sections, tables, maps) for the specific Category (c) tasks also are listed to provide perspective on the new information to be gained during the Update process; these will be incorporated into sections of the draft Five-Year Update Report. The draft Update Report will be presented to the Zone 7 Water Resources Committee and to the Board of Directors and posted on the webpage. Comments on the draft Update Report will be incorporated into the Final Update. The Final Five-Year Update Report will be submitted to DWR.

Task	Deliverable Items	% Complete
Category (a): Grant Agreement Administration	Executed Grant Agreement	0%
	Draft and final Quarterly Progress Reports and invoices	0%
	Draft and final Grant Completion Report	0%
Category (b): Stakeholder Engagement/Outreach	Project Outreach and Communication Plan (to be an Update appendix)	0%
	Screen shot copy of and hyperlink to Zone 7’s groundwater sustainability webpage	0%
	Summary materials from Land Use Planning agencies and RWQCB meetings	0%
	Staff reports and presentation materials for Zone 7 Board meetings and Water Resources Committee meeting	0%
Category (c) - Task 1 Groundwater Level Program Update	Map and table of potential wells to be added to the groundwater levels program	0%
	New minimum depth-to-water and revised historic low groundwater maps and tables	0%
	Updated Groundwater Levels Section of the Alternative GSP Update	0%
	Updated table and map of monitoring wells used for Alternative GSP groundwater level monitoring program	0%

Category (c) - Task 2 Groundwater Storage Program Update	Two to four cross sections of the groundwater basin including Fringe and portions of the Upland Basins	0%
	Description of the new Areal Recharge Model developed for the Alternative GSP Update	0%
	Updated Groundwater Storage Section in Alternative GSP Update	0%
Category (c) - Task 3 Groundwater Quality Program Update	Description, maps, and/or tables on effectiveness of OWTS restrictions on high nitrate areas-of-concern	0%
	Description, maps, and/or tables on constituent-of-concern for Livermore Valley Groundwater Basin	0%
	Updated Water Quality Section in Alternative GSP Update	0%
Category (c) - Task 4 Land Subsidence Program Update	Updated Land Subsidence Section in Alternative GSP Update	0%
Category (c) - Task 5 Surface Water– Groundwater Interaction/Groundwater Dependent Ecosystems (GDE) Program Update	Updated GDE inventory table and location map	0%
	Updated Surface Water-Groundwater Interaction/GDEs Section in the Alternative GSP Update	0%
	GDE monitoring point locations map and monitoring protocol in the Alternative GSP Update	0%
Category (c) - Task 6 Compile Alternative GSP Update Report	Outline of Alternative GSP Update	0%
	Draft Alternative GSP Update	0%
	Final Alternative GSP Update and proof of submittal to DWR	0%
Category (d): Monitoring/Assessment	None - Not applicable	

Plan for Environmental Compliance and Permitting

This project is intended to reduce data gaps and uncertainty, to enhance management tools, to evaluate and develop quantitative minimum thresholds for Fringe and Upland Basins, to better evaluate the effectiveness of specific management actions, and to prepare a Five-Year Update for the Alternative GSP. Per SGMA, Section 10728.6, the California Environmental Quality Act (CEQA) is not applicable to GSP preparation; this project is an Update of the Alternative GSP.

The Five-Year Update may identify management actions or projects that are subject to environmental assessment. In those situations, Zone 7 Water Agency would develop a plan for environmental compliance, including addressing any California Environmental Quality Act obligations in connection with the project(s). Zone 7 also would identify any environmentally-related permits, approvals, or entitlements needed for the project(s) and any applicable permitting. Zone 7 maintains strong working relationships with regulatory agencies (for example, RWQCB) and keeps them informed of project planning; this approach is continued in this Five-Year Update.

Well permitting is described in Section 1.3.3.5 of the Alternative Plan, should Zone 7 consider future installation of wells. As documented, Zone 7 is the well permitting agency within its service area and its regular procedures include submittal of Well Completion Reports to DWR (in addition to incorporation into the Zone 7 data management system.) Zone 7 maintains a good working relationship with Contra Costa County, which has well permitting authority for the Contra Costa portion of the basin.

MISCELLANEOUS
E. Project Support

The following table represents a list of supporters who contributed letters of support for Zone 7 Water Agency’s proposal for funding for the Five-year Update.

Helen Ling, Water Resources Division Manager	City of Livermore (DACs)
Nelson Fialho, City Manager	City of Pleasanton
Judy Zavadil, Engineering Services Manager	Dublin San Ramon Services District
Ryan Hernandez, Manager	Contra Costa County Water Agency
Laura Mercier, Executive Director	Tri-Valley Conservancy

The first letter is from a representative of the City of Livermore, which includes three **Disadvantaged Community** Block Groups. As stated in the letter from Livermore, the success of the Alternative GSP is fundamental to the economic vitality of the region, because it supports the ability of local water purveyors to continue to supply a reliable source of high quality water to all citizens. This is especially important to Disadvantaged Communities.

Zone 7 Water Agency has a long history of successful collaboration with the City of Livermore, including outreach to citizens and education activities. Outreach events and resources are presented on the Zone 7 website including a calendar of events, Kid’s Zone, and Education for the Rest of Us. See <https://www.zone7water.com/events-resources/calendar-of-events>. Selected outreach materials are available in Spanish.

Letters of support from other GSAs within or surrounding the basin are not provided because there are no such eligible GSAs. Nonetheless, Zone 7 Water Agency is actively involved with other water agencies (including GSAs) throughout California. This includes collaboration with State Water Project contractors and banking / water transfer partners. Staff from Zone 7 have been actively engaged in SGMA planning through the Association of California Water Agency Groundwater Committee.

Zone 7 engages in active, ongoing communication with beneficial users of groundwater in the basin. As demonstrated in the Letters of Support, local municipalities and water purveyors are aware of Zone 7’s role as groundwater basin manager, exclusive GSA, and drinking water wholesaler. They also are aware of the importance of groundwater management to reliable, high quality water supply and the benefits of the proposed Five-Year Update project. The letter from Tri Valley Conservancy (TVC) demonstrates support from the environmental community; TVC protects open space for parks, farms, trails, ranches and wildlife habitat in the Tri-Valley area.

Zone 7 interaction with local groundwater users is apparent in its Alternative GSP and subsequent Annual Reports. These demonstrate ongoing productive communication with various regulatory and resource agencies, public and private water purveyors, land use agencies, aggregate mining companies, landscape irrigators, agricultural water users, conservation organizations and other stakeholders.