

DRAFT

Section 7: Implementation Plan

**Groundwater Sustainability Plan for
Petaluma Valley Groundwater Basin**

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7.0 IMPLEMENTATION PLAN

This implementation plan serves as an initial roadmap for addressing GSP implementation activities between 2022 and 2042 with a primary focus on implementation activities within the initial five years (2022 through 2026). This section describes the plans for implementing the activities and actions identified in Sections 4 through 6 in this GSP, including:

- GSA’s governance structure and planned administrative approach;
- Main implementation components and estimated costs for the initial five years of implementation;
- Initial approach to funding; and
- Schedule.

This implementation plan is based on the current understanding of Basin conditions, identified data gaps, monitoring needs and projects and management actions. In order to successfully implement the GSP, the implementation plan will adapt over time based on new information and data, model development, and input from Basin stakeholders.

7.1 Governance Structure & Planned Administrative Approach

The GSA anticipates that the current governance and general administrative structure will remain in place through the implementation period. As described in Section 1.3.2, the six member agencies currently plan to continue operating under the Joint Powers Authority agreement that created the GSA. The Board will continue serving as the governing body, making decisions regarding implementation of projects and management actions; closing data gaps; contracts; administration; funding; and other governance issues. A stakeholder-based Advisory Committee representing multiple stakeholder interests will continue providing guidance and recommendations to the Board and GSA staff. Both the GSA Board and Advisory Committee will continue to hold regular public meetings in compliance with California’s laws governing public meetings (commonly known as the Brown Act).

Currently, the GSA contracts with Sonoma Water for technical, outreach, grant administration and GSA management services and contracts with other consultants for legal, facilitation and some monitoring services. As the GSA transitions from GSP development to implementation starting in 2022, staffing needs will be evaluated to determine how to most efficiently and effectively move forward. To reduce costs and for consistency for groundwater users within Sonoma County, it is possible that the GSA will coordinate management and other services with the Santa Rosa Plain and Sonoma Valley GSAs.

7.2 GSP Implementation Components and Estimated Costs

This section describes details of each of main implementation components, assumptions and estimated costs for the initial five years.

7.2.1 Administration and Finance

Administration and finance costs include day-to-day management of the agency, as-needed legal costs, applying for and administering grants, tasks associated with implementation of a fee, auditing and

accounting services, administration of the well registration program, facility fees and office supplies. Annual administration costs to range from \$220,000 to \$245,000 annually.

7.2.2 Communication and Stakeholder Engagement

To meet the requirements of SGMA, the GSA will continue the activities described in Section 1, including:

- Holding regular meetings of a diverse, stakeholder-based Advisory Committee to receive feedback on implementation efforts and to solicit outreach ideas and assistance; and
- Informing, educating and soliciting feedback from groundwater users of implementation progress and on basin conditions through social media, the GSA website, periodic community meetings, focused stakeholder briefings, and paid and free media.

The GSA will maintain and improve two products currently under development: The Groundwater User Information Data Exchange program, which allows well owners to review and correct well and groundwater use information, and the Groundwater Data Dashboard, which will provide groundwater data in a visual, user-friendly format.

In addition, the GSA will continue to engage and coordinate with local, state and regional agencies (including City of Petaluma, Permit Sonoma, other GSAs, Agricultural Commissioner, Sonoma County Ag + Open Space District, DWR, SWRCB's Drinking Water and Water Rights Division, NCRWQCB and SFBRWQCB) on filling data gaps and implementation of projects and actions. This coordination will include discussions of partnering opportunities for funding implementation components that are mutually beneficial. The GSA will also engage with general plan updates and any specific planning area processes in Petaluma Valley.

Annual outreach and communication is estimated to cost \$80,000 in the first four year of implementation, and \$100,000 in Year 5, when additional outreach will be needed for the preparation of the 5-Year GSP update.

7.2.3 Annual Monitoring, Data Evaluation and Reporting

Monitoring of the six sustainability criteria is a key component for successful implementation of the GSP. Most monitoring relies on existing monitoring programs, some of which will be enhanced or expanded as described in Section 5 and Section 7.1.4. Data from the monitoring programs will be routinely evaluated to ensure progress is being made toward sustainability, or to identify whether undesirable results are occurring. Data will be maintained in the Data Management System and will be used by the GSA to guide decisions on projects and management actions and to prepare annual reports to Basin stakeholders and DWR.

7.2.3.1 Monitoring and Data Evaluation

Specific planned monitoring activities are summarized below and in Table 7-1 and are more fully described in Section 5.

- Groundwater level monitoring activities will include the collection of groundwater level data at 15 RMPs (consisting of 11 existing and 4 new RMPs) identified in Section 5.3.1 for comparison to minimum thresholds and measurable objectives. The groundwater level monitoring will also

include the coordination and evaluation of measurements from 9 additional wells within the Basin and contributing watershed areas described in Section 5.2.1 to continue tracking trends in these wells with historical data and support the development of groundwater level contour maps and storage change estimates. The groundwater level data will be collected in accordance with the monitoring protocols outlined in Section 5.3.1. Monitoring network data gaps identified in Section 5.4.1 will be addressed through the activities described in Section 7.2.4, below.

- Water quality monitoring activities will include the compilation and evaluation of water quality data reported from existing public water supply wells and compared with the minimum thresholds and measurable objectives for the seawater intrusion and water quality sustainability indicators.
 - For the water quality sustainability indicator, the data review will focus on exceedances of minimum thresholds, or MCLs and SMCLs for the three constituents of concern (arsenic, nitrate and total dissolved solids) identified for this GSP. However, if during review of the water quality data, additional constituents appear to frequently exceed MCLs and SMCLs, minimum thresholds and measurable objectives will be considered for these additional constituents during GSP five-year updates. The number of public water supply wells routinely monitored for each constituent of concern is shown in Table 7-1, below. If any other routine monitoring of supply wells is initiated in the Basin at a later date, these wells, will also be considered for inclusion in the water quality monitoring network.
 - Monitoring for seawater intrusion just north and along the perimeter of the San Pablo Baylands area will be conducted using a combination of existing water supply wells and additional proposed new dedicated monitoring wells constructed during implementation of the GSP, depending upon well access, construction, and funding availability. Initially, this network will include existing public water supply wells within one mile of the Baylands area. The future monitoring network will be designed to more accurately map the location of the 250 mg/L chloride isocontour
- Monitoring for land surface subsidence will be measured using satellite Interferometric Synthetic-Aperture Radar (InSAR) data provided by DWR. InSAR data will be downloaded from the DWR website annually, checked and verified for completeness and reasonableness and used to develop annual change in elevation maps. The average value for each 100 square meter pixel and elevation change maps will be used to compare with minimum thresholds and measurable objectives for the land surface subsidence sustainability indicator.
- Monitoring for surface water and groundwater interaction will include the following monitoring activities:
 - Compilation and evaluation of surface water data from five active stream gages within the Basin and contributing watershed area.
 - Measurement and evaluation of groundwater elevations from the 3 RMPs used to monitor surface water depletion as a proxy. For reporting seasonal highs and lows for future comparison with minimum thresholds, all sub-daily measurements will be reported as monthly averages in order to better align with the measurement frequency within historical datasets used to calculate the minimum thresholds.
 - Plans for assessing and improving the monitoring network for surface water and groundwater interaction are described in Section 7.2.4.1, below.

Table 7-1: Monitoring Networks and Initial Representative Monitoring Point Networks

Sustainability Indicator	Monitoring Network	Initial Representative Monitoring Point Network
Chronic Lowering of Groundwater levels	20 wells within the contributing watershed area (including 15 wells in the Basin)	11 wells (3 dedicated monitoring wells; 5 private supply wells; 3 inactive municipal wells)
Reduction in Groundwater Storage	20 wells within the contributing watershed area (including 15 wells in the Basin)	11 wells (3 dedicated monitoring wells; 5 private supply wells; 3 inactive municipal wells)
Seawater Intrusion	Within 1-2 miles of baylands: 9 public water supply wells	Within 1-2 mile of baylands: 9 public water supply wells
Degraded Water Quality	Existing supply well groundwater quality monitoring programs, as follows: Arsenic: 18 wells Nitrate: 30 wells Salts: 13 wells	Existing supply well groundwater quality monitoring programs, as follows: Arsenic: 18 wells Nitrate: 30 wells Salts: 13 wells
Land Surface Subsidence	1 global positioning survey (GPS) locations; Interferometric Synthetic-Aperture Radar (InSAR) satellite in most of the Basin	InSAR dataset
Interconnected Surface Water	16 stream gages; 3 shallow monitoring wells adjacent to streams	3 shallow monitoring wells adjacent to streams

7.2.3.2 Annual Reports

Annual reports will be developed to present data, information and the implementation status for each water year and meet SGMA requirements. As defined by DWR, annual reports must be submitted for DWR review by April 1st of each year following the GSP adoption, except in years when five-year or periodic assessments are submitted. Annual reports are anticipated to include three key sections: general information, Basin conditions (including SMC status), and implementation actions and activities.

General Information

The General Information section will include an executive summary that highlights the key content of the annual report. This section will include a map of the Basin, a description of the sustainability goal, a description of GSP projects and their progress, as well as an annual update to the GSP implementation schedule.

Basin Conditions

Basin conditions will describe the current groundwater conditions and monitoring results. This section will include an evaluation of how conditions have changed over the previous year and will compare groundwater data for the water year to historical groundwater data. Estimated pumping data, effects of project implementation (if applicable), surface water deliveries, total water use, and groundwater storage data will be included. Key required components include:

- Groundwater level data from the monitoring network, including contour maps of seasonal high and seasonal low water level maps

- Hydrographs of groundwater elevation data at RMPs
- Groundwater extraction data and estimates by water use sector
- Groundwater Quality at RMPs
- Surface water supply availability and use data by water use sector and source
- Streamflow data
- Total water use data
- Change in groundwater in storage
- Subsidence rates and associated data

As part of the monitoring program reporting, status of sustainable management criteria will also be reported, including minimum threshold and measurable objective status for RMPs.

GSP Implementation Progress

Progress toward GSP implementation will be included in the annual report. This section of the annual report will describe the progress made toward achieving interim milestones as well as implementation of projects and management actions. Key required components include:

- GSP implementation progress
- Progress toward achieving the Basin sustainability goals
- Any changes that may be considered necessary for successful GSP implementation

Development of an annual report will begin following the end of the water year, September 30, and will include an assessment of the previous water year. The annual report will be submitted to DWR before April 1st of the following year. The 2022 annual report covering water year 2021 will be submitted by the GSA by April 1, 2022. Four annual reports for the Basin will be submitted to DWR each April between 2022 and 2025, prior to the first five-year update of this GSP, which will be prepared in 2026 and submitted to DWR in January 2027.

The estimated annual cost to perform annual monitoring, data evaluation and reporting ranges from \$150,000 to \$200,000, with a cumulative five-year cost ranging \$750,000 to \$1,000,000.

7.2.4 Addressing Data Gaps

Through development of this GSP a number of key data gaps have been identified in Sections 3 through 5. These data gaps were shared and discussed with Basin stakeholders in order to prioritize activities and actions needed to address the data gaps.

- Amounts and locations of groundwater pumping (rural residential, agricultural, public water systems, commercial, and industrial)
- Role of faults within and along the boundaries of the Basin
- Distribution and extent of brackish groundwater along margins of Baylands area
- Interconnection of streams to the shallow aquifer system, including seasonal variability and how groundwater pumping and surface water diversions can affect streamflow
- Basin boundary characteristics, such as the direction and magnitude of groundwater fluxes across Basin boundaries
- Aquifer characteristics, recharge and discharge mechanisms and volumes for both the shallow and deep aquifer systems
- Three-dimensional data gaps in the monitoring network for each primary aquifer

Studies and activities planned to address these identified data gaps within the initial five years of GSP implementation are identified below and categorized as either studies and information gathering or monitoring network improvements.

7.2.4.1 Studies and Information Gathering

Planned studies and information gathering includes the following activities.

Improve information on existing water wells and groundwater extraction. The objective of this task is to better assess the locations, volumes and timing of groundwater pumping. This will improve assessment of potential impacts from groundwater pumping to beneficial users and uses within the Basin, including existing residential and other water wells and GDEs. The task will include the following activities:

- Integration of parcel-specific information obtained through the planned well registration program with existing well log databases.
- Assessment of available remote sensing data on actual evapotranspiration to help constrain the estimates of groundwater demands for irrigation supplies.

Aquifer system properties assessment: The objective of this task is improve the understanding of the aquifer system hydrogeologic framework, distribution and potential effects of faults on groundwater flow, and basin boundary characteristics. Completion of this task will also improve the GSAs ability to assess potential impacts from groundwater pumping to beneficial users and uses within the Basin, including existing residential and other water wells and GDEs. As part of this task, the GSA will:

- Evaluate the (AEM) survey results (data collection and compilation funded by DWR) and incorporate into the existing hydrogeologic conceptual model (HCM). DWR is planning to collect geophysical data from the Basin through its airborne electromagnetic (AEM) survey program in 2021 or 2022. Additional focused geophysical surveys to refine information in key areas (e.g., areas identified for potential managed aquifer recharge projects) will also be considered.
- Based on the data collection and evaluation described above, perform aquifer testing at up to three locations. Wells for testing will be identified using the following criteria:
 - Wells are owned by willing well owners
 - Wells have known well completion information
 - Wellheads are completed such that water elevations in wells can be monitored with data loggers
 - Wells are equipped with accurate flow meters
 - Wells have area or system for discharge of test water
 - Preferred wells will have nearby wells that can be monitored during the test and will be located near key data gap areas, basin boundaries and interconnected surface water.

Baylands area voluntary water quality sampling program: The objective of this task is to improve the understanding of the distribution and extent of brackish groundwater along margins of Baylands area and provide data to assist in the selection of locations for future RMPs needed for the seawater intrusion monitoring network. The study will be designed to supplement data collected through previous studies and monitoring programs. The task will include the following activities:

- Outreach to well owners within and near the Baylands area through the outreach activities described in Section 7.2.2, above.
- Assessment of potential candidate wells for sampling.

- Collection of water quality samples for analysis of chloride and TDS from up to twenty-five existing water wells.
- Evaluation of water quality sampling results to inform development of seawater intrusion monitoring network.

Interconnected surface water and GDE studies: As indicated in Section 4.10.2.1, in recognition of the significant information and data limitations and the importance of interconnected surface water to beneficial users within the Basin, the following studies and activities are planned:

- Develop improved information on the locations and amounts of surface water diversions under the jurisdiction of the SWRCB, including both direct diversions from streams and diversions that may occur from water wells near streams under riparian water rights. This information will be developed through the coordination process established between the GSA and SWRCB related to depletions of interconnected surface water.
- Assessment the influence of groundwater levels on GDE health using available remote sensing tools and datasets. The GDE Pulse web app developed by the Nature Conservancy provides data on long term temporal trends of vegetation metrics, including. This information will be integrated with available groundwater level data and information to assess the relationship between groundwater levels and GDEs. Conduct field visits as-needed to verify findings from remote sensing assessment.
- Compile and evaluate existing and relevant habitat field surveys that aid in understanding potential impacts of groundwater pumping on habitat associated with interconnected surface water.

7.2.4.2 Monitoring Network Improvements

Based on the assessment of data gaps in Section 5, the following activities for improving the monitoring networks are planned.

Development of seawater intrusion monitoring network: Following completion of the voluntary water quality sampling program described above, the GSA will develop an improved sea water intrusion monitoring network. It is anticipated that the network will include a combination of appropriately constructed and located existing wells through a long-term voluntary sampling program and new dedicated monitoring wells. The monitoring network will be designed to adequately map the chloride concentration isocontour in both the shallow and deep aquifer system. For the purposes of estimating costs, it is assumed that four new dedicated multi-level monitoring wells would be constructed for the seawater intrusion monitoring network.

Refinement of groundwater level monitoring network: As described in Section 5, many of the identified data gaps in the groundwater level monitoring network are being addressed through new wells being constructed under the Proposition 68 grant. For remaining data gap areas, the GSA will evaluate both use of existing voluntary wells and construction of new dedicated monitoring wells. For the purposes of estimating costs, it is assumed that three new dedicated multi-level monitoring wells would be constructed for the groundwater level monitoring network. The GSA intends to conduct outreach and expand the voluntary groundwater-level monitoring program in the Basin during GSP implementation.

Additionally, the GSA will work to improve data quality in groundwater-level monitoring networks by a combination of the following activities:

- Performing survey activities for wells that lack sufficient Reference Point vertical survey data, as funding becomes available;
- Obtaining well construction information from well owners or by conducting investigations (i.e., video logging) as funding or technical assistance becomes available; and/or
- Replacing wells in the monitoring network that have data quality issues with dedicated monitoring wells, as funding becomes available.

Refinement of interconnected surface water monitoring network: Following completion of the interconnected surface water and GDE studies and information gathering described above, improvements to the interconnected surface water monitoring network will be developed. For the purposes of estimating costs, it is assumed that four new dedicated shallow aquifer system monitoring wells would be constructed for the interconnected surface water monitoring network. Additionally, it is assumed that remote sensing assessments of vegetation health will continue to be performed and reported at key intervals such as the 5-year GSP updates.

The five-year costs to address data gaps is estimated to be \$1,500,000 to \$2,000,000.

7.2.5 Maintaining, Updating and Improvements to Model

The Basin groundwater model (PVIHM) informs the project and management activities and ongoing performance assessment of the sustainable management criteria. Periodic updates to the groundwater model will be required to continue to refine and improve its capabilities and maintain ongoing functionality. This includes incorporating new model tools and features, updates to data, and related work to support ongoing simulations of projects and management actions. Improvements will be focused on the initial 3 years of implementation to facilitate reassessing preliminary SMCs, as appropriate, and planning for any projects and actions. Model updates and refinements will be informed by data and information collected during early stages of implementation, including the planned activities for assessing data gaps, described in Section 7.2.4 above. The preliminary of focus identified for model updates and improvements include:

- Focused calibration of surface water and groundwater interaction
- Assessment of model boundary conditions
- Improve how model represents groundwater pumping
- Assessment of aquifer properties assigned to model

The five-year costs to perform updates and improvements to the model is estimated to be \$200,000 to \$300,000.

7.2.6 Study and Implementation of Projects and Actions

To prevent potential undesirable results and to achieve measurable objectives, PMAs are planned as part of GSP implementation. As described in Section 6, a portfolio of PMAs has been developed with the goal of addressing relevant sustainability indicators, including the circumstances under which they may be implemented.

The GSA plans to immediately begin implementation of Group 1 PMAs. For other project and management actions included in Section 6, initial implementation steps include performing studies or analyses to refine the concepts into actionable projects. Studies and work efforts may include, but are not limited to, California Environmental Quality Act (CEQA) studies and documentation, and engineering feasibility studies and preliminary design reports.

After necessary initial studies are completed, other PMAs will undergo, as necessary, final engineering design (in the case of infrastructure projects) and public noticing and outreach, after which construction projects can occur followed by ongoing operations and maintenance.

The following activities related to projects and actions are planned during the first five years of implementation.

Implementation of Group 1 Projects:

- Assessment and implementation of conservation and groundwater-use efficiency opportunities. This project would include an assessment of groundwater use characteristics, existing levels of water-use efficiency, and recommendations on preferred tools and strategies for implementing.

Planning for Other Projects included in Section 6:

- Update 2013 feasibility study for other ASR opportunities
 - Update source water (Russian River) availability and transmission system capacity assumptions
 - Assessment of locations/operations that benefit GSP implementation (i.e., areas of depletion)
 - Design and implement pilot studies for favorable areas
- Coordinate with City of Petaluma to assess additional recycled water opportunities
 - Optimization of existing and projected future available supplies
 - Cost/benefit analysis for future alignment options
 - Identify optimal locations for future storage
- Site-specific investigations and pilot study of On-Farm and other stormwater capture and recharge opportunities
 - Water available for recharge
 - Areas with permeable near-surface deposits
 - Optimal methods and techniques
 - Focus on locations that could help sustain baseflows/support GDEs for recharge
 - Coordinate with Petaluma Flood Zone 2a's Upper Petaluma River Watershed Feasibility Analysis and other ongoing studies

Management Actions:

- Study of potential policy options for future GSA consideration or recommendation, including the below initial list of potential policy options:
 - Water conservation plan requirements for new development
 - Discretionary review of well permits for any special areas identified in GSP
 - Expand low impact development or water efficient landscape plan requirements

- Well construction and permitting recommendations (e.g., water quality sampling/reporting for COCs, requirement for water-level measurement access, prevent cross-screening multiple aquifers)
 - Metering program
 - Permitting and accounting of water hauling
- Coordinate Farm Plans, developed at individual farm sites, with implementation of the basin-wide GSP:
 - Identify areas of mutual interest (e.g., improved water use efficiency, increased groundwater recharge, increased monitoring and data collection, coordinated information sharing, and reporting) in addition to challenges that need to be addressed (e.g., data confidentiality, data quality requirements, verification of Farm Plan performance)
 - This project would: (1) identify requirements or standards to demonstrate benefits to GSP implementation; (2) develop metrics that would be measured and verified; and (3) consider options to incentivize actions of mutual benefit.

The estimated costs to refine and implement the above-described projects and actions is estimated to be \$150,000 to \$350,000, as summarized in **Table 7-2**, below.

Table 7-2: Summary of Estimated Five-Year Costs for Projects and Management Actions, Excluding Capital Project Costs

Project/Action	Project Group	Estimated 5-Year PVGSA Costs	Other Potential Funding Sources	Assumptions
Conservation/Water-Use Efficiency/Alternate Water Sources	1	\$40,000 - \$80,000	Other GSAs	Split equally amongst 3 GSAs
Stormwater Capture and Recharge Site Investigations		\$80,000 - \$190,000	Grants	
Aquifer Storage and Recovery Participate in Regional Feasibility Study		\$20,000 - \$40,000	Other GSAs, Sonoma Water/Water Contractors	Other GSAs and Sonoma Water/Water Contractors will also contribute funding
Farm Plan Coordination		\$20,000 - \$60,000	Other GSAs	Other GSAs will also contribute funding
Recycled Water Expansion Assess additional opportunities		\$20,000 - \$30,000	City of Petaluma	
Policy Options		\$20,000 - \$40,000	County	County and other GSAs will also contribute funding
		\$200,000 - \$440,000	Total Range	
		\$ 320,000	Midrange	

It is anticipated that capital project costs within the initial five years will be paid for by some combination of individual project proponents/beneficiaries and grant funding. Specific details regarding roles of project proponents and the cost share mechanisms are anticipated to be determined as the projects are further defined and scoped. Therefore, costs associated with implementation of capital project implementation is not included in the GSP implementation budget estimate shown in **Table 7-2**.

It is also anticipated that each implemented PMA will have its own set of monitoring objectives and data collection requirements to allow for PMA evaluation and confirmation assessments, and, if necessary, modifications to improve PMA effectiveness. The costs of specific projects that aren't covered by beneficiaries/project proponents will include assumptions about financing the projects over time.

7.2.7 Five Year Update to GSP

As required by SGMA regulations, an evaluation of the GSP and the progress toward meeting the approved sustainable management criteria and the sustainability goal will occur at least every five years and with every amendment to the GSP. A written five-year evaluation report (or periodic evaluation report) will be prepared and submitted to DWR. The information to be included in the evaluation reports is summarized below.

- A sustainability evaluation will contain a description of current groundwater conditions for each applicable sustainability indicator and will include a discussion of overall sustainability in the Basin. Progress toward achieving interim milestones and measurable objectives will be included, along with an evaluation of status relative to minimum thresholds.
- An implementation plan progress section will describe the current status of project and management action implementation and whether any adaptive management actions have been implemented since the previous report. An updated project implementation schedule will be included, along with any new projects identified that support the sustainability goals of the GSP and a description of any projects that are no longer included in the GSP. The benefits of projects and management actions that have been implemented will be described and updates on projects and management actions that are underway at the time of the report will be documented.
- GSP elements will be reconsidered as additional monitoring data are collected, land uses and community characteristics change, and GSP projects and management actions are implemented, it may become necessary to reconsider elements of this GSP and revise the GSP as appropriate. GSP elements to be reassessed may include basin setting, management areas, undesirable results, minimum thresholds, and measurable objectives. If appropriate, a revised GSP, completed at the end of the five-year evaluation period, will include revisions informed by findings from the monitoring program and changes in the Basin, including changes to groundwater uses, demands, or supplies, and results of project and management action implementation.
- A description of the monitoring network will be provided. An assessment of the monitoring network's function will be included, along with an analysis of data collected to date. If data gaps are identified, the GSP will be revised to include a method for addressing these data gaps, along with an implementation schedule for addressing gaps and a description of how the GSA will incorporate updated data into the GSP.
- New information available since the last five-year evaluation or GSP amendment will be described and evaluated. If the new information should warrant a change to the GSP, this will also be included, as described previously in Reconsideration of GSP Elements.
- A summary of the regulations or ordinances related to the GSP that have been implemented by DWR or others since the previous report will be provided. The report will include a discussion of any required updates to the GSP.
- Legal or enforcement actions taken by the GSA in relation to the GSP will be summarized, including an explanation of how such actions support sustainability in the Basin.

- A description of amendments to the GSP will be provided in the five-year evaluation report, including adopted amendments, recommended amendments for future updates, and amendments that are underway.
- Ongoing coordination will be required among the GSA, members of the AC, other local, state and federal partners, and the public. The five-year evaluation report will describe coordination activities between these entities such as meetings, joint projects, data collection and sharing, and groundwater modeling efforts.
- Outreach activities associated with the GSP implementation, assessment, and GSP updates will be documented in the five-year evaluation report.

The initial 5-year GSP evaluation is due for submission to DWR in 2027. The estimated cost to prepare the initial Five Year GSP update is estimated to be \$200,000 to \$300,000.

7.2.8 Estimated Five-Year Implementation Costs

The cost of the items described in Sections 7.1.1 through 7.1.7 will vary from year to year but the average cost of implementation is approximately \$1.0 million annually for the first five years (fiscal year 2022-2023 through fiscal year 2027-2028), excluding the construction costs of specific capital projects, as summarized in **Table 7-4**.

To enhance efficiencies and provide similar benefits to nearby groundwater users in Santa Rosa Plain and Petaluma Valley GSAs, it is assumed that the development costs of common projects and actions will be shared between the three GSAs. In addition, the budget assumes that costs will be shared for the development of projects and actions conducted in cooperation with local, regional and state partners (such as sanitation districts, water suppliers, RCDs and others).

Table 7-4: Total Estimated Five-Year Implementation Costs

GSP Implementation Item	Year 1	Year 2	Year 3	Year 4	Year 5
	2022-2023	2023-2024	2024-2025	2025-2026	2026-2027
GSA Administration & Operations	245,000	235,000	230,000	220,000	235,000
Communication & Stakeholder Engagement	80,000	80,000	80,000	80,000	100,000
Annual Monitoring, Evaluation & Reporting	190,000	170,000	170,000	170,000	170,000
Data Gap Filling	55,000	515,000	885,000	265,000	25,000
Conceptual Projects	20,000	95,000	185,000	10,000	10,000
Model Updates	0	30,000	50,000	100,000	70,000
Five Year GSP Updates	0	0	0	100,000	200,000
Subtotal	590,000	1,125,000	1,600,000	945,000	810,000
10% Contingency - rounded to nearest \$5000	60,000	115,000	160,000	95,000	80,000
Total	650,000	1,240,000	1,760,000	1,040,000	890,000
Preliminary average annual costs = approximately \$1 million					

Estimates of future implementation costs (Years 6 through 10) will be provided in the five-year GSP update.

7.3 Funding

The budget described in Section 7.1.8 is the basis of a fee study that is currently underway. The fee study will include an analysis of potential funding mechanisms and recommendations for options that are fair, efficient and legally feasible. This fee could include the annual operating and implementation costs. Other potential funding sources include grants through DWR, SWRCB, and federal and local entities; DWR technical support; and partnerships with member agencies, other GSAs and entities interested in leveraging mutually beneficial programs, projects and studies.

7.3.1 GSP Implementation Funds

Development of this GSP was partially funded through grants from DWR through the Water Quality, Supply, and Infrastructure Improvement Act of 2014 (Proposition 1) and the California Drought, Water, Parks, Climate, Coastal Protection, and Outdoor Access for All Act of 2018 (Proposition 68). Additional in-lieu finding was provided through DWR Technical Support Services program, which included the drilling of 12 shallow monitoring wells. GSA member agencies, as described in Section 1.3.1, funded the remainder of the GSP development and GSA administration. The member-agency funding agreement ends on June 30, 2022, and the GSA anticipates having a fee in place to assist with funding GSP implementation.

Based on its recent success in securing grants and technical assistance support, the GSA plans to aggressively seek future opportunities and has included funding in its budget to apply for and administer grants. In addition, the GSA anticipates that mutually beneficial projects with other entities would be fully or partially funded by project partners.

7.3.2 Fee Study

SGMA provides GSAs the authority to impose certain fees, including groundwater pumping fees. In August 2022, the GSA engaged a consultant to conduct a fee study to evaluate and provide recommendations for GSP implementation funding. The study will include outreach and education to inform and solicit feedback from groundwater users and other stakeholders. Any imposition of a fee, tax or charge will comply with California law and all applicable Constitutional requirements, based on the nature of the fee. The fee study will be based on the implementation budget provided in **Table 7-4**. The costs of specific projects that aren't covered by beneficiaries/project proponents will include assumptions about financing the projects over time.

7.3.3 Grant and Low Interest Financing

The GSA has successfully applied for and received more than \$2.2 million in grant funding and technical support services, and will continue to pursue grants and low-interest financing to offset the costs of monitoring, filling data gaps and for planning and implementing projects and actions. Grants and financing are not generally available to pay for administrative and operational costs.

7.4 Schedule

The final GSP will be submitted to DWR no later than January 31, 2022. While DWR has two years to review the GSP, **Figure 7-1** assumes that implementation begins immediately, and provides an overview of the preliminary schedule for agency administration and finance, monitoring, project implementation and reporting. Many of these categories consist of ongoing tasks and efforts that will continue throughout GSP implementation.

Administration and finance in **Figure 7-1** includes:

- Completion and implementation of the fee study;
- Adaptive management tasks related to ongoing development and assessment of the SMCs for seawater intrusion and interconnected surface water (as described in Section 4);
- Outreach and communication; and
- Studies and implementation of management actions, including Farm Plan Coordination and development of the policy options (described in Section 7.1.6).

The monitoring task includes collecting and analyzing data from existing and future RMPs, and planning for new monitoring sites to fill the data gaps discussed in Section 5. Specifically, this category includes the installation of stream gages and development of associated shallow wells to fill data gaps for depletion of interconnected surface water and the development of additional monitoring sites to assess seawater intrusion.

The project implementation schedule includes the development and implementation of Group 1 projects, as described in Section 6. After a short planning period, it is assumed that Group 1 project implementation will begin in 2023. Timing for implementation of other projects and management actions will be based on conditions within the Basin, ongoing evaluation of the potential for undesirable results to occur in the future, and completion of the initial planning activities. The timing of projects is based on best estimates and may shift as GSP implementation proceeds based upon the needs at the time.

GSP reporting will occur on an annual and a 5-year basis as required under SGMA. Annual reports will be submitted to DWR by April 1 of each year. Periodic reports (every 5-years or following substantial GSP amendments) will be submitted to DWR by April 1 at least every 5 years (2027, 2032, 2037, and 2042). The contents of Annual and Periodic reports are described in Section 7.3.

Figure 7-1. Implementation Schedule

GSP Program Elements	First 20 Years of GSP Implementation																			
	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041
GSP Submittal and State Review																				
GSP Submittal to DWR	★																			
DWR Review/Approval																				
Administration & Finance Program																				
Administrative/Governance Planning																				
Funding Program																				
Fee Study																				
Funding Mechanism Implementation																				
Fee Collection																				
Public Outreach & Coordination																				
Adaptive Management																				
Management Action Implementation																				
Study - Policy Options																				
Study - Recycled Water Opportunities Assessment																				
Study - Farm Plan Coordination																				
Implement Recommended Actions																				
Monitoring Program & Data Gaps																				
Implementation of Monitoring																				
Data Gap Filling																				
Model Updates and Refinements																				
Project Implementation																				
Group 1 Projects																				
Voluntary Conservation																				
Planning for Other Projects																				
Stormwater Capture & Recharge - Site Investigations																				
Stormwater Capture & Recharge - Pilot																				
Stormwater Capture & Recharge - Project																				
Group 3 Projects																				
Aquifer Storage & Recovery (ASR) Feasibility Study Update																				
ASR Investigations and Pilot ⁽¹⁾																				
ASR Project Implementation ⁽¹⁾																				
Reporting																				
Annual Reports	★	★	★	★		★	★	★	★	★	★	★	★	★	★	★	★	★	★	★
Five Year Evaluation/Updates																				

Notes:

Milestone/Document Submittal	★
Planning, Design, Construction Activity	
Implementation Activity	

¹ Some projects, such as ASR, may be pursued on a more rapid pace by other entities involved with drought response.