Section 6: Projects and Management Actions
Groundwater Sustainability Plan
Petaluma Valley Groundwater Basin

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Appendices

6 PROJECTS AND MANAGEMENT ACTIONS

This section satisfies Sections 354.42 and 354.44 of the SGMA regulations, which require that GSPs include descriptions of projects and possible management actions that the GSA has determined will help achieve the sustainability goal as well as respond to changing conditions in the basin over the 50-year planning horizon. Additionally, the GSP is required to include:

1. Which MO will benefit from a specific project or management action

2. Criteria and circumstances that would trigger implementation and future termination

3. The process by which the GSA will determine a project or management action is necessary to execute

Projects and management actions can be used to attain the MOs, meet interim milestones, and address MT exceedances and undesirable results.

The management actions and projects covered in this chapter outline a framework for maintaining sustainability; however, many details must be negotiated before many of the projects and management actions can be implemented. The costs for management actions and project implementation are additional to the funding required to sustain the operation of the GSA, and the funding needed for monitoring and reporting. The collection of projects and management actions discussed in this section demonstrate that sufficient options exist to maintain sustainability. Not all projects and actions have to be implemented to maintain sustainability. Therefore, the projects and management actions included herein should be considered a list of options that will be refined during GSP implementation.

6.1 Identification and Evaluation of Projects and Management Actions

The identification of projects and management actions was an iterative process which included significant Advisory Committee and GSA Board input and a substantial amount of staff work.

Input received from the Advisory Committee and GSA Board helped refine and categorize the selection of projects and management actions into those that could be initially evaluated as part of this GSP, and those that require further assessment or study prior to implementation. For example, some ideas raised by Advisory Committee and community members like recharge net-metering programs, water markets, and zero-net water use requirements for new development need further refinement. Management actions the GSA has under its authority, such as mandatory conservation or pumping reductions, will also be studied and considered during the first 5 years of GSP implementation, as described in **Section 6.4**.

- The projects and management actions considered for implementation and further planning build upon the successful, historical groundwater management activities conducted within the Basin that are listed below:

- Use of imported surface water by the City of Petaluma in lieu of local groundwater supplies.

- Development and use of recycled water supplies for meeting agricultural and landscape irrigation demands.
- Implementation of water-use efficiency and conservation programs within the urban water-use sector.
- Studies and implementation of water-use efficiency measures within the agricultural sector.
- Studies and initial planning for managed aquifer recharge, including studies, data collection, and pilot testing for stormwater recharge projects.

While some of these initiatives and activities have historically been developed and planned specifically to address groundwater conditions within the Basin, many have been developed and implemented to achieve other benefits, objectives, and purposes. Inclusion and further assessment of these initiatives and activities during implementation of the GSP will facilitate coordination and optimization of these initiatives and activities to support sustainable groundwater management. **Sections 6.2** through **6.4** describe the identified projects, summarize initial assessment of projects using scenario modeling, and describe identified management actions.

6.2 Project Descriptions

To prevent potential undesirable results and to achieve MOs, projects and management actions are planned as part of GSP implementation. As described in **Section 6.3**, only the voluntary water-use efficiency and alternate water source projects (Group 1 projects) are defined enough for evaluation using model scenarios and are deemed necessary in the near term. To address uncertainty and prepare for future droughts and other uncertain conditions, a portfolio of other projects and management actions (consisting of expanded recycled water deliveries, ASR, and stormwater capture and recharge) that have been discussed and considered by the Advisory Committee and GSA Board are described in this section, including information required by Section 354.44 of the GSP Regulations. Where applicable, a CEQA analysis will be performed for projects. A CEQA analysis includes an assessment of water supply impacts, GHG emissions, and impacts on Tribal cultural resources.

The GSA plans to immediately begin implementation of the voluntary water-use efficiency and alternate water source projects. For the other projects and management actions described in this section, initial implementation steps include performing studies or analyses to refine the concepts into actionable projects.

6.2.1 Water-use Efficiency and Alternate Water Source Projects (Group 1)

The water-use efficiency and alternate include smaller-scale dispersed land-owner projects, such as turf removal, rainwater harvesting, and stormwater capture and reuse. These projects are initially planned as voluntary, incentive-based projects focused on groundwater users, primarily rural, residential, agricultural, and commercial/industrial groundwater users. The programs and education offered to rural domestic and commercial groundwater users will

mirror programs offered to regional municipal water users, which have led to a 37 percent reduction in per capita water use since 2010. It is assumed that existing water-use efficiency by municipal groundwater users will continue through the Sonoma-Marin Saving Water Partnership. In addition to the Sonoma-Marin Saving Water Partnership, as described in **Section 2.6**, numerous other regional and local water conservation programs are operational in the Plan Area, including the LandSmart Program and the Sustainable Winegrowing Program. Many grape growers already use drip irrigation and rely on new technologies to determine when and how much to irrigate vines. This program would be focused on leveraging existing tools and BMPs and working with farmers who haven't had access to or the resources available to reduce water use. Examples of the tools and BMPs included in these programs are:

- Indoor (high-efficiency toilets, fixtures, and washers) and outdoor (landscaping assistance, surveys, and retrofits) water-use efficiency
- Conservation rebate programs for high-efficiency appliances and fixtures, landscape water budgets, landscape and irrigation design, and irrigation scheduling
- Stormwater management through low-impact development practices
- Rainwater harvesting
- BMPs for conserving water use in commercial processing, including wineries
- Soil moisture monitoring and efficient irrigation scheduling

During the first year of GSP implementation, this project will include an assessment of the exact types of water-use efficiency tools and alternate water source projects that are expected to be most effective and feasible for Subbasin stakeholders, including of groundwater-use characteristics, existing levels of conservation and water-use efficiency, and recommendations on preferred tools and strategies for implementation (such as incentive options). While implementation of these projects is initially planned to be on a voluntary basis, the assessment will also identify specific metrics for evaluating the benefits of the projects and assess Basin conditions that may lead to mandatory implementation of demand management actions.

6.2.1.1 Objectives, Circumstances, and Timetable for Implementation

Implementation of the water use efficiency and alternate water source projects will help achieve MOs and avoid undesirable results for the chronic lowering of groundwater levels sustainability indicator. Achieving MOs and avoiding undesirable results for the chronic lowering of groundwater levels sustainability indicator is also expected to benefit the groundwater storage and land subsidence sustainability indicators. Additionally, depending upon the locations within the Basin where projects are implemented, there may be benefits to the MOs for the depletion of interconnected surface water sustainability indicator.

After a short planning period, it is assumed that water use efficiency and alternate water source projects will begin in 2023. Initial implementation will include an assessment of the exact types

of water-use efficiency tools and alternate water source projects that are expected to be most effective and feasible for Basin stakeholders. The assessment will also evaluate specific metrics for evaluating the benefits of the projects and assess Basin conditions that may lead to mandatory implementation of management projects.

6.2.1.2 Expected Benefits

The water use efficiency and alternate water source project scenarios are described in detail in **Appendix 6-A**. For the purpose of estimating the potential benefits of water use efficiency and alternate water source projects, it was assumed that the Group 1 scenario simulates the impacts of a 20 percent reduction in all rural domestic use and a 10 percent reduction in consumptive use for all vineyards, both beginning in 2025. This assumption was considered to represent a reasonable level of groundwater use reduction based on the outcomes from existing BMPs and other water-use efficiency programs. Other groundwater-use sectors would be included in the project, including commercial, industrial, and other agricultural crops. However, for the purposes of conducting the scenario modeling, only reductions in rural domestic and vineyard groundwater use were applied, as these components were most readily able to be incorporated in the model.

General findings from the Group 1 model scenario indicate the following benefits relative to the baseline scenario:

- **Groundwater Levels**: Changes in groundwater elevation with Group 1 implementation are moderate, with less than 5 feet of increase from baseline expected by 2040, and less than 10 feet expected by 2070. These simulation results indicate that the benefit from Group 1 projects in terms of increasing groundwater levels will be most significant during drought conditions, and least significant during wet periods when the water table is relatively shallow and there is minimal (unsaturated) storage capacity.

- **Stream-Aquifer Interaction:** Results show that with Group 1, there is a projected increase in the magnitude of net groundwater discharge to surface water. This is due to diminished rates of stream leakage into the groundwater system rather than increased groundwater discharge to streams.

The planned initial assessment of water use efficiency and alternate water source projects will include recommendations for evaluating specific metrics for the actual benefits of the projects during implementation.

6.2.1.3 Public Noticing, Permitting and Regulatory Process

Public notice and outreach communications will be a critical component of the success of implementing water use efficiency and alternate water source projects, because these actions are initially planned as voluntary actions and will rely on Basin stakeholders clearly understanding their importance and benefits. Activities described in **Section 7.2.2** will include outreach to DACs, Tribal, rural residential, commercial, industrial, and agricultural stakeholders on the benefits of participating.

Many of the types of projects and actions planned for inclusion in water use efficiency and alternate water source projects do not have any permitting or regulatory requirements. Any projects that may include permit or regulatory requirements, such as graywater systems, would need to comply with local requirements and ordinances.

6.2.1.4 Estimated Costs and Funding Plan

A total of $60,000 is included in the initial 5-year budget provided in **Section 7.2** to perform the assessment of water use efficiency and alternate water source projects and to fund initial rollout of voluntary measures. To continue and expand implementation of water use efficiency and alternate water source projects, the GSA will seek grant funding. The GSA is also considering applying for funding for high-efficiency toilet replacement and agricultural BMP implementation through the State's 2021 Drought Relief Program or other applicable grant opportunities.

6.2.1.5 Legal Authority

No legal authority is anticipated to be needed to voluntarily implement the water use efficiency and alternate water source projects.

6.2.2 Recycled Water Expansion

Recycled water is wastewater that enters into the wastewater collection system from within the service area of the City of Petaluma and is treated to tertiary standards at the ECWRF. Recycled water has been and will continue to be an important source of irrigation water to offset the use of local groundwater and potable water supplies in the Basin. Recycled water can be used in applications where potable water is often used (such as the irrigation of public parks and golf courses and for agriculture). In addition to allowing for potable water offsets, recycled water use may potentially facilitate in lieu groundwater recharge. For example, if a farm that has historically used pumped well water for pasture or crop irrigation begins using recycled water instead, the groundwater aquifer beneath may potentially recover through reduced pumping and natural recharge. Recycled water is a sustainable water source and allows potable supplies to be reserved for the best and highest use. Additionally, using recycled water for irrigation also means a decrease in discharge of treated wastewater to local water bodies such as the Petaluma River.

The ECWRF opened in July 2009 and provides advanced secondary treatment, anaerobic digestion, and tertiary treatment of wastewater. The treatment facility treats domestic, commercial, and industrial wastewater generated in the City of Petaluma and in the unincorporated Penngrove area. The facility treats on average 4.2 million gallons of wastewater each day and 1.5 to 1.8 billion gallons annually, although not all influent wastewater is treated to tertiary standards. During the winter months ECWRF is permitted to discharge treated wastewater into the Petaluma River.

Tertiary-treated recycled water, distributed through a system of pump stations and pipelines, provides irrigation for agriculture, golf courses, school yards, parks, and other landscaped areas.

Urban use of recycled water saves potable water and supplements the city's potable water supply. Agricultural use of recycled water reduces the amount of groundwater pumping for local farming, including dairy pastures and vineyards.

Recent production and deliveries of recycled water from the ECWRF are approximately 650 AFY within the city's service area and 1,115 AFY outside of the city's service area (primarily to agricultural customers). The city plans for an expansion of the urban recycled water system aimed at delivering recycled water to more parks and schools throughout the service area, and also continues to plan for an expansion to deliver recycled water to more agricultural customers, further extending the service area.

6.2.2.1 Objectives, Circumstances, and Timetable for Implementation

Implementation of expanding recycled water deliveries will help to achieve MOs and avoid undesirable results for the chronic lowering of groundwater levels sustainability indicator. Achieving MOs and avoiding undesirable results for the chronic lowering of groundwater levels sustainability indicator is also expected to benefit the groundwater storage, seawater intrusion and land subsidence sustainability indicators. Additionally, depending upon the locations within the Basin where recycled water projects are expanded, there may be benefits to the measurable objectives for the depletion of interconnected surface water sustainability indicator.

Recycled water projects require permitting, environmental analysis, and engineering design. The City of Petaluma's planned recycled water projects have been included in the Final Environmental Impact Report (EIR) (Environmental Science Associates 2018) developed for the Phase 2 North Bay Water Reuse Program. Initiation of design is dependent upon securing funding for the project. The timing of projects is based on availability and securing of funding and may shift as GSP implementation proceeds, depending upon project needs at the time.

6.2.2.2 Expected Benefits

Potential benefits from the implementation of recycled water projects are anticipated to include a reduction in groundwater pumping and localized increases in groundwater levels. Benefits from recycled water projects would primarily be evaluated using changes in measured groundwater levels and improvements to groundwater storage changes through implementation of the monitoring activities described in **Section 5**.

6.2.2.3 Public Noticing, Permitting and Regulatory Process

Public notice for aspects of the recycled water projects will be carried out by the lead agency, which is anticipated to be the City of Petaluma. For recycled water projects where the GSA is not the lead agency, the GSA will provide support for outreach activities to nearby well owners and the local community. Compliance with CEQA is incorporated into the existing EIR for the Phase 2 North Bay Water Reuse Project (Environmental Science Associates 2018). Any additional recycled water projects would be included in future CEQA analysis, as-needed. A

CEQA analysis includes an assessment of water supply impacts, GHG emissions, and impacts on Tribal cultural resources.

Existing wastewater treatment and recycled water production occur at the ECWRF in compliance with Order No. R2-2016-0014 (National Pollution Discharge Elimination System [NPDES] Permit No. CA0037810) issued by the San Francisco Bay RWQCB. It is anticipated that future expansion of recycled water deliveries would also occur under this or future revised or amended orders.

6.2.2.4 Estimated Costs and Funding Plan

The City of Petaluma is a member of North Bay Water Reuse Authority, a regional water recycling and management initiative which covers areas north of the San Francisco Bay. The North Bay Water Reuse Program is comprised of member agency recycled water projects, including City of Petaluma projects. Through North Bay Water Reuse Authority, the City continues to pursue funding opportunities for projects included in North Bay Water Reuse Program Phase 2. Additionally, the city will update the 2004 Recycled Water Master Plan (City of Petaluma 2004) in the near term to allow for Council priorities and program growth alignment. The planned expansion of the recycled water system is separated into three parts:

- Tertiary Treatment Expansion (TTE): This project will increase ECWRF tertiary treatment capacity by 2.12 millions of gallons per day, providing a yield of 712 AFY. Existing capacity is 4.68 millions of gallons per day for Title 22 disinfected tertiary. This project will allow the city to meet increasing demands of both urban and agricultural irrigation sectors. The Tertiary Treatment Expansion project is currently under design, and recently received $3.6 million in DWR Integrated Regional Water Management grant funding through North Bay Water Reuse Program Phase 2. Overall project costs are projected to be $12,080,00.

- Agricultural Pipeline Expansion: Expanded agricultural distribution pipeline to provide 1,343 AFY of recycled water for irrigation. Agricultural Pipeline Expansion costs are projected to be $10,200,000 and are anticipated to be funded through a combination of grant funding, public funding and cost share from project beneficiaries.

- Urban Pipeline Expansion: Expanded urban distribution pipeline system to provide 173 AFY of potable water offsets for primarily institutional irrigation. Urban Pipeline Expansion costs are projected to be $14,000,000 and are anticipated to be funded through a combination of grant funding, public funding, and cost share from project beneficiaries.

A total of $25,000 is included in the GSA's initial 5-year budget provided in **Section 7.2** for the GSA to coordinate with the City of Petaluma to assess additional recycled water opportunities. It is anticipated that the assessment will include:

- Evaluation of existing and future availability, delivery commitments, and constraints
- Assessment optimization options for existing and projected future supplies
- Preliminary cost and benefit analysis for future prioritizing options

- Recycled water masterplan development
- Feasibility studies for potential recycled water storage locations

6.2.2.5 Legal Authority

The City of Petaluma owns its recycled water and has the legal authority to sell its recycled water in alignment with its policies. CWC Section 10726.2 provides GSAs the authority to purchase, among other things, land, water rights, and privileges.

6.2.3 Aquifer Storage and Recovery

As described in **Section 2.6**, regional planning for ASR and well-specific assessments have been performed by local agencies in neighboring Subbasins (GEI et al. 2013 and City of Petaluma 2008). Conceptually, an ASR program would involve the diversion and transmission of surplus Russian River water produced at existing drinking water production facilities during wet weather conditions (that is, the winter and spring seasons) for storage in the deep aquifer system of the Basin. The stored water would then be available for subsequent recovery and use during dry weather conditions (that is, the summer and fall seasons) or emergency situations. The Groundwater Banking Feasibility Study (GEI et al. 2013) provided an evaluation of the regional needs and benefits, source water availability and quality, regional hydrogeologic conditions, and alternatives for groundwater banking. Prior to implementing long-term ASR programs, pilot studies are recommended to verify location specific feasibility, including aquifer capacity for recharge and recovery operations and geochemical compatibility. Pilot testing involves injecting potable drinking water into the Basin's aquifers and recovering it to assess injection and recovery capacities and monitor potential water quality impacts to native groundwater resources. Information generated by pilot test evaluations will help inform the degree to which ASR is a feasible strategy to improve the reliability water supply, along with helping to evaluate whether or not an ASR project can be developed and operated in a manner that will achieve both supply reliability and groundwater sustainability benefits. In 2018 a successful pilot study project was completed in the nearby Sonoma Valley Subbasin which provides information that can inform future ASR planning within the Basin (GEI et al. 2020).

The feasibility study also found that adequate water for the hypothetical 5,000 AFY groundwater recharge program would be available for diversion from Sonoma Water's diversion facilities along the Russian River more than 90 percent of the time. This divertible flow was calculated by simulating the river system operations to meet Water Agency demands, simulating Water Agency diversions, and then subtracting minimum flows needed to meet the Biological Opinion and other instream requirements. In general, water is expected to be available for groundwater recharge in most years during the months of December through May. Because of the high-flow rates in these winter and spring months (with 100 cubic feet per second or more divertible flow expected 90 percent of the time), this pattern of availability is expected to be present under higher future levels of demand. Some water would also be available for diversion to groundwater storage during June through November, though less frequently (GEI et al. 2013). An updated assessment of water available for recharge will be performed during the early stages of GSP implementation.

6.2.3.1 Objectives, Circumstances, and Timetable for Implementation

Implementation of ASR projects would help achieve MOs and avoid undesirable results for the chronic lowering of groundwater levels sustainability indicator. Achieving MOs and avoiding undesirable results for the chronic lowering of groundwater levels sustainability indicator is also expected to benefit the groundwater storage and land subsidence sustainability indicators. Additionally, depending upon the locations within the Basin where ASR projects are implemented, benefits to the MOs for the depletion of interconnected surface water sustainability indicator may also be realized.

While current conditions and existing assumptions for future projections do not indicate the occurrence of undesirable results, the GSA will initiate planning for ASR in the Basin to help address uncertainty related to future conditions and the potential for future severe droughts. Early planning for ASR consists of participating with the Santa Rosa Plain and Sonoma Valley GSAs, along with Sonoma Water and other interested municipal water purveyors in updating the 2013 Groundwater Banking Feasibility Study to address current source water (Russian River) availability and transmission system capacity assumptions, an assessment of locations and operations that specifically benefit GSP implementation, and design and implementation of pilot studies for favorable areas.

ASR projects require permitting, environmental analysis, and engineering design, which could begin following completion and recommendations from the update to the regional groundwater banking feasibility study (planned for completion in 2023). The timing of projects is based on best estimates and may shift as GSP implementation proceeds based upon the needs at the time. Additionally, it is recognized that other water purveyors are pursuing initiation of ASR in the Basin on a more expedited timeframe in response to the 2020/2021 drought and associated funding opportunities. The GSA will coordinate and provide support for planning and implementation of ASR projects that may be developed and implemented by Sonoma Water and other project proponents in response to current drought conditions.

6.2.3.2 Expected Benefits

Expected benefits from implementation of ASR projects include:

- Limiting the potential for chronic lowering of groundwater levels and undesirable results for other associated sustainability indicators.
- Enhanced reliability of the regional water supply during droughts, natural hazard events (for example, earthquakes), and periods of peak seasonal water demands.

Benefits from ASR projects would primarily be evaluated using changes in measured groundwater levels and improvements to groundwater storage changes through the monitoring network described in **Section 5**.

6.2.3.3 Public Noticing, Permitting and Regulatory Process

Public notice for aspects of the ASR pilot projects will be carried out by the lead agency for each project. For ASR projects where the GSA is not the lead agency, the GSA will provide support for outreach activities to nearby well owners and the local community. For the full-scale ASR project, public noticing is anticipated to occur through compliance with the CEQA for any facilities or plans associated with the project. This includes the development of an underground storage supplement to permit the storage of water in the Basin that is required by the SWRCB, and through discussions of the proposed project at public meetings. A CEQA analysis includes an assessment of water supply impacts, GHG emissions, and impacts on Tribal cultural resources.

The SWRCB has recognized that it in the best interest of the state to develop a comprehensive regulatory approach for ASR projects, and has adopted general waste discharge requirements for ASR projects that inject drinking water into groundwater (Order No. 2012-0010-DWQ or ASR General Order). The ASR General Order provides a consistent statewide regulatory framework for authorizing both pilot ASR testing and permanent ASR projects. Pilot tests and any future permanent ASR facility will be permitted under the ASR General Order. Oversight of these regulations is done through the Regional Water Quality Control Boards (RWQCBs) and will require project proponents to comply with the monitoring and reporting requirements of the ASR General Order. Any additional permits required for the construction and operation of an ASR facility will be obtained by the lead agency for each ASR project as needed. Future GSP implementation projects or actions that require their own site-specific monitoring network, such as ASR, would take into consideration any localized COCs and regulatory requirements to avoid potential impacts on beneficial users, including domestic well users and DACs.

6.2.3.4 Estimated Costs and Funding Plan

Preliminary cost estimates to test, permit and construct project facilities for ASR is estimated to range from about $300,000 to $3,600,000 depending upon the complexity of each project with the lower cost estimates representing the use of existing wells that have the necessary monitoring infrastructure (GEI et al. 2013). The range of the costs also varies dependent upon whether existing facilities could be retrofitted or new facilities would need to be constructed. Preliminary costs will need to be further refined and provided upon completion of site-specific evaluation and pilot testing. The current plan for developing ASR in the Basin would utilize existing infrastructure, meaning that new infrastructure would be greatly limited, thus allowing for earlier onset of both incremental drought supply and groundwater sustainability benefits.

A total of $30,000 is included in the initial 5-year budget provided in **Section 7.2** to contribute to an updated regional ASR feasibility study. To continue and expand implementation of ASR projects, the GSA will coordinate with other project proponents who may be pursuing ASR projects, consider providing additional funding in future years and will seek opportunities for grant funding.

6.2.3.5 Legal Authority

Local water supply agencies and the GSA have the authority to develop water supply projects, such as ASR for both water supply benefits and to provide groundwater sustainability benefits.

6.2.4 Stormwater Capture and Recharge

As described in **Section 2.6**, planning for stormwater capture and recharge efforts, including site investigations have been initiated by local agencies and growers within the Basin. Stormwater capture and recharge projects are intended to cover two general types of stormwater capture activities that have been identified in the Southern Sonoma SWRP. The first stormwater capture activity involves retaining and recharging onsite runoff. Examples of this type of activity include low-impact development and on-farm recharge of local runoff. The second stormwater capture activity involves recharge of unallocated storm flows, which could include multi-benefit projects such as managed floodplain inundation. These actions require temporary diversions of storm flows from streams, and conveyance of those flows to recharge locations. State programs and grants (such as FLOOD-MAR, Proposition 68) and local entities (such as RCDs) can be used as resources to move forward on stormwater capture and recharge efforts.

Prior to implementing long-term stormwater capture and recharge programs, site-specific field investigations and assessments will be needed to identify suitable locations. Therefore, early stages of implementation are anticipated to include site-specific investigations and pilot studies of on-farm and other dispersed recharge opportunities that consider and include the following:

- Water available for recharge
- Areas with permeable near-surface soils
- Optimal methods and techniques
- Outreach to interested landowners with locations that could help sustain baseflows to streams and support GDEs

6.2.4.1 Objectives, Circumstances, and Timetable for Implementation

Implementation of the stormwater capture and recharge projects are primarily anticipated to help achieve MOs and avoid undesirable results for the depletion of interconnected surface water sustainability indicator. Depending upon the location of the projects and hydraulic connection between surficial recharge locations and the shallow aquifer system, there may be benefits to the chronic lowering of groundwater levels, groundwater storage and land subsidence sustainability indicators.

Stormwater capture and recharge projects require permitting, environmental analysis, and engineering design, which would begin in 2022. Depending upon results of pilot studies (planned to be initiated in 2024) and identified needs for projects, full-scale implementation of stormwater capture and recharge projects could begin in 2028. However, implementation of smaller-scale low-impact development type projects may proceed sooner, as permitting requirements are anticipated to be much less involved that projects that involve recharging

diverted streamflows. The timing of projects is based on best estimates and may shift as GSP implementation proceeds, depending upon the needs at the time and resources available.

6.2.4.2 Expected Benefits

Expected benefits from implementation of stormwater capture and recharge projects are anticipated to raise localized groundwater levels within the shallow portions of the aquifer system and increase baseflows to streams located near the projects. Benefits from stormwater capture and recharge projects would primarily be evaluated using changes in measured groundwater levels and surface water flows near and downstream of project locations using the monitoring networks described in **Section 5**.

6.2.4.3 Public Noticing, Permitting and Regulatory Process

Public outreach would be conducted to identify landowners interested in participating in stormwater capture and recharge projects. The degree of public noticing will vary depending upon the scale and type of recharge project.

Recharge of stormwater by retaining and recharging onsite runoff does not require permits. Recharge of unallocated storm flows is currently subject to the SWRCB's permit program for groundwater recharge by capturing high flow events. Recharge of unallocated storm flows will be subject to the terms of these 5-year permits. Stormwater capture may also be subject to CEQA permitting. Additionally, stormwater management projects will need to comply and coordinate with existing NPDES and MS4 permits for regional municipal stormwater systems. Future GSP implementation projects or actions that require their own site-specific monitoring network, such as some stormwater capture and recharge projects, would take into consideration any localized COCs and regulatory requirements to avoid potential impacts on beneficial users, including domestic well users and DACs.

6.2.4.4 Estimated Costs and Funding Plan

A total of $135,000 is included in the initial 5-year budget provided in **Section 7.2** to perform site-specific investigations and to fund a pilot study. To continue and expand implementation of stormwater capture and recharge projects, the GSA will coordinate with other project proponents who may be pursing multi-benefit projects, consider providing additional funding in future years, and seek opportunities for grant funding.

6.2.4.5 Legal Authority

In addition to acquiring required permits and the right to divert stormwater, other legal authorities required to implement stormwater capture and recharge will depend upon the lead implementing agency for the projects. CWC Section 10726.2 provides GSAs the authority to purchase, among other things, land, water rights, and privileges.

6.3 Evaluation of Projects Through Scenario Modeling

For the purposes of conducting initial evaluation of projects for this GSP, staff used the PVIHM to simulate the Group 1 projects, which represent voluntary, incentive-based water-use efficiency and alternate water source projects focused on rural residential and agricultural groundwater users. Examples include smaller-scale dispersed land-owner projects, such as turf removal, rainwater harvesting, and irrigation efficiency practices. The exact types of these dispersed projects are not distinguished for the purposes of evaluating potential benefits using model scenarios. Other new or significantly expanded projects and actions that would require further studies and planning for implementation were not evaluated using the scenario modeling, as the projected baseline scenario does not indicate the need for additional projects and management actions.

The model scenarios were performed as an initial evaluation of benefits of the Group 1 projects and management actions relative to the baseline 50-year projected scenario and incorporate the future climate change and growth assumptions described in **Section 3.3.6**. The methodology and results of the scenario modeling are described in **Appendix 6-A**. Project scenarios help limit groundwater declines during the latter portion of the projected period (affected by the major drought) and improve net groundwater discharge to streams.

Considering current uncertainties pertaining to modeling, data gaps, and project information, these project scenarios provide a pathway for reaching sustainability and preparing for future changed conditions in the Subbasin to meet GSP requirements. Additional data collection and project conceptualization during early phases of GSP implementation will help refine and allow for consideration of additional scenarios. The projects will also be supplemented by the planned management actions described in **Section 6.4** for the GSA Board's consideration.

6.4 Management Actions

In addition to initiating the projects detailed in this section, the GSA will further assess and implement the following management actions:

- Assessment and prioritization of potential policy options
- Coordination of Farm Plans with GSP implementation

Additionally, as provided by SGMA, should the above-described projects and management actions not be sufficient to eliminate undesirable results during implementation of the GSP, the GSA has authorities to limit groundwater pumping. **Section 6.4.2.5** further describes these authorities and potential situations where they may be considered.

6.4.1 Assessment of Potential Policy Options for GSA Consideration

SGMA provides several authorities to GSAs, which can be used to achieve groundwater sustainability and requires coordination between GSAs and land use agencies.

This management action involves a collaboration between the GSA Board, local land use agencies, GSA member agencies, and stakeholders to assess future policy options that may be appropriate for the GSA to consider adopting or recommending for adoption by other agencies. Based on input from the Advisory Committee, GSA Board, and the public, the following initial list of policy options has been developed for potential inclusion in the assessment:

- Water conservation plan requirements for new development
- Discretionary review of well permits for any special areas identified in GSP
- GSA review of discretionary projects that impact groundwater resources
- Low-impact development or water efficient landscape plan requirements expansion
- Well construction and permitting recommendations (such as water quality sampling and reporting for COCs, requirement for water-level measurement access, and procedures for preventing cross-screening of multiple aquifers)
- Well metering program
- Development of a drinking water well mitigation program
- Study of water markets
- Permitting and accounting of water hauling

This list represents initial ideas for policy options, which will be informed through the continued stakeholder engagement and outreach efforts described in Section 7. As required by SGMA, it is expected that the GSA will participate with the County in the development of future General Plan amendments and updates. During this process, additional policy options may be developed and considered.

6.4.1.1 Objectives, Circumstances, and Timetable for Implementation

The objectives for this management action are to develop, prioritize, and vet potential policy options that may be needed to supplement or replace the projects described above. As the timeframe for conducting the community outreach, studies, and procedural requirements for adopting policy options can be lengthy, the assessment and prioritization will be initiated in the initial few years of GSP implementation. The circumstances and timetable for adopting and implementing any of the recommended policy options will be based on ongoing monitoring of groundwater conditions and progress of project implementation. Policy options that focus on demand management would be applied in the case of a situation where planned projects and management actions are determined to be insufficient to reach and/or maintain sustainability and undesirable results are occurring and are not projected to be eliminated by 2042 using other available projects and management actions.

6.4.1.2 Expected Benefits

Specific expected benefits for this management action will depend upon the type and scope of any policy options that are recommended and adopted by the GSA Board and/or partner agencies. However, the types of policy options considered and recommended will be those that focus on avoiding undesirable results and achieving the sustainability goal.

6.4.1.3 Public Noticing, Permitting and Regulatory Process

Public noticing will be a key aspect of implementing this management action, as considerable engagement with stakeholders will be needed to assess potential benefits and impacts to current and future groundwater users. Any policy options that result in limitations or curtailments of groundwater users would be conducted in an open and transparent process. The permitting and regulatory process associated with this management option will also depend upon the type of policy options under consideration.

6.4.1.4 Estimated Costs and Funding Plan

A total of $30,000 is included in the initial 5-year budget provided in **Section 7.2** for the GSA to perform the assessment and initiate implementing recommendations. The total cost associated with implementing the management action will depend upon the type and scope of any policy actions considered for implementation.

6.4.2 Legal Authority

The legal authorities required for implementing any policy options will depend upon the type of policy options being considered. For policy options that include mandatory reductions or limitations on groundwater use, CWC Section 10726.4 (a)(2) provides GSAs the authority to control groundwater extractions by regulating, limiting, or suspending extractions from individual groundwater wells or extractions from groundwater wells in the aggregate. The County and City of Sonoma retain legal authorities for policy options which involve land use policy changes. Similarly, for any policy options related to well permitting, the legal authorities reside with the county.

6.4.2.1 Coordination of Farm Plans with Groundwater Sustainability Plan Implementation

Farm Plans are voluntary plans developed by third party organizations in collaboration with individual landowners that identify BMPs and provide site-specific actions to mitigate issues like sediment runoff or to improve water quality. In some areas of California, regulatory fees are reduced for landowners with Farm Plans that are certified by agreed-upon third parties. Currently, most Farm Plans do not include aspects of groundwater management that would directly support the GSA's efforts to comply with the requirements of the SGMA.

This management action involves a collaboration between the three Sonoma County GSA's and interested members of the agricultural community to evaluate the feasibility of developing a program that coordinates Farm Plans, developed at individual farm sites, with the implementation of the basin-wide GSP. This effort will identify areas of mutual interest (for

example, 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 (such as, data confidentiality, data quality requirements, and verification of Farm Plan performance).

6.4.2.2 Objectives, Circumstances, and Timetable for Implementation

Objectives of the management action include:

- Strengthening partnerships and coordination between the GSA and growers
- Identifying requirements or standards that need to be met to demonstrate that the implementation of the Farm Plan contributes to compliance with SGMA
- Developing metrics that will be measured and verified during implementation of the Farm Plan
- Considering options for Farm Plan sites to receive a form of credit for the contributions of the subject farm to the compliance with SGMA.

Coordination activities will begin in the first year of GSP implementation and it is anticipated that within 1 year of funding approval, staff would submit a report to the GSA Board with recommendations on the viability of such a program and next steps, as appropriate.

6.4.2.3 Expected Benefits

Expected benefits would include information sharing and coordination between the GSA and growers within the Subbasin. Other benefits will depend upon the outcome of the coordination activities and identification of mutual areas of interest to incorporate into Farm Plans. Potential areas of benefit include improvements to the GSAs monitoring network, filling key data gap areas, and advancing projects (such as water-use efficiency or recharge projects) that support the sustainability goal and avoid undesirable results to sustainability indicators.

6.4.2.4 Public Noticing, Permitting, and Regulatory Process

Public notice of actions and outcomes from the coordination process would be provided at the GSA's regular Board and Advisory Committee meetings. The permitting and regulatory process would depend upon the outcome of the coordination and identification of mutual areas of interest to include within the Farm Plans.

6.4.2.5 Estimated Costs and Funding Plan

A total of $40,000 is included in the initial 5-year budget provided in **Section 7.2** for developing and beginning implementation of the work plan. It is assumed that costs for portions of the study will be shared with the Santa Rosa Plain and Sonoma Valley GSAs.

6.4.2.6 Legal Authority

Any needed legal authorities would depend upon the outcome of the coordination and identification of mutual areas of interest to include within the Farm Plans.