PROJECTS AND MANAGEMENT ACTIONS

18. PROJECTS AND MANAGEMENT ACTIONS

> *§ 354.42. Introduction to Projects and Management Actions*
> *This Subarticle describes the criteria for projects and management actions to be included in a Plan to meet the sustainability goal for the basin in a manner that can be maintained over the planning and implementation horizon.*

Pursuant to the Sustainable Groundwater Management Act (SGMA) and Groundwater Sustainability Plan (GSP) Regulations, this section presents the Projects and Management Actions (PMAs) proposed to achieve the Sustainability Goal within the Cosumnes Subbasin (Basin) (23-California Code of Regulations [CCR] § 354.42):

> *The Sustainability Goal of the Cosumnes Subbasin is to ensure that groundwater in the Basin continues to be a long-term resource for beneficial users and uses including urban, domestic, agricultural, industrial, environmental and others. This goal will be achieved by managing groundwater within the Basin's sustainable yield, as defined by sustainable groundwater conditions and the absence of undesirable results.*

To the extent that information was available, the PMAs presented herein were developed by the PMA Committee under the direction of the Cosumnes Subbasin SGMA Working Group (Working Group). The PMA Committee is comprised of Groundwater Sustainability Agency (GSA) representatives (supported by technical consultants) that collaboratively identified the proposed PMAs and developed the necessary supporting information for inclusion in the GSP. In November 2021 the Working Group developed a joint exercise of powers agreement (JPA) that established the Cosumnes Groundwater Authority (CGA) for the purpose of implementing the GSP, which includes implementating the PMAs (see **Appendix B**).

The GSAs preliminarily considered feasibility, costs and benefits when finalizing the recommended list of PMAs. However, the PMAs will require further evaluation (e.g., engineering, economic, environmental, legal, etc.) as part of implementation and will be designed with the best available information and best available science. In addition to the PMAs presented herein, the GSAs in coordination with the CGA will conduct data gap filling activities as part of GSP implementation that may include, for example, validating the status of existing wells (i.e., active/inactive), performing feasibility studies, refining the Basin water budget parameters based on additional data and modeling, collecting additional data related to aquifer conditions and properties, and conducting additional data compilation and analysis of groundwater conditions information (see Section 19.1 *Plan Implementation Activities*).

This section presents the goals and objectives of the PMAs, including the guiding principles used to prioritize the PMAs, the relevant Sustainability Indicators they address, and the expected benefits from their implementation. A list of specific PMAs is presented and summarized in **Table PMA-1** (PMA Information Forms are included in **Appendix O**) and groups the PMAs by benefit category and type. In addition, an explanation is provided for how the PMAs address the following:

- Sustainability Indicators and Undesirable Results (URs);
- Potentially applicable permitting and regulatory requirements;
- Status and implementation timeline;
- Expected benefits and/or how expected benefits will be evaluated;
- Description of the sources of water that will support PMA implementation;
- Legal authority required to implement the PMAs; and,
- A summary of estimated PMA costs and how the GSAs plans to fund PMA implementation.

18.1. Goals and Objectives of Projects and Management Actions

18.1.1. Guiding Principles

The PMAs are based on the following guiding principles:

- Groundwater Augmentation from Wet Year Supplies: Preference for supply sources available during wet years.
- Groundwater Augmentation from New Supplies: Preference for new supply sources over demand reduction (e.g., increase groundwater recharge preferred over fallowing agricultural lands).
- Offset Costs with Revenue-Generating PMAs: Develop PMAs to generate revenue and minimize the financial burden on Basin stakeholders. This principle includes potentially developing a water banking operation, wherein groundwater saved through a voluntary land fallowing program is stored in the Basin for sale later as supplemental dry year supply for other agencies. The money generated by the water sales can be used to fund GSP implementation.

In addition to these principles, the preferred PMAs are cost effective, provide multiple benefits (e.g., environmental, flood control, groundwater recharge, etc.), have a high probability for success, and maintain the viability of current beneficial uses of groundwater within the Basin.

18.1.2. Relevant Sustainability Indicators

Per the GSP Regulations, GSPs must include PMAs to address existing or potential future URs for relevant Sustainability Indicators (23-CCR § 354.44). As summarized in **Table PMA-1**, each PMA addresses one or more of these applicable Sustainability Indicators.

Projected conditions for the Basin indicate Sustainable Management Criteria (SMCs) may be exceeded for Chronic Lowering of Groundwater Levels without active groundwater management efforts. Accordingly, the PMAs are directed toward avoiding projected URs from the Chronic Lowering of Groundwater Levels, which is also protective of the Depletion of Groundwater Storage and Land Subsidence Sustainability Indicators.

Avoiding URs from lowering of water levels can also potentially protect against water quality changes that might occur due to alterations in vertical and horizontal groundwater-flow. Water quality changes from

other factors, like increased deep percolation of applied water, are already regulated under the Central Valley Regional Water Quality Control Board's (RWQCB's) Irrigated Lands Regulatory Program (ILRP), and therefore also protective of water quality. Moreover, PMAs determined to potentially impact water quality can include focused monitoring and evaluation to prevent URs.

The shallow groundwater levels near interconnected surface water are influenced by stage, the exchange of surface- and groundwater, recharge and pumping. As a result, the shallow groundwater levels can be poorly correlated with the groundwater levels at greater depths and greater distances from surface water, and the protection of interconnected surface water relies on its own monitoring network and criteria.

18.1.3. Benefit Categories

The primary water management "tools" by which the GSAs can address conditions that may lead to URs for the applicable Sustainability Indicators pertain to management of water inflows (supplies) and outflows (demands). The expected benefits are groundwater augmentation, both from wet-year and new supplies, and to generate revenue to support GSP implementation. The PMAs can provide for one or more secondary benefits such as flood control, data gap filling, and so forth.

18.2. List of Projects and Management Actions

§ 354.44. Projects and Management Actions

(b) Each Plan shall include a description of the projects and management actions that include the following:

(1) A list of projects and management actions proposed in the Plan with a description of the measurable objective that is expected to benefit from the project or management action. The list shall include projects and management actions that may be utilized to meet interim milestones, the exceedance of minimum thresholds, or where undesirable results have occurred or are imminent. The Plan shall include the following:

(A) A description of the circumstances under which projects or management actions shall be implemented, the criteria that would trigger implementation and termination of projects or management actions, and the process by which the Agency shall determine that conditions requiring the implementation of particular projects or management actions have occurred.

(B) The process by which the Agency shall provide notice to the public and other agencies that the implementation of projects or management actions is being considered or has been implemented, including a description of the actions to be taken.

This section provides a list of the PMAs that have been preliminarily identified, and their approximate locations in the Basin are shown in **Figure PMA-1**. The PMAs were organized into three categories: (1) Groundwater Augmentation (wet year supplies), (2) Groundwater Augmentation (new supplies), and (3) Revenue Generation. Their descriptions and benefits determined by the Numerical Model are provided below, and in the summaries provided in **Table PMA-1** (Sustainability Benefits and Implementation Process), **Table PMA-2** (Expected Benefits, Water Source, and Costs), and the PMA forms provided by the GSAs are included in **Appendix O**.

18.2.1. Groundwater Augmentation from Wet Year Supplies

PMA #1 Omochumne-Hartnell Water District (OHWD) Agricultural Flood Managed Aquifer Recharge (Flood-MAR)

As part of the *OHWD Agricultural Flood-MAR* project, winter diversions will be applied on up to 1,800 acres of dormant vineyards, orchards, and other farmlands for recharge to increase groundwater levels and groundwater storage. Although the targeted farmlands are located directly north of the Cosumnes River (in the South American Subbasin [SASb]), as shown on **Figure PMA-1**, the resulting storage changes are expected to increase groundwater levels in the Cosumnes Subbasin and provide an almost 700 AFY augmentation to groundwater storage.

During Phase 1 of project implementation (anticipated to start in 2022), winter river flows from the Cosumnes River will be diverted at an anticipated average annual rate of 1,200 acre-feet per year (AFY), and the water will be applied to approximately 1,200 acres of dormant fields to percolate and recharge the aquifer. Diversions will be based on minimum daily flows on the Cosumnes River measured at the Michigan Bar gauging station as follows:

- less than 76 cubic feet per second (cfs), no diversions;
- greater than 76 cfs but less than 175 cfs, 6.5 cfs can be diverted; and
- greater than 175 cfs, a maximum of 16 cfs can be diverted.

Using historical average daily flows measured at Michigan Bar and the diversion rule set above, the estimated average annual diversion would be almost 1,400 AFY. The estimated benefit to the Cosumnes Subbasin is less than 100 AFY.

During Phase 2 of project implementation (anticipated to start in 2028), additional winter flood water from the American River will be delivered to the OHWD recharge area from Folsom Reservoir by way of the Folsom South Canal (FSC) to supplement the recharge from diversions under Phase 1. Hydrologic and reservoir operations modeling under a set of conservative assumptions and constraints indicate that, on average, more than 20,000 AFY of water could be available for spreading on up to 1,800 acres during mid-November through mid-March (MBK, written communication, March 22, 2021). For the purposes of this GSP, Phases 1 and 2 are assumed to operate until the end of the 50-year SGMA implementation period (2072).

Model-calculations indicate that the OHWD Flood-MAR project could reduce projected annual declines in groundwater storage within the Basin by almost 700 AFY. Implementation of this project will be led by the OHWD GSA and will be coordinated with other GSAs in the SASb. The project benefits will be routinely re-assessed as part of the Basin's adaptive management strategy.

PMA #2 Sacramento Area Flood Control Agency (SAFCA) Flood-MAR

The *SAFCA Flood-MAR* project includes augmenting Basin storage with excess winter American River flows released from Folsom Reservoir and delivered to the Basin by the FSC. Recharge operations will include "flooding" up to 2,000 acres of dormant fields and/or passive injection from dry wells located along FSC

(**Figure PMA-1**). During Phase 1 (2022 to 2027) the GSAs will conduct pilot studies to assess the feasibility of aquifer recharge in various locations throughout the Basin. In addition, outreach to landowners will be conducted to assess interest in participating in the recharge program. Lastly, agreements for water deliveries to participating farm fields will be secured. During this same time period, SAFCA plans to work with the United States Bureau of Reclamation (USBR), Sacramento Water Forum participants, and other interested stakeholders to reach agreement on SAFCA Flood-MAR project implementation. This includes storage of winter floodwater in the Folsom Reservoir, resolution of the water rights associated with this stored water, diversion of a portion of the stored water down the FSC and other regional conveyance systems for infiltration beneath land areas in the South American and Cosumnes subbasins, and acquisition of the right to place dry wells in the right of way of the FSC. Water diversions will commence during Phase 2 (2028 to 2042). For the purposes of this GSP, Phase 2 is assumed to continue after 2042 continuously through the 50-year sustainability period required by SGMA (through 2072).

Hydrologic and reservoir operations modeling under a set of conservative assumptions and constraints project that, on average, more than 9,000 AFY of water could be available to the Basin during November through March for spreading, and almost 6,000 AFY of additional water could be available to the Basin from November through May for passive injection through dry wells (MBK, written communication, March 22, 2021). The former diversions would be applied up to 2,000 acres of farm fields, and the latter diverted to about 50 dry wells for passive injection.

The Numerical Model was employed to analyze the benefits from the planned spreading and injection operations. Results indicated that the aquifer recharge would result in about 4,000 AFY decrease in projected storage decline in the Basin. Similarly, injection would result in more than 2,000 AFY for a total storage benefit of over 6,000 AFY.

18.2.2. Groundwater Augmentation from New Supplies

PMA #3 OHWD Cosumnes River Flow Augmentation

The *OHWD Cosumnes River Flow Augmentation* PMA releases water from the FSC into the Cosumnes River during late-October through December when the Cosumnes River typically does not flow continuously between reaches. The discontinuity in surface flows impedes fish migration and spawning. The introduction of additional instream flows will support fish requirements and provide additional flows to increase leakage from the river that will recharge the Basin. A pilot project was completed in 2005, and full implementation is contingent on securing a water source and funding (Robertson-Bryan, Inc. and Fisheries Foundation of California, 2006).

During Phase 1 (2022 – 2027), an agreement with the United States Bureau of Reclamation (USBR) for Central Valley Project (CVP) water (or other source) will be secured for release into the Cosumnes River from the FSC. During Phase 2 (2028-2042), project implementation will begin and 1,500 AFY to 5,000 AFY of CVP water (or other source) will be released from FSC into the Cosumnes River during late October through December.

For the purposes of this GSP, Phase 2 is assumed to release 1,000 AF per month during the period October

through December (3,000 AFY) during the period 2028-2072.

Model calculated benefits were over 17 cfs of instream flow but the additional leakage increased groundwater storage in the Cosumnes Subbasin by less than 100 AFY.

PMA #4 City of Galt Recycled Water Project

The City of Galt currently provides secondary treated wastewater (recycled water) to more than 160 acres of nearby farmland for summer irrigation. The approximate location of farmlands and the wastewater treatment plant (WWTP) are shown on **Figure PMA-1**. This PMA will expand the program to apply more of the existing recycled water supply (secondary or tertiary treated as determined) to 640 acres of Basin farmland year-round. During Phase 1 (2022-2027) agreements will be secured with landowners to expand the area of fields that will receive recycled water and the discharge permit from the National Pollutant Discharge Elimination System (NPDES) will be modified to include year-round irrigation. The current RWQCB Central Valley Region NPDES Order R5-2015-0125 allows for secondary treated effluent irrigation to the designated areas. During Phase 2 (2028-2042), the application area will be expanded, and treated wastewater will be applied year-round. The winter applications are expected to increase recharge, and the summer growing season deliveries will decrease demands for groundwater. The model-calculated storage benefit of this PMA is approximately 300 AFY. For the purposes of this GSP, Phase 2 is assumed to extend continuously through the 50-year sustainability period required by SGMA (through 2072).

18.2.3. Revenue Generation

PMA #5 Voluntary Land Repurposing

The *Voluntary Land Repurposing* PMA includes land fallowing and potentially other methods to reduce groundwater extractions and use by agriculture. The land repurposing activity decreases groundwater use by temporarily removing a portion of the approximately 11,000 total acres in the Basin Plain that is irrigated solely with groundwater (more than 7,300 acres of pasture, more than 1,100 acres of alfalfa, and more than 2,500 acres of corn). In Phase 1 (2022-2027), approximately 750 to 1,000 acres of active farmland irrigated with groundwater will be repurposed (for example, 7-9% of the candidate lands will be voluntarily fallowed), and increased to as much as 2,000 acres (about 18% of the candidate lands) during Phase 2 (2028-2042). For the purposes of this GSP, Phase 2 is assumed to extend continuously through the 50-year sustainability period required by SGMA (through 2072). The potential candidate farmlands are shown on **Figure PMA-1**. The program will be voluntary, and participating landowners will be compensated by the GSAs for the cessation of groundwater use on their land.

Initial estimates indicate that repurposing 750 acres can reduce groundwater consumption by 2,700 AFY during Phase 1 and decrease consumption by more than 6,300 AFY when fully implemented in Phase 2. The repurposed land could include voluntary fallowing for short time periods (1-2 years) or extend longer and represent relatively permanent changes in land use. The water not consumed and retained in storage can be extracted and sold as supplemental dry year supply.

PMA #6 Groundwater Banking and Sale

The *Groundwater Banking and Sale* PMA utilizes the available storage in the Basin to store water that can

be extracted later and sold to out-of-Basin users for dry year supply augmentation. This PMA depends on demand for dry year water supply augmentation, a partnering urban water agency, and construction of necessary pipelines and recovery wells. The PMA can generate significant revenue from water sales, thereby reducing the cost to Basin landowners to support GSP implementation. The sale of stored water will only occur once external flood and/or recycled water enter the Basin in sufficient amounts to offset the volume sold. Exported water will be guided by a leave-behind policy, whereby a set fraction of the banked water intentionally remains in the Basin. As a starting point, it has been suggested that for every 1.0 AF of banked water that is sold, 3.0 AF of water will have been added to the Basin aquifer. Additional stakeholder and GSA input is needed to formalize the policy and identify the appropriate criteria to manage the groundwater bank.

During Phase 1 (2022-2027), the Cosumnes Groundwater Authority (CGA) will work with Basin landowners, GSA members, and regional stakeholders to develop necessary policies and procedures that define how the water banking and recharge programs will be implemented. This will include governance, groundwater monitoring, and establishment of a verifiable accounting system to track the amount of water entering the Basin and the amount that is sold. Once these policies and procedures are in place, an interested urban water purveyor has been identified, construction activities are completed, and recharge of winter flood water has begun, the banking and sale of stored water could commence in Phase 2 (2028-2042) after. For the purposes of this GSP, Phase 2 is assumed to extend continuously through the 50-year sustainability period required by SGMA (through 2072).

18.2.4. Other PMAs

Other PMAs are also under consideration, but details are currently insufficient to estimate implementation costs and benefits. For example, consistent with existing law, the GSAs can implement agricultural water conservation and management practices, including conjunctive use, to reduce extraction volumes, increase groundwater recharge, and manage the Basin water budget. To accomplish these goals, the GSAs may develop programs and Best Management Practices (BMPs) to increase water use efficiency. For example, effective BMPs that reduce overall groundwater consumption could include improved irrigation practices, conversion of land uses from relatively high-water demand to lower water demand crops, improved water tracking and accounting methods, installation of higher efficiency irrigation delivery and application systems, employment of soil moisture sensors for more precise irrigation scheduling and application volumes, and promotion of other actions that can help reduce overall groundwater consumption. The GSAs may consider creating incentives or providing funding to promote these improvements based upon available financial resources and landowner participation.

Other potential PMAs that may be considered by the GSAs include:

- Expand incentives to expand the voluntary land fallowing program, or shift land use to growing less water intensive crops (land repurposing);
- Provide technical and financial incentives that support landowners wanting to implement local water use efficiency/conservation projects;

- Explore multi-benefit opportunities for off stream impoundments to store floodwater, including potential stormwater diversions from the Cosumnes River to augment storage/recharge on the south side of the river;
- Coordinate with Agency and Nongovernmental Organization (NGO) partners working with willing landowners near the Cosumnes River to develop multi-benefit projects that offer recharge and agricultural and/or habitat preservation benefits;
- Explore recharge projects that utilize potentially available surface water from Amador County and existing infrastructure;
- Explore multi-benefit opportunities for diversions to interior Basin drainages to increase recharge from leakage and reconnect their lower reaches in the floodplains;
- Evaluate the efficacy of local recharge projects such as catch ponds, dry wells, seepage pits, and other water substitution practices. For example, a distributed network of dry wells throughout the Basin could help manage stormwater and increase groundwater recharge beneath private lands;
- Implement Low Impact Development practices in the City of Galt (including the use of dry wells to redirect stormwater runoff for recharge);
- Implement the Drought Resilience Impact Platform for verifying Basin pumping, conservation efforts and land repurposing effectiveness;
- Participate in regional water supply and water banking projects, such as the Harvest Water Project[83];
- Review implementation of the Deer Creek Hills Aquifer Storage and Recovery (ASR) project, initially proposed in 1997 as part of the water supply for the proposed Deer Creek Hills development, which utilizes high flows from the Cosumnes for ASR immediately north of the community of Rancho Murieta. Based on the initial application to appropriate water by permit with the SWRCB, 4,800 AFY of excess high flows (10 cfs max diversion rate) from the Cosumnes River (between November and June) would be diverted from the existing Rancho Murieta Community Service District Pump Station near Granlees Dam. The diversions are then injected into nearby private wells (consolidated aquifer) for storage and recovery at a later time; and,
- Construct a new well for Arcohe School and develop a groundwater recharge program for the students.

[83] The Harvest Water project is in the SASb, and implementation is similar in concept to the City of Galt Recycled Water Project (PMA #4) whereby groundwater irrigation is replaced by treated wastewater and the water is applied year-round. The combined reduction in groundwater use and greater recharge north the Basin is projected to increase groundwater levels, benefiting groundwater storage in the SASb and Basin, and reduce Cosumnes River depletions ("South Sacramento County Agriculture and Habitat Lands Recycled Water, Groundwater Storage, and Conjunctive Use Program, Integrated Groundwater and Surface Water Modeling Results Technical Memorandum," RMC, 2017).

These additional PMAs provide flexibility to the Basin to adaptively address unforeseen conditions. For example, one or more of the additional PMAs may be implemented should projected climatic conditions be drier than represented in this evaluation. Additional PMAs may also be needed should the expected benefits from the planned PMAs be unrealized, or unforeseen circumstances restrict implementation (e.g., failure to secure outside water sources). If the institutional partnerships needed to implement the SAFCA Flood-MAR program are not realized, and voluntary land repurposing in combination with the other PMAs described above cannot achieve the deficit reduction anticipated in the GSP, the GSAs must be prepared to use the required five-year update to examine alternatives, including more extensive demand reduction measures within the CGA's control.

Table PMA-1. Projects and Management Actions – Sustainability Benefits and Implementation Process[1]

PMA Name	Summary Description	Relevant Sustainability Indicators Affected			Circumstances for Implementation	Public Noticing Process	Permitting and Regulatory Process Requirements	Status	Timetable / Circumstances for Initiation
		Groundwater Levels	Groundwater Storage	Interconnected Surface Water					
Groundwater Augmentation (Wet Year Supplies)									
#1 OHWD Agricultural Flood Managed Aquifer Recharge	Phase 1 (2022-2027): 1,200 AF per year of winter diversions anticipated from Cosumnes River during high flows to flood 1,200 acres of dormant vineyards, orchards, etc. (Estimated benefit toward reducing the projected storage decline is almost 700 AFY). Phase 2 (2028-2042): Anticipated average annual diversions of 20,000 AFY excess American River winter water released from Folsom Reservoir and delivered to Basin by the FSC during the period November 15 – March 15 (See SAFCA Flood-MAR project described below). Diversion applied to 1,800 acres dormant vineyards, orchards, etc. (Estimated benefit toward reducing the projected storage decline is approximately 700 AFY).[2]	x	x		Phase 1 is underway. Phase 2 requires secured agreement with SAFCA and grant funding	Dependent on Permitting and Regulatory Process Requirements	OHWD annual permits from SWRCB 2022-2027, 2028-2042; USBR (uncertain) CEQA, Neg Dec	Planning	Upon agreement with SAFCA; USBR: completion of infrastructure; and grant funding.
#2 SAFCA Flood Managed Aquifer Recharge	Phase 1 (2022-2027): Perform feasibility studies, develop agency partnerships and agreements for water deliveries, and secure agreements with landowners in the Basin to receive water to percolate recharge. Phase 2 (2028-2042): Average annual diversions of more than 9,000 AFY excess American River winter water anticipated for release from Folsom Reservoir and delivered to Basin by FSC to up to 2,000 acres of dormant farm fields during the period November 15 -March 15. (Estimated benefit toward projected storage decline in Basin is approximately 4,000 AFY).[1] Average annual diversions of more than 6,000 AFY excess American River winter water released from Folsom Reservoir and delivered to Basin by FSC to dry wells during the period November 1 through May 31. (Estimated benefit toward reducing the projected storage decline is approximately 2,000 AFY).[2]	x	x		Requires secured agreement with SAFCA and grant funding	Dependent on Permitting and Regulatory Process Requirements	CEQA; NEPA	Planning	Upon agreement with SAFCA; USBR; completion of infrastructure; and grant funding
Groundwater Augmentation (New Supplies)									
#3 OHWD Cosumnes River Flow Augmentation	Phase 1 (2022-2027): Secure agreement with USBR for CVP water (or other source) to release from FSC into Cosumnes River. Phase 2 (2028-2042): Release 1,500 AFY- 5,000 AFY CVP water (or other source) from FSC into Cosumnes River during late Oct-Dec to improve flows for fish migration and increase recharge from river leakage. (Estimated benefit from releasing 3,000 AFY towards reducing the projected storage decline is less than 100 AFY).[2]			x	Upon contract for water supply	TBD	CEQA Neg Dec/NEPA	Pilot project completed	On-going
#4 City of Galt Recycled Water Project	Phase 1 (2022-2027): Secure agreements with landowners to expand area of fields that receive recycled water. Phase 2 (2028-2042): Expand existing summer irrigation of 160 acres with plant effluent to include year-round irrigation to a total of 640 acres. (Estimated benefit toward reducing the projected storage decline is approximately 300 AFY).[2]	x	x		Upon agreement with nearby farmers, completion of necessary infrastructure and completion of necessary permit modifications	None other than signage along perimeter of area to warn/preclude public from potential contact	Current RWQCB Central Valley Region Order R5-2015-0125 allows for secondary treated effluent irrigation to designated areas. Expansion of receiving area or tertiary treatment for winter use may require permit modification, CEQA	Planning	Project development and implementation

PMA Name	Summary Description	Relevant Sustainability Indicators Affected			Circumstances for Implementation	Public Noticing Process	Permitting and Regulatory Process Requirements	Status	Timetable / Circumstances for Initiation
		Groundwater Levels	Groundwater Storage	Interconnected Surface Water					
Revenue Generation									
#5 Voluntary Land Repurposing	Phase 1 (2022-2027): Incentivize farmers to voluntarily repurpose up to ~1,000 acres (for example, temporary land fallowing) to provide a net reduction in groundwater consumption of about 2,700 AFY. (Estimated benefit toward reducing projected storage decline is Phase 2 (2028-2042): Incentivize farmers to voluntarily repurpose as many as 2,000 acres to provide at full implementation a net reduction in groundwater consumption of 6,300 AFY, of which about 5,000 AFY would be available for extraction and sale.	x	x		Upon secured agreements with landowners	None	None	Planning	Secured agreements with landowners
#6 Groundwater Banking and Sale	Phase 1 (2022-2027): Develop agreements with local water management agencies and interested water purveyors to design water banking and recharge policies, governance procedures, groundwater monitoring and accounting methods, and terms and conditions for the export of stored water (for example, a "leave behind policy"). Phase 2 (2028-2042): Initiate water banking and sale once SAFCA Flood-MAR construction activities are complete and recharge of winter flood water has begun.	x	x		Agreement with water purveyor; construction of infrastructure	Dependent on Permitting and Regulatory Process Requirements	CEQA Neg Dec	Planning	Agreement with water purveyor; construction of infrastructure

Notes:
(1) Summary table developed based off information provided by the Basin PMA Committee, s*ee* **Appendix O** for detail.
(2) Model estimated storage benefits include SASb PMAs (conservation, water bank, and Harvest Water).

Abbreviations:
AFY = acre-feet per year
CEQA = California Environmental Quality Act
CWC = California Water Code
DEW = Climate Change - Dry Extreme Warming
Flood-MAR= Flood-Managed Aquifer Recharge
FSC= Folsom South Canal
GSA = Groundwater Sustainability Agency
GSP = Groundwater Sustainability Plan
HC = Repeat of Historical Climate
OHWD= Omochumne-Hartnell Water District
Neg Dec= Negative Declaration
NEPA = National Environmental Protection Act
PMA = Project and/or Management Action
SAFCA= Sacramento Area Flood Control Agency
SWRCB = State Water Resources Control Board
TBD = to be determined
UR = Undesirable Result
USBR= United States Bureau of Reclamation
WWTP= Wastewater Treatment Plant

Table PMA-2. Projects and Management Actions – Expected Benefits, Water Source, and Costs

PMA Name	Timetable for Implementation	Timetable for Accrual of Expected Benefits	Expected Benefits				Source(s) of Water, if applicable	Legal Authority Required	Estimated Costs		
			Primary	Secondary							
			Groundwater Storage	Flood Control	Policy Project	Develop New Supplies			Capital	Operations and Maintenance (per year)	Potential Funding Source(s)
Groundwater Augmentation (Wet Year Supplies)											
#1 OHWD Agricultural Flood Managed Aquifer Recharge	Phase 1: 2022 -2027 Phase 2: 2028 -2042	Upon project initiation	--- 700 AFY	x		x	Phase 1: Cosumnes River Phase 2: American River via FSC	Phase 1: Consistent with OHWD's authority as a water district Phase 2: OHWD, USBR, SAFCA, and others TBD	Phase 1: Completed Phase 2: $20,000,000[2]	$660,000	Sale of stored water
#2 SAFCA Flood Managed Aquifer Recharge	2028 - 2042	Upon project initiation	4,000 to 6,000 AFY	x		x	American River via FSC	Consistent with SAFCA's authority as the regional flood-control agency	$18,000,000[2]	$1,980,000	Sale of stored water, Grants
Groundwater Augmentation (New Supplies)											
#3 OHWD Cosumnes River Flow Augmentation	2028	Upon Project initiation	<100 AFY			x	Imported CVP surface water or other source	Consistent with OHWD's authority as a water district	Completed	$100,000	Sale of stored water
#4 City of Galt Recycled Water Project	2028	Upon project initiation	300 AFY			x	Recycled water	Consistent with City of Galt	TBD	$50,000	Sale of stored water
Revenue Generation											
#5 Voluntary Land Repurposing	Phase 1: 2022 -2027 Phase 2: 2028 -2042	Upon project initiation	~2,700 AFY ~6,300 AFY		x		NA	Consistent with Basin GSAs authority pursuant to CWC Section 10726.2(b)	N/A	$430,000 to $935,000	User fees and sale of stored water
#6 Groundwater Banking and Sale	2028	Upon project initiation			x		Imported Surface Water	Consistent with Basin GSAs authority pursuant to CWC Section 10726.2(b)	$1,000,000	$130,000	Banking revenue

Abbreviations:

AFY = acre-feet per year
CEQA = California Environmental Quality Act
CWC = California Water Code
DEW = Climate Change - Dry Extreme Warming
Flood-MAR= Flood-Managed Aquifer Recharge
FSC= Folsom South Canal
GSA = Groundwater Sustainability Agency
GSP = Groundwater Sustainability Plan
HC = Repeat of Historical Climate
OHWD= Omochumne-Hartnell Water District
Neg Dec= Negative Declaration
NEPA = National Environmental Protection Act
PMA = Project and/or Management Action
SAFCA= Sacramento Area Flood Control Agency
SWRCB = State Water Resources Control Board
TBD = to be determined
UR = Undesirable Result
USBR= United States Bureau of Reclamation
WWTP= Wastewater Treatment Plant

Note:

(1) Summary table developed based off information provided by the Basin PMA Committee, see **Appendix O** for detail.
(2) Capital costs funded by SAFCA and anticipated Grant Funds.