

## 4. Implementing Projects and Programs

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Integrated Regional Water Management (IRWM) Plans must select projects for inclusion in the Plan. The process must include the following:

- Procedures for submitting a project to the Regional Water Management Group (RWMG)
- Procedures for review of projects that consider a number of factors outlined in the Proposition 84 & 1E IRWM Guidelines
- A list of selected projects

### 4.1. Project Review Process

#### 4.1.1. Procedure for Submitting Projects and Programs

Project solicitation is the process by which agencies, organizations, and/or members of the public can submit project concepts for inclusion in the IRWMP. To be considered for the IRWMP, projects must be able to be effectively described; however, they can be in any stage of development, from conceptual to design. There are many benefits to submitting a project for inclusion in the IRWMP, including raising local awareness of the potential project and associated benefits and positioning the project for potential State funding.

Two project solicitation periods were implemented as part of the MAC IRWMP update. An advanced announcement for a call for projects was emailed to the stakeholder contact list and posted on the MAC IRWMP website informing participants that the initial project solicitation period would be held from December 21, 2011 to January 20, 2012. A project information form was developed and distributed on December 21<sup>st</sup> for the first round of project solicitation. The form was emailed to the stakeholder contact list and posted on the website. In addition, RPC members were asked to distribute the form to others that might be interested and announce the process at their respective meetings. Project information forms were required to be submitted to the project team by January 20, 2012. If there was a project included in the 2006 IRWMP that an agency or stakeholder wanted included in the MAC Plan Update, they were requested to resubmit the project to ensure any updates to the project and status were included in the Update. Almost fifty projects were collected for the 2006 MAC IRWMP.

In addition, a second project solicitation period followed, with project information being due on May 30, 2012. This solicitation period was noticed in the same manner as the initial solicitation, with email announcements, a website update, and a request for distribution by RPC members. Holding a second solicitation provided project proponents with additional time to develop projects that would contribute to meeting the MAC Plan objectives and gather information necessary to complete the project template.

Forms submitted after the due date have been appended to the MAC Plan Update, but have not been included in the Plan sections. An official project solicitation process for the MAC region will occur at least once every two years, at a minimum, in which the RPC will meet to review the prioritized list and provide feedback. More frequent calls for projects may be conducted as deemed appropriate by the UMRWA Board of Directors. During the periodic project solicitation processes, projects submitted after the due date will be added, and the project list will be prioritized.

#### 4.1.2. Procedure for Review and Selection of Projects/Programs

The project review process developed for the MAC Plan Update implemented a two-tiered approach of screening followed by evaluating projects, as depicted in Figure 4-1. The result of this process was a list of projects that meet regional IRWMP goals and statewide water resource management priorities while favoring projects which provide significant regional benefit. The order of prioritized projects does not reflect the recommended implementation order or priority of projects to individual agencies and organizations, but rather to the region.

After a project was submitted for inclusion in the MAC Plan Update, it went through a basic screening process. In order to be included in the IRWMP, each project met at least one regional goal, at least one Statewide Priority, and at least two Resource Management Strategies (RMS). This screening process is depicted as Steps 1 and 2 of Tier 1 as shown in Figure 4-1. Projects that do meet the minimum screening requirements may be modified or merged with another project to increase benefits to the region and meet the specified criteria for inclusion in the IRWMP. At the completion of the preliminary screening, 36 projects remained for evaluation and prioritization.

##### *Tier 1 - Screening, Step 1*

Step 1 of Tier 1 compared projects with the Statewide Priorities and the MAC Plan Update regional goals (see Section 3 of this document for more details). Projects must meet at least one regional goal and at least one Statewide Priority to move forward to Step 2.

##### *Tier 1 - Screening, Step 2*

In Step 2 of the Tier 1 prioritization process, each project was compared with the list of RMS identified for inclusion in the MAC Plan Update. These strategies are discussed in Section 3 and include the following.

- Agricultural Water Use Efficiency
- Urban Water Use Efficiency
- Conveyance – Regional/local
- System Reoperation
- Water Transfers
- Conjunctive Management & Groundwater Storage
- Precipitation Enhancement
- Recycled Municipal Water
- Surface Storage – Regional/local
- Drinking Water Treatment and Distribution
- Groundwater Remediation/Aquifer Remediation
- Matching Quality to Use
- Pollution Prevention
- Salt and Salinity Management
- Urban Runoff Management
- Flood Risk Management
- Agricultural Lands Stewardship
- Economic Incentives (Loans, Grants and Water Pricing)
- Ecosystem Restoration
- Forest Management
- Recharge Area Protection
- Water-Dependent Recreation
- Watershed Management

In order to move forward and be included in the IRWMP, each project must incorporate at least two of the RMS above.

Together, these two preliminary screening steps identified the projects that met both regional goals and objectives and the State's priorities for the IRWM planning process. Projects that met the minimum requirements of addressing at least one regional goal, one statewide priority, and two RMS were included in the MAC Plan Update and passed to Tier 2 of the evaluation and prioritization process.

#### 4.1.3. Evaluation and Prioritization of Projects and Programs

The purpose of project prioritization is to identify those projects with highest value to the MAC region, as defined in the MAC Plan Update. The means by which this prioritization is achieved can vary significantly, but for a process that aims to achieve integrated and regional results, the selection of projects to be implemented must ultimately be achieved through consensus. For the purposes of the MAC Plan Update, consensus is defined as the process by which agreement is reached by a group as a whole. It is important to note that inclusion of a project in the MAC Plan does not reflect endorsement by any or all members of the RPC or UMRWA.

The Tier 2 process yielded the prioritized list of IRWMP projects by utilizing a two step evaluation process.

##### *Tier 2, Step 1 - Apply Evaluation Criteria*

Step 1 of the Tier 2 process involves assessment of project benefits in several areas. Due to the conceptual nature of many of the projects and incomplete data, these projects were evaluated qualitatively. This evaluation focused on the following ten evaluation criteria.

**Criterion 1: Maximize Economic Feasibility.** Project benefits and costs were qualitatively assessed to establish a high level determination of economic feasibility. Projects were rated as follows.

Low = Lower benefit-cost ratio

Medium = Mid-range estimated benefit-cost ratio

High = High estimated benefit-cost ratio

**Criterion 2: Address MAC Plan Goals.** The specific goals each project met were identified to determine how well each project met regional needs. Projects were rated as follows.

Low = Addresses less than 2 specific regional goals

Medium = Addresses 2 - 4 specific regional goals

High = Addresses 5 or more specific regional goals

**Criterion 3: Integrate with State RMS.** In order to recognize multi-benefit, integrated projects, projects were assessed for the degree of RMS integration. Projects were rated as follows.

Low = Incorporates 2 RMS

Medium = Incorporates 3 - 5 RMS

High = Incorporates 6 or more RMS

**Criterion 4: Provide Multi-agency/Entity Benefits.** As a regional program, the IRWM Plan promotes projects with multiple partners. A project that benefits more than one agency may benefit a larger population, utilize economies of scale, reduce regional conflicts, and may be more likely to incorporate multiple benefits in multiple resource areas. Projects were rated as follows.

Low = Benefits 1 agency/entity

Medium = Benefits 2 agencies/entities

High = Benefits 3 or more agencies/entities

**Criterion 5: Maximize Benefits to Disadvantaged Community (DAC) and Native American Tribes, and Minimize Environmental Justice (EJ) Impacts.** Projects were assessed to identify projects that provide targeted benefits to address the critical water supply, water quality, and resource management needs of local DACs, EJ concerns, and tribal communities. Projects were rated as follows.

Low = Provides no DAC or Native American benefits; may have EJ impacts

Medium = Provides targeted benefits to one or more DAC or Native American community; but may have environmental justice impacts

High = Provides targeted benefits to one or more DAC or Native American community; does not have EJ impacts

**Criterion 6: Ensure Technical Feasibility.** The IRWMP seeks to promote projects that are not only economically feasible, but technically feasible as well. Projects were qualitatively assessed based on implementation feasibility, given knowledge about the project, location, and whether there are data gaps. Projects were rated as follows.

Low = Insufficient technical knowledge or supporting data to sustain claimed benefits/values

Medium = Adequate technical knowledge and supporting data to defend claimed benefits/values although some gaps may exist

High = Ample technical knowledge and supporting data to uphold claimed benefits/value

**Criterion 7: Encourage Climate Change Adaptation or Mitigation Benefits.** In order to recognize the potential implications of climate change in long-term planning, projects were assessed for their contribution to climate change adaptation and / or mitigation of greenhouse gas (GHG) emissions. Projects were rated as follows.

Low = Climate Change Adaptation and/or Mitigation Benefits Are Unlikely

Medium = Adaptation and / or Mitigation Benefits Are Likely

High = Adaptation and / or Mitigation Benefits Have Been Demonstrated

**Criterion 8: Minimize Implementation Risk.** To help identify projects that may have significant challenges achieving successful implementation and conversely, identify projects that have minimal institutional, political, and legal obstacles, this criterion was applied to the projects. Projects were rated as follows.

Low = High implementation risk due to documented institutional barriers such as regulatory, environmental, or permitting obstacles, and high degree of controversy, potential legal challenge, or potential partners' uncertainty

Medium = Moderate implementation risk due to documented institutional barriers such as regulatory, environmental, or permitting obstacles, and high degree of controversy, potential legal challenge, or potential partners' uncertainty

High = Minimal implementation risk due to documented institutional barriers such as regulatory, environmental, or permitting obstacles, and high degree of controversy, potential legal challenge, or potential partners' uncertainty

**Criterion 9: Best Project for Intended Purpose.** This criterion was applied to the projects to recognize that sometimes projects that may have the greatest likelihood of being realized to achieve a specific purpose may not always be the best projects from an economic, environmental, or social perspective. Projects were rated as follows.

Low = Other alternatives clearly exist that will be better to meet the intended need from a social, environmental, and economic perspective

Medium = Other alternatives exist that may be preferable from a social, environmental, and economic perspective

High = Project is the best possible alternative to meet the stated need from a social, environmental, and economic perspective

**Criterion 10: Project Status / Readiness.** This criterion evaluates the status of a project and its proximity to construction and/or implementation. Projects were rated as follows.

Low = Conceptual or preliminary planning completed

Medium = Advanced planning completed, final design and environmental documentation not completed

High = Fully ready with design and environmental documentation completed

### *Tier 2, Step 2 - Prioritize Projects*

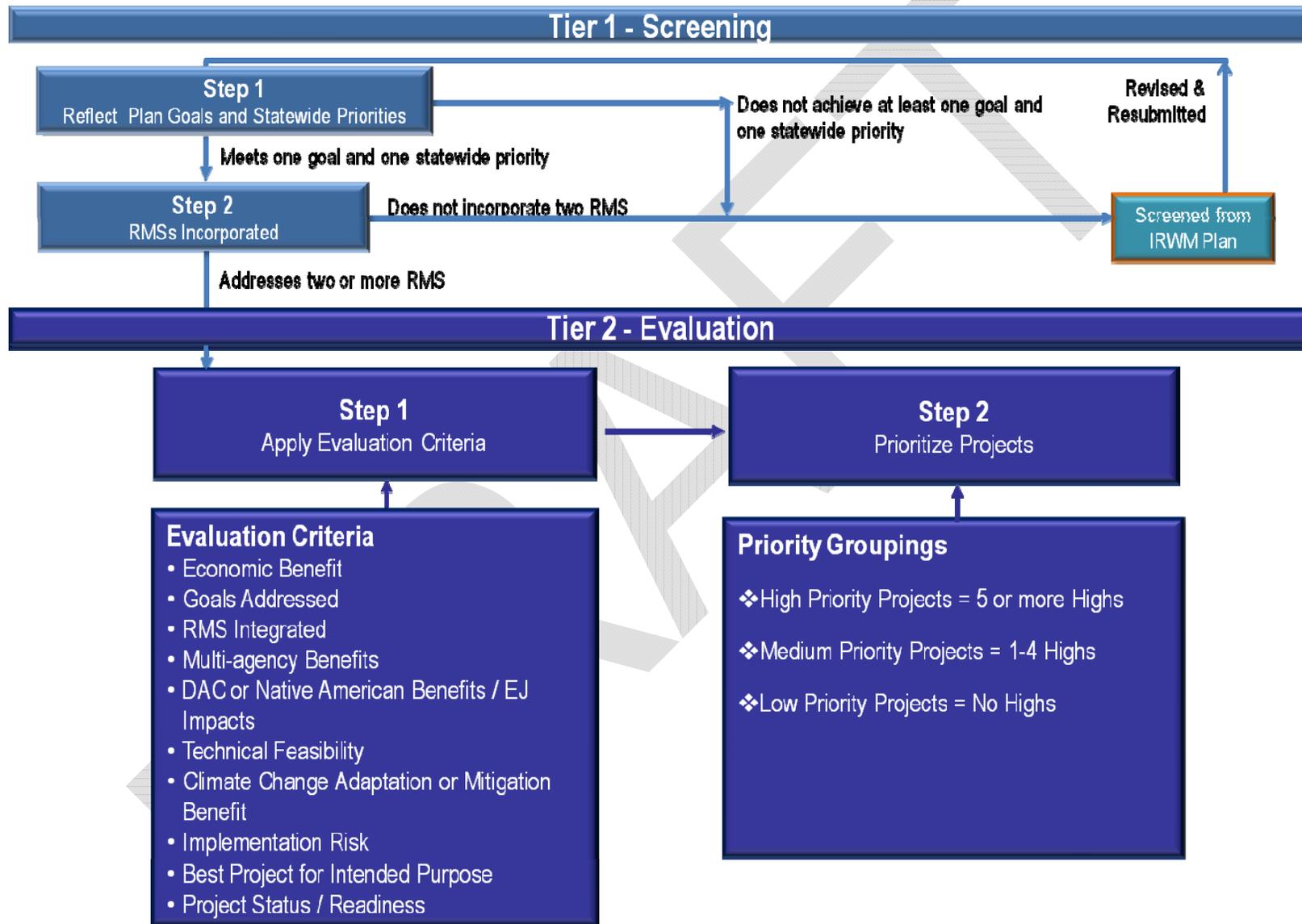
In Step 2 of the Tier 2 process, the projects were prioritized based on their overall scores. The projects received a final score of High, Medium, or Low, which were determined as follows.

High = Received 5 or more Highs on evaluation criteria

Medium = Received 1 to 4 Highs on evaluation criteria

Low = Received no High scores on evaluation criteria

**Figure 4-1: Project Review and Prioritization Process**



### Results

During the two project solicitation periods, with the most recent period ending on May 30, 2012, eight agencies/entities submitted 37 projects for consideration. One project did not meet the minimum requirements and was eliminated from the project evaluation. The other 36 were prioritized using the evaluation methodology previously described. The application of this process generated 1 project with a Low score, 11 with Medium scores, and 24 projects with High scores. The project list will be updated periodically. The project list and the associated scores (as of August 23, 2012) are included in Appendix A. The spreadsheets developed during the evaluation are also presented in Appendix A; Tier 1, Step 1 through Tier 2, Step 2 are demonstrated in the spreadsheets.

It should be noted that the RPC implemented a thorough project review process in which specific comments and questions related to each project were reviewed with project proponents and project scores were adjusted to address comments or concerns associated with preliminary project scoring. The result of this process is a more robust project list and prioritization, which will more effectively assist the Region in achieving its objectives. However, due to the thorough nature of this review, the scores of a subset of the projects included in the Plan have not yet been reviewed and adjusted to the mutual satisfaction of all RPC members. The following projects, while included in the IRWM Plan and believed to be important projects for the MAC Region, must be further discussed and vetted before all RPC members may be comfortable with the results of their scoring and ranking. This review and vetting process is currently underway, and results of this process will be addressed in future MAC Plan updates. The following projects require further vetting.

**NOTE: AN UPDATED LIST WILL BE PROVIDED AT RPC MEETING 12**

Project No.	Project Name
1	CAWP & AWS Intertie
2	CAWP Gravity Supply Line
3	Treated Water to Residents Using Untreated Water
4	Lake Camanche Wastewater Improvement Program
5	Small Diameter Pipeline Raw Water Canal to Pipe Conversion Project
7	AWS Regional Water Treatment Plant
8	Lower Amador Canal Project
9	Backwash Water Reuse Project
10	CAWP Fire Storage
11	Highway 88 Corridor Wastewater Treatment, Transportation, Disposal
12	Ione Treated Water Loop
13	Regional Wastewater Project
14	New York Ranch Reservoir Conservation and Management
15	AWA Low Pressure Flow Improvements
16	Lake Camanche Water Storage Tank & Transmission Main
17	Lake Camanche Water Service Replacement-Phase II
19	Wildwood Leachfield Replacement
20	Bear River Reservoir Expansion Project
21	Septic System Management Program
26	Camanche Area Regional Water Supply Project

#### 4.1.4. Project Integration

The RPC developed the project review and evaluation process to foster integration and identify project efficiencies and maximize benefits. The high priority projects, as identified through the project review process, integrate RMS and tend to be multi-benefit projects. The more RMS a project integrates, and the more benefits it will achieve, the more likely it is to receive a High score. Of the 38 project submitted for inclusion in the MAC Plan Update, 14 projects received High scores for the RMS Integrated evaluation criteria, meaning each project integrates at least 6 RMS. 10 of the 14 projects that received High scores for RMS integration, received final High scores as well. When projects integrate multiple RMS there is the opportunity to take advantage of synergies in water management.

#### 4.1.5. Considerations for Future Updates

The IRWM planning process is an evolutionary process, in which each plan update generates new thoughts, ideas, and lessons learned. In order to ensure that future plan updates consider the lessons learned during this update, the RPC documented several considerations to be addressed in future updates. The RPC identified the following recommendations for future Plan updates.

- Allow for additional time for critical vetting of project submittals to ensure that project issues are addressed and there is consensus on project scoring.
- Consider integrating groundwater management more thoroughly into the IRWM plan. While the region is primarily served by surface water supplies, groundwater will be an increasingly important supply in coming years.
- Add more detailed cost and financing information to project summaries as the project mature and more information becomes available.
- Consider adding the creation of a DMS to future updates.

## 4.2. Coordination with Water Agencies

Integrated Regional Water Management (IRWM) Plans must:

- Document the local water planning documents on which it is based including:
  - A list of local water plans used in the IRWM Plan.
  - Discussion of how the IRWM Plan relates to planning documents and programs established by local agencies.
  - A description of the dynamics between the IRWM Plan and local planning documents.

#### 4.2.1. Water Planning History

The first MAC integrated regional water management planning effort was completed in 2006. This initial effort was based on a cooperative endeavor between the "partnering agencies" which included Amador Water Agency, Calaveras County Water District, Amador County, City of Jackson, City of Sutter Creek, City of Plymouth, Amador Regional Sanitation Authority, and East Bay Municipal Utility District. These partnering agencies entered into a Memorandum of Understanding (MOU) in October 2006 for the purpose of funding the development of the first MAC Plan and coordinating water resources planning and implementation activities.

The first MAC Plan process included other entities and stakeholders with interests in regional water planning in addition to the partnering agencies. These stakeholders played an essential role in plan development by providing a variety of ideas, values, perspectives, and cultures that represented the diversity present within the region. These stakeholder participants included Calaveras County, Calaveras

Public Utilities District, Eastern San Joaquin Groundwater Banking Authority, City of Ione, Jackson Valley Irrigation District, City of Lodi, Pacific Gas and Electric Company, Protect Historic Amador Waterways, and the Upper Mokelumne River Watershed Council. These stakeholders participated and provided input through their attendance at stakeholder meetings, by direct correspondence, and via other communications.

The geographic boundary developed and used during this initial MAC regional planning process was broader than what is reflected in the current MAC region. The primary difference is that areas within Eastern San Joaquin County, which remain within the Northeastern San Joaquin County Groundwater Banking Authority's (GBA) IRWM region, have been removed from the MAC region. This area was initially included in both regions (thus constituting an overlap area) because of the interest of both regions in evaluating mutually-beneficial conjunctive use opportunities. Subsequent to the completion of the two regions' initial IRWM plans, it was decided that eliminating the overlap area, and thereby eliminating the associated governance complications, was a better approach. Thus, the decision to delete what is essentially a portion of the Lower Mokelumne River watershed from the MAC region was made in conjunction with the GBA region. The resulting change in the adjoining region's boundary was subsequently approved by DWR as part of the 2009 RAP process.

The cooperative planning that resulted in the MAC region's initial regional plan has not always been the norm. For many decades, the competing water needs of Amador and Calaveras counties and EBMUD presented obstacles to cooperative development of water resource solutions. These decades of rivalry and discord had rendered cooperative regional water planning an impossible challenge until recently. With the creation of the Upper Mokelumne River Watershed Authority (UMRWA) in 2000 and ongoing regional water resource planning venues promoted by the Integrated Regional Water Management Act and the Mokelumne River Forum, new opportunities to work together to develop solutions to today's water resource problems began to emerge. The boundary of the MAC region was configured in part to reflect this history, and in part to further opportunities for these historically competitive interests to work cooperatively to find mutually-acceptable water management solutions.

Several of the Authority's recent initiatives and accomplishments, briefly described below, are indicative of the local water planning conducted in the region, its ties to regional water resource planning and programs in the MAC Region, and interconnectivity with the IRWMP Update.

*Inter-regional Conjunctive Use Concept Evaluation* - The Authority's water agency members have been exploring potential inter-regional water resource project alternatives with their counterparts in northeastern San Joaquin County through the Mokelumne River Forum, a Department of Water Resources- (DWR-) facilitated process. Mokelumne River Forum stakeholder discussions have led to the identification of the Inter-regional Conjunctive Use Project (IRCUP) as a potential multi-region project involving water district members of both UMRWA and the San Joaquin Groundwater Banking Authority. UMRWA may have a coordinating role in evaluating the feasibility of this and other potential inter-regional projects.

*Upper Mokelumne River Watershed Assessment and Planning Project* - One of the Authority's milestone tasks, this \$1.3 million project was completed in December 2007. The project was undertaken to advance the understanding of watershed water quality and related environmental issues, and to develop tools which will facilitate the long-term evaluation and management of Upper Mokelumne River watershed water and natural resources. Funding for the project was provided by Authority member agencies (\$317,500) and by grants from Propositions 50 and 84 (\$950,000). Development of this comprehensive

watershed project was guided by a Project Advisory Committee (PAC), which included stakeholders representing a diverse set of watershed interests such as water, resource management, environmental resources, agriculture, timber, recreation and national forest lands. Baseline watershed water quality was characterized, providing a reference point for assessing water quality impacts associated with future changes in the watershed. Also, a physical hydrologic watershed model was developed using the Watershed Analysis and Risk Management Framework (WARMF) tool. The WARMF model was used to analyze the watershed's existing hydrologic and water quality characteristics as to simulate how water quality conditions could change based on changes to land uses and activities. Activities and reports prepared as part of this project included:

- *Wildfire Models* – Fire behavior was modeled throughout the watershed to gain a better understanding of high risk areas and potential impacts from wildfires. *FlamMap* was used to determine the relative hazard and flammability of selected watershed areas. This model allows prediction of fire behavior on a spatial basis by modeling flame length, heat release, rate of spread and type of fire (e.g. surface fire, crown fire). The *FARSITE* model was used to simulate potential fire behavior and predict where and how fast fire would spread from pre-selected burn ignition sites in the watershed. The fire behavior simulation outputs were used to develop three new categories of land use / land cover for the watershed based on burn severity: low, moderate and high. The spatial distribution of the burn severity categories for each selected ignition site was used as an input to the WARMF model to simulate potential effects on water resources resulting from wildfires in specific vulnerable areas of the watershed.
- *Water Quality Vulnerability Zones* – Areas within the watershed considered to have very high to moderate vulnerability to water quality contamination were identified based on key physical characteristics of the watershed including slope, soils, vegetation and proximity to water. A map was developed identifying watershed vulnerability zones.
- *Watershed Assessment* – The water quality in the Upper Mokelumne River watershed was assessed in a three-step process. Guided by the stakeholder PAC, water quality benchmarks were established, specific water quality parameters of concern were identified, and selected parameters exhibiting historical exceedences were analyzed to determine source locations and characteristics.
- *Upper Mokelumne River Watershed Management Plan* – A management plan was prepared, addressing the findings of the watershed assessment by coupling scientifically valid data and technically-based recommendations to maintain and improve source water quality with stakeholder understanding and support. The PAC-guided plan contains a series of recommended management actions designed to reduce sources of contaminants, manage contaminated flows and sediments, and encourage regulatory and institutional controls.
- *Water Conservation Plan: A Guide for Assisting Authority Members Prepare Water Agency Conservation Plans* – This plan was prepared to provide UMRWA member water agencies with guidance in establishing individual agency-specific water conservation plans and thus aid in their efforts to improve water conservation and water recycling. The plan is designed to serve as a resource document for water agency staff and it includes basic water conservation plan elements found throughout the water utility industry. It also includes recommended water conservation measures and programs which may be adapted to fit the specific needs of water agencies in the region.

#### 4.2.2. Local Water Planning Documents

The MAC IRWMP and this update were developed based on collaborative discussions regarding regional needs, proposed projects, and teaming for regional effectiveness. As various regional stakeholders shared

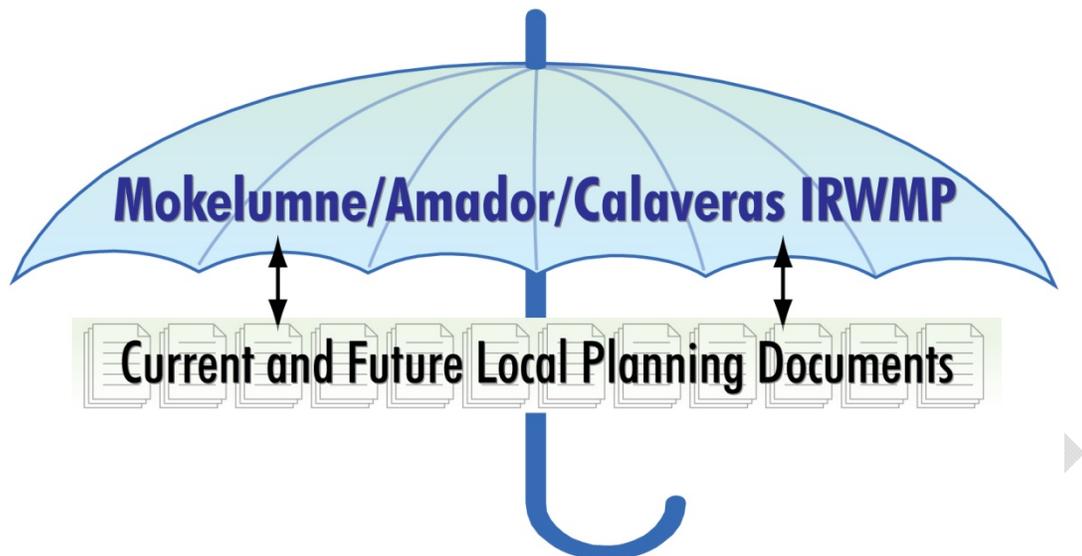
their needs and objectives, similarities and opportunities for collaboration were identified. The RPC began developing a regional plan to bring about integrated projects for the benefit of the region, building on these similarities and opportunities. During plan preparation and development, data and water management strategies were collected from a number of existing local and/or sub-regional planning documents, and were integrated into the regional strategies presented in this document. Examples of local planning documents reviewed during the IRWMP development and update include Urban Water Management Plans, Water Supply Master Plans, Capital Improvement Plans, Recycled Water Master Plans, project Environmental Impact Reports/Environmental Impact Statements, and grant applications for other state and federal programs. **Table 4-1** summarizes key planning reports used in the IRWMP preparation process and update.

**Table 4-1: Major Planning Reports Used to Create the M/A/C IRWMP**

Document Title/Description	Publication Date	Agency(ies)/ Entity(ies)	Relation to IRWMP
Camanche South and North Shore Water Treatment Plants Evaluation	May 2003	EBMUD	Directly related to the Camanche Area Regional Water Supply Project.
Camanche Water Treatment Plant Replacement Project Mitigated Negative Declaration	July 2011	EBMUD	Directly related to the Camanche Regional Water Supply Project.
Camanche Regional Water System Feasibility Study	October 1999	EBMUD	Directly related to the Camanche Area Regional Water Supply Project.
Cosumnes & Mokelumne Rivers Floodplain Integrated Resources Management Plan	January 2006	Southeast Sacramento County Agricultural Water Authority	For understanding of regional integrated planning for floodplain, riparian and riverine environments along the Cosumnes and Mokelumne Rivers.
County Water Master Plan	April 1995	CCWD	For general understanding of local water resources issues in Calaveras County.
Eldorado National Forest Land and Resource Management Plan, as amended		USFS	Directly related to management of forest and water resources within the Eldorado NF portion of the Upper Mokelumne.
Final EIR, Volume One: Updated Water Supply Master Program	September 1993	EBMUD	Discusses groundwater storage/conjunctive use as an alternative with groundwater storage to occur in the Lodi area.
Lower Mokelumne Watershed Stewardship Plan	May 2002	San Joaquin County Resource Conservation District	For general understanding of existing watershed studies and planning along the Mokelumne River.
Multi-Hazard Mitigation Plan	June 2006	Amador County	For general information regarding mitigation strategies for reducing potential losses resulting from fire, flood and other possible hazards. Directly relates to several projects.

<b>Document Title/Description</b>	<b>Publication Date</b>	<b>Agency(ies)/ Entity(ies)</b>	<b>Relation to IRWMP</b>
Preferred Alternative Report, Wastewater Improvement District #11 – Lake Camanche Village	July 2004	AWA, EBMUD	Directly relates to the Lake Camanche Wastewater Improvement Project.
Reconnaissance Study of Two Potential New Water Supply Sources	November 1995	Amador County	Directly related to the Bear River Reservoir Expansion Program.
Report to the Amador Local Agency Formation Commission, Amador County Municipal Services Review	August 2008	Amador County	A countywide water and wastewater municipal services review – a State-required comprehensive study of services within a designated geographic area.
Stanislaus National Forest Land and Resource Management Plan, as amended	April 2010	USFS	Directly related to management of forest and water resources within the Stanislaus NF portion of the Upper Mokelumne.
Upper Mokelumne River Watershed Assessment and Planning Project	November 2005	Upper Mokelumne River Watershed Authority	For general understanding of existing watershed studies and planning along the Mokelumne River.
Urban Water Management Plan	2011	AWA	For understanding of Amador-area urban water needs, management and planning objectives.
Urban Water Management Plan	June 2011	CCWD	For understanding of Calaveras-area urban water needs, management and planning objectives.
Urban Water Management Plan	June 2011	EBMUD	For understanding of EBMUD service-area urban water needs, management and planning objectives.
Various County General Plans	Various	Amador, Calaveras, San Joaquin and Alpine Counties, City of Ione, Jackson, Lodi, Plymouth, Sutter Creek and Amador City	For general understanding of local land use, environmental/water resources, economic, and administrative management issues.
Water and Wastewater Municipal Service Review for Calaveras Agency Formation Commission	April 2011	Calaveras County	A countywide water and wastewater municipal services review – a State-required comprehensive study of services within a designated geographic area.
Water Resources and Land Use Planning, Watershed-based Strategies for Amador and Calaveras Counties	December 2008	Amador and Calaveras Counties	For understanding relationship of water and land use planning.

The IRWMP will also be used as a source of information for other documents as well. It is intended to serve as an umbrella document, referencing and integrating many documents while also acting as a consolidated source of information. Figure 4-2 depicts this relationship. The MAC IRWMP is not intended to drive or direct other planning processes.



**Figure 4-2: Relationship between IRWMP and Local Planning Documents**

### 4.3. Impact and Benefit Analysis

Integrated Regional Water Management (IRWM) Plans must discuss potential impacts and benefits of Plan implementation.

The discussion must include impacts and benefits:

- within the IRWM Region
- between regions
- those directly affecting DAC, EJ related concerns and Native American tribal communities

The MAC IRWMP partners and stakeholders recognize the importance of pursuing and integrating multiple resource management strategies to achieve the greatest and most equitable benefit for the region. The MAC region stakeholders understand that implementing the MAC Plan Update will result in regional and localized benefits and potential impacts that must be addressed as part of the IRWM planning process for the Region. This section provides an overview of potential benefits and impacts from implementation of projects or programs included in the MAC Plan Update which implement the Plan. It should be noted that inclusion of a project in the IRWM Plan indicates that it passed the screening requirements outlined in Section 4.1, but does not necessarily reflect endorsement by the Regional Participants Committee (RPC). In addition, inclusion of a project in the IRWM Plan does not commit the Regional Water Management Group or RPC member(s) to implement the project. Implementation, if undertaken, is the

responsibility of the project proponent. Prior to implementation and/or construction of any project included in this Plan, individual environmental review, compliant with the California Environmental Quality Act (CEQA), the National Environmental Policy Act (NEPA), and any other local, state and/or federal requirements as applicable, will be completed by the project proponents.

The potential impacts and benefits that implementing the projects included in the MAC Plan Update could achieve are shown in Table 4-2, and are described in more detail in the following sections.

**Table 4-2: Potential Impacts and Benefits by Project Type**

Project Type	Within the MAC Region		Interregional	
	Potential Impacts	Potential Benefits	Potential Impacts	Potential Benefits
<b>Groundwater Projects</b>				
<b>Groundwater Supply Development</b>	Water quality degradation Reduced groundwater availability and reliability	Increased groundwater storage / recharge Improved water supply reliability Improved water quality Reduced land subsidence and/or fissuring Local prosperity	Water quality degradation Reduced groundwater availability and reliability	Increased groundwater storage / recharge Improved water supply reliability Improved water quality Local prosperity
<b>Conjunctive Use</b>	Water quality degradation Reduced groundwater availability and reliability	Increased groundwater storage / recharge Improved water supply reliability Improved water quality Reduced land subsidence and/or fissuring Improved water management coordination Local prosperity	Water quality degradation Reduced groundwater availability and reliability	Increased groundwater storage / recharge Improved water supply reliability Improved water quality Reduced land subsidence and/or fissuring Improved water management coordination Local prosperity
<b>Potable Water Supply Projects</b>				
<b>Conveyance Facilities</b>	Land use compatibility (rights-of-way) Disturbance of habitat and endangered species	Improved water supply reliability	None	None
<b>Storage Facilities or Storage Operations</b>	Land use compatibility (rights-of-way) Disturbance of habitat and endangered species	Improved water quality (through reduced groundwater pumping) Improved water supply reliability	None	Improved water quality (through reduced groundwater pumping)
<b>Treatment Facilities</b>	Energy consumption Land use compatibility (rights-of-way) Disturbance of habitat and endangered species	Improved water supply reliability Improved water quality Economic benefits	None	None
<b>Salinity Management</b>	None	Improved water quality Long-term sustainability of water supplies Local prosperity	None	Improved water quality Long-term sustainability of water supplies Local prosperity
<b>Conservation Projects</b>				
<b>Outreach and Education</b>	Reduced discharges to Mokelumne and Calaveras Rivers	Improved water supply reliability Public education and environmental awareness	Reduced discharges to Mokelumne and Calaveras Rivers	Improved water supply reliability Public education and environmental awareness
<b>Economic Incentives</b>	Reduced discharges to Mokelumne and Calaveras Rivers	Improved water supply reliability Avoided costs of imported water supply Avoided costs of water supply infrastructure Local prosperity	Reduced discharges to Mokelumne and Calaveras Rivers	Improved water supply reliability Avoided costs of imported water supply Avoided costs of water supply infrastructure Local prosperity
<b>Wastewater Projects</b>				
<b>Conveyance Facilities</b>	Land use compatibility (rights-of-way) Disturbance of habitat and endangered species	Improved water supply reliability	None	None
<b>Treatment Facilities</b>	Energy consumption Land use compatibility (rights-of-way) Disturbance of habitat and endangered species	Improved water supply reliability Improved water quality Avoided costs of imported water supply Local prosperity	None	Improved water quality
<b>Septic to Sewer Conversion</b>	Land use compatibility (rights-of-way) Disturbance of habitat and endangered species	Improved water quality Local prosperity	None	None
<b>Recycled Water Projects</b>				
<b>Conveyance Facilities</b>	Land use compatibility (rights-of-way) Disturbance of habitat and endangered	Improved water supply reliability Increased nutrient levels for landscape	None	Improved water supply reliability Potable water offsets

Project Type	Within the MAC Region		Interregional	
	Potential Impacts	Potential Benefits	Potential Impacts	Potential Benefits
<b>Treatment Facilities</b>	species Water quality degradation Land use compatibility (rights-of-way) Disturbance of habitat and endangered species	irrigation Potable water offsets Improved water supply reliability Potable water offsets Improved water quality Local prosperity	None	Improved water supply reliability Potable water offsets Improved water quality
<b>Salinity Management</b>	None	Improved water quality Improved water supply reliability Local prosperity	None	Improved water quality Improved water supply reliability Local prosperity
<b>Urban Runoff Management Projects</b>				
<b>Stormwater Capture and Reuse / Recharge</b>	Water quality degradation	Increased groundwater storage / recharge Improved water supply reliability Reduced land subsidence and/or fissuring Avoided costs of imported water supply Local prosperity	Water quality degradation	Increased groundwater storage / recharge Improved water supply reliability Avoided costs of imported water supply Local prosperity
<b>Diversion to Sewer</b>	Disturbance of habitat and endangered species	Improved water quality Flood control enhancement Increased recycled water	None	None
<b>Pollution Prevention</b>	None	Improved water quality	None	Improved water quality
<b>Flood Management Projects</b>				
<b>Storm Drains or Channels</b>	Land use compatibility (rights-of-way) Disturbance of habitat and endangered species Increased sedimentation and erosion Economic impacts	Flood control enhancement Increased groundwater storage / recharge Avoided costs of flood damage Local prosperity	None	None
<b>Ecosystem Restoration and Protection Projects</b>				
<b>Land Conservation</b>	Economic impacts	Improved water quality Flood control enhancement Habitat protection, restoration, and enhancement Open space preservation	None	None
<b>Invasive Species Removal</b>	Disturbance of habitat and endangered species Increased sedimentation and erosion	Improved water quality Flood control enhancement Habitat protection, restoration, and enhancement	None	None
<b>Restoration / Revegetation</b>	Disturbance of habitat and endangered species	Improved water quality Flood control enhancement Habitat protection, restoration and enhancement Reduced threat of wildfires	None	None
<b>Water-Based Recreation Projects</b>				
<b>Reservoir Recreation</b>	Water quality degradation	Enhanced recreation and public access Local prosperity	None	None
<b>Parks, Access and Trails</b>	Disturbance of habitat and endangered species Increased sedimentation and erosion	Enhanced recreation and public access Local prosperity	None	None

### 4.3.1. Plan Implementation Benefits and Impacts

#### *Regional Impacts and Benefits*

Implementation of MAC Plan Update will lead to numerous benefits including, at a minimum:

- **A more reliable and high quality water supply.** Additional water supplies and conjunctive use lead to enhanced water supply reliability and assist with the improvement of water quality. Water quality projects ensure that existing water quality is sustained and protected. Reliable and high quality water is directly linked to economic and environmental health and well-being.
- **Cost-effective and multi-beneficial projects.** Opportunities for multi-beneficial projects, which can achieve a multitude of goals and objectives for several stakeholders rather than a single entity, provide increased value to stakeholders and the communities they serve. Integrated planning and collaboration can lead to multi-benefit projects that achieve cost savings through cost-sharing opportunities, economies of scale, resource sharing, and other mechanisms. Existing resources can be optimized, duplication of efforts avoided, and larger scale efforts developed to provide cost savings to all involved.
- **Shared experience and resources.** The completion of the MAC Plan Update and implementation of the Plan facilitates knowledge sharing and equips agencies to overcome future challenges by coordinating resources, more effectively meeting the needs of the region as a whole. In addition to direct quantitative benefits of Plan implementation, such as new or more reliable water supplies, indirect benefits are expected to result from avoiding the negative impacts of not implementing the projects.
- **Increased regional understanding.** Agencies and stakeholders are working together as a cohesive group to solve water resource problems in a consensus-based approach, resulting in a deeper understanding of the effects of each individual project on other agencies and stakeholders. This deeper understanding, in turn, reduces interagency conflicts that may prevent projects from gaining the necessary support for successful implementation.
- **Improved local understanding of water resources issues.** Through consistent and coordinated public outreach and education programs, local understanding of regional water resources issues, conflicts, and solutions will improve. Maintaining a consistent message will improve public understanding of water resource management issues and encourage the acceptance and understanding of integrated projects.

Potential impacts of implementation of the MAC Plan could include a variety of temporary construction-related impacts during project construction, including dust, noise, and traffic generation. Other impacts may include increased costs associated with water infrastructure financing. Additional impacts may be identified on a project-by-project basis during CEQA or NEPA analyses.

#### *Interregional Benefits and Impacts*

Interregional projects such as the Mokelumne Water Interregional Sustainability Evaluation (WISE) Program stand to provide benefits that extend beyond regional boundaries. The projects included in this Plan Update benefit not only the local agencies and residents of the MAC region, but multiple watersheds (Mokelumne, Cosumnes, and Calaveras River watersheds), the Delta, the East Bay Municipal Utility District (EBMUD) service area, and members of the public throughout California. Specific ways in which the projects contained in the Plan Update provide benefits beyond the MAC region include the following:

- Reduced effluent discharges (and associated pollutant loadings) into the Mokelumne and Calaveras Rivers due to increased recycled water use upstream, promoting improved water quality both in the Mokelumne and Calaveras Rivers and downstream in the Delta.
- Improved regional water supply and reliability for the East Bay, Amador County, Calaveras County and San Joaquin County, achieved through several water storage projects, will reduce pressure on the Delta to serve the region in times of significant drought. Additional wastewater reuse projects will also reduce the demand for upstream potable water, potentially increasing downstream supplies.
- Conjunctive use projects will increase water supply reliability within the region and in San Joaquin County, resulting in increased surface water supply availability in dry years and reduced pressure on the San Joaquin River as a water supply.

Most likely, though project dependent, construction-related impacts would not impact other IRWM regions, as project and program facilities would be implemented within the MAC region with temporary and local impacts, if any.

The MAC Plan Update also has the potential to benefit resources beyond local and regional water resources. Improved surface water quality will benefit the local ecosystem. Enhanced tree cover, while viewed as a habitat enhancement, may also directly benefit regional air quality through the creation of microclimates and the filtering capacity provided by trees. By optimizing water supply operations and implementing conjunctive use, additional surface water supplies may be available for hydropower generation to benefit statewide energy resources.

#### *Benefits and Impacts to DACs, EJ-Related Concerns, and Native American Tribal Communities*

Protection of the people and economy of disadvantaged communities (DACs) and Native American tribal communities in the region, and correction of environmental justice concerns are priorities for the MAC Plan Update. Environmental justice is addressed by ensuring that all stakeholders have access to the MAC planning decision-making process and that minority and/or low-income populations, such as DACs and Native American tribal communities, do not bear disproportionately high and adverse human health or environmental impacts. Working on a regional basis aids in protecting the economy of the MAC region and minimizing direct monetary impacts felt by DACs and Native American tribes in the region through the stabilization of water and wastewater utility rates. Implementation of the region's flood control projects will protect the local cities from disastrous flood damage, as was experienced in the winter and spring of 2006. Regional coordination has been and will continue to be achieved through the noticing of public meetings, to be held as needed to address public and stakeholder concerns, conducting routine reviews to ensure that DACs are not being adversely affected by project and Plan implementation, and by using grant monies receive to help offset project implementation costs.

Similar to DACs, Native American Tribes in the MAC region are encouraged to participate. Focused outreach to Native American within the MAC Region was completed as part of the Plan update. There are three federally recognized tribes within the MAC Region including:

- The Ione Band of Miwok Indians
- The Jackson Rancheria Band of Miwok Indians
- The California Valley Mikwok Tribe, generally known as the "Sheep Ranch Tribe"

While there are no federally-recognized tribes, there are a number of state-recognized tribes in the region. Although none of the federally- or state-recognized tribes is actively engaged in the planning process, through the project review process UMRWA and the RPC have sought to minimize impacts to these

communities and provide for equitable benefits associated with project implementation. Impacts to DACs and Native American tribes will be kept to a minimum, and ongoing coordination and public involvement will aid in preventing possible impacts. Construction of project facilities will create short-term environmental impacts (noise, dust, traffic disruption) at neighboring communities. A preliminary analysis of the areas affected by construction of project facilities will ensure that these construction nuisance impacts will not be borne predominantly by any minority population or low-income group.

#### 4.3.2. Project / Program Impacts and Benefits

The potential benefits and impacts summarized in Table 4-2 are described in more detail in the following sections. Additionally, the projects included in the MAC Plan Update by project type are summarized in the table included in Appendix B. For each project, potential benefits and impacts are assumed to be similar to those identified for the specific project type.

##### *Benefits*

##### *Increased groundwater storage / recharge*

The Eastern San Joaquin subbasin, within the San Joaquin Valley Groundwater Basin, extends from the western corner of Calaveras County west of the cities of Stockton and Lodi. Use of groundwater for irrigation and municipal purposes has resulted in a continuous decline of available groundwater over the past 40 years. As of 1990, annual groundwater extractions in San Joaquin County had exceeded the estimated safe yield. Overdraft of the groundwater in this subbasin has created groundwater depressions in areas near Stockton and east of Lodi. Groundwater recharge could help improve the state of the subbasin. Groundwater improvement programs may include projects to:

- Enhance conjunctive management and groundwater storage
- Aquifer storage and recovery
- Stormwater capture and recharge
- Construction of new and/or rehabilitation of spreading grounds/recharge basins
- Improvement to groundwater monitoring
- Hydrogeologic investigations and groundwater modeling

##### *Improved water supply reliability*

Improving water supply reliability in the MAC Region is Policy 2, developed as part of the Regional Goals and Objectives. Projects that diversify the Region's water supply portfolio, create new supplies, improve efficiencies of existing supplies, or offset potable water supplies will improve the MAC region's water supply reliability. Projects that would achieve this benefit include:

- Water use efficiency and water conservation projects
- New water supply pipelines and/or rehabilitation/repair projects
- Water system tie-ins, interconnections, and diversion structures
- Water transfer projects
- Groundwater extraction and/or treatment projects
- Water storage and treatment projects
- Upgrading wastewater treatment facilities to produce recycled water
- Water quality protection projects

##### *Improved water quality*

Policy 1, as described in Section 3, Policies, Goals, Objectives, and Strategies, is to Maintain and Improve Water Quality. Different types of projects contribute to different types of water quality improvements. For example, groundwater recharge projects can improve groundwater quality in the overdrafted Eastern San Joaquin groundwater subbasin, while treatment improvement projects will improve potable water quality. Projects that improve water quality include, but are not limited to:

- Stormwater projects (e.g. stormwater capture and recharge or stormwater management to reduce volume of urban runoff discharged to surface waters)
- Upgrading wastewater treatment plants
- Groundwater monitoring and assessment
- Conversion of septic systems to municipal sewers
- Conjunctive management and groundwater storage
- Sewer collection improvements
- Water treatment projects
- Ecosystem restoration and revegetation projects
- Land conservation
- Salinity management

#### Reduced land subsidence and/or fissuring

Land subsidence occurs when groundwater is excessively pumped from a groundwater basin; the clay layers in the aquifer settle and the ground surface in the area lowers, eventually creating a cone of depression. Projects that will reduce groundwater pumping or increase groundwater recharge will help reduce land subsidence and fissuring. These projects include:

- Enhance conjunctive management and groundwater storage
- Stormwater capture and recharge
- Construction of new and/or rehabilitation of spreading grounds/recharge basins
- Improvement to groundwater monitoring
- Hydrogeologic investigations and groundwater modeling

#### Local prosperity

Local prosperity can be achieved by:

- Avoiding costs of imported water supply by increasing the use of recycled water, creating new water supply sources within the region, or capturing and reusing stormwater.
- Avoiding costs of water supply infrastructure with the implementation of water conservation and water use efficiency projects.
- Avoiding flood damage costs.
- Avoiding impacts to the economy (e.g. businesses and agriculture) associated with water supply interruption.
- Increased tourism with enhanced recreational opportunities and improved water quality.
- Benefits to the regional economy associated with constructing and maintaining proposed IRWM projects.

Additionally, as previously stated, working on a regional basis aids in protecting the economy of the MAC region and minimizing direct monetary impacts felt by DACs in the region through the stabilization of water and wastewater utility rates. IRWM planning and collaboration can lead to multi-benefit projects that achieve cost savings through cost-sharing opportunities, economies of scale, resource sharing, and

other mechanisms. Existing resources can be optimized, duplication of efforts avoided, and larger scale efforts developed to provide cost savings to all involved.

#### Long-term sustainability of water supplies

Some groundwater basins throughout California contain salts and nutrient levels exceeding water quality objectives established in Water Quality Control Plans (Basin Plans). The high salt and nutrients concentrations could be from natural conditions and irrigation with surface water, groundwater, and recycled water. Salinity management is key in contributing to the long-term sustainability of groundwater supplies. Groundwater quality varies throughout the MAC region with overdraft in portions of the Eastern San Joaquin or Cosumnes Groundwater Subbasins. As new water supplies are developed, recycled water use increases, and groundwater recharge projects are implemented, the importance of salinity management will increase.

#### Public education and environmental awareness

Many water conservation, water quality protection, and water supply projects include public education and environmental awareness components, creating multi-benefit projects or programs. Public outreach programs and components can help promote and increase water conservation, educate about forest stewardship which can improve water resources, discourage illegal dumping of trash and litter in watercourses, and encourage appropriate water management practices including appropriate collection and disposal of hazardous liquid wastes and pharmaceuticals.

#### Increased nutrient levels for landscape irrigation

Depending on the nutrients supplied by the recycled water available, increasing the use of recycled water for landscape irrigation through construction of additional conveyance facilities could significantly reduce the amount of fertilizer required for the areas irrigated.

#### Potable water offsets

The benefits of potable water offsets will be achieved by stormwater and recycled water projects. As new non-potable water supplies are identified and the use for irrigation or other beneficial uses are implemented, surface water and groundwater in the MAC region will be freed up for other uses. The Eastern San Joaquin subbasin can be replenished as groundwater pumping is reduced and flows in the Mokelumne River and other surface water bodies in the watershed can increase as diversions are reduced. Potable water offsets are also tied to improved water supply reliability and diversification of the region's water supply portfolio. Projects that would provide potable water offsets include:

- Recycled water treatment and conveyance projects.
- Stormwater capture and reuse/recharge.
- Conversion of septic systems to centralized sewer collection systems to increase the amount of recycled water available.

#### Flood control enhancement

Flooding is a concern for many areas within the MAC IRWM planning region. Many cities and communities are included in 100-year floodplains (of both the Mokelumne River and its tributaries), including Sutter Creek, Jackson, Ione, and Mokelumne Hill. In some cases, like in the City of Plymouth, flooding is due to an inadequate storm drainage system, unable to handle heavy storms during winter and spring seasons. The Calaveras County General Plan discusses three basic types of potential flood hazards: stream-side overbank flows, areas of flat terrain with slow surface drainage, and inundation due to structural dam failure. Flooding can occur from heavy rainfall, rapid snow melt, saturated soils, or a

combination of these conditions. Also, increasing development leads to an increase in impervious surface areas and a decrease in natural vegetative cover, which reduces the detention and attenuation characteristics of the overland areas. To reduce potential property and structure damage, and economic impacts, flood control enhancement may be provided by projects that:

- Capture and divert stormwater.
- Improve levee systems (e.g. floodwalls or setback levees).
- Install pervious pavement.
- Protection and manage floodplains.
- Construct regional flood control infrastructure.

#### Increased recycled water

By centralizing sewer collection systems in areas that may still be on septic, a greater volume of wastewater will be treated at the wastewater treatment facilities, creating more recycled water for beneficial uses. Increasing the amount of recycled water available for landscape, golf course, and school irrigation, industrial uses, and other uses, will lead to other benefits such as potable water offsets and increased nutrient levels for landscape, previously discussed.

#### Habitat protection, restoration, and enhancement

Projects that contribute to habitat protection and restoration have the ability to enhance the MAC Region's ecosystems and protect threatened, endangered, and sensitive species. The following types of projects would provide this benefit:

- Land conservation.
- Water quality protection projects that would result in surface water quality improvement.
- Invasive species removal.
- Restoration and enhancement of special aquatic features (e.g. wetlands, springs, bogs).
- Stormwater management and pollution prevention.
- Debris cleanup and habitat restoration.
- Meadow restoration.
- Forest fuels reduction.
- Road management activities to reduce runoff to streams.

#### Reduced threat of wildfire

Wildfires threaten property, lives, and ecosystems, and can adversely impact flood management and erosion. Ecosystem Restoration and Protection activities such as forest restoration can help reduce the threat of wildfire. There is already evidence that wildfires are becoming more frequent, longer, and more widespread, and they are expected to increase in frequency and severity due to climate change (CDM, 2011).

#### Open space preservation

Open space preservation is a benefit that can be achieved through implementation of land conservation projects. Preserving open space contributes to other benefits such as environmental and recreational benefits, as well as stormwater control, reduced runoff, and flood management benefits.

### Enhanced recreation and public access

Reservoirs, parks, and the wilderness within the MAC Region are used by outdoor recreation enthusiasts throughout the year. Enhancing recreation and public access in the region will be achieved by projects that:

- Conserve and preserve open space and access to public land.
- Remove and control invasive species.
- Improve water quality.
- Provide appropriate sanitation facilities at recreation sites.
- Road management activities to reduce runoff to streams.
- Improve opportunities for public outreach and environmental education.

### Impacts

Implementation of the projects described in this plan may also have quantitative and/or qualitative impacts if the MAC Plan Update and/or its component projects are not managed or implemented properly.

These impacts may include increased project costs to agencies and ratepayers, delayed construction and/or operation of planned facilities leading to delayed water supply and other benefits, negative impacts to surface water and/or groundwater quality, and more limited operational flexibility, especially in times of drought, leading to increased water rationing and associated pressure on water users and the environment.

Project-specific environmental compliance processes will be completed by project proponents prior to project implementation. These processes will determine the significance of project-related impacts. Each project will comply with the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA), if applicable prior to and throughout implementation.

Negative impacts that could be associated with the implementation of projects and programs included in the MAC Plan Update are similar to those of other water infrastructure projects. In general, temporary, site-specific impacts related to construction and potential long-term impacts associated with project operation are anticipated. Short-term, site-specific construction impacts from implementing physical project facilities may include increased traffic and/or congestion; noise; and impacts to public services, utilities, and aesthetics. Other potential, longer-term impacts are described in more detail below.

### Water quality degradation

Groundwater-related projects, such as projects that increase groundwater pumping or implement conjunctive use, could degrade water quality if not operated appropriately for the groundwater basin and conditions. In addition, projects that involve the implementation of potentially contaminating activities in groundwater recharge areas could result in negative impacts to groundwater quality. Surface water quality could similarly be impacted by projects that encourage recreation and / or intensive development have the potential to increase loading of nutrients, bacteria, and other contaminants to adjacent surface water bodies, negatively impacting water quality for water supply and environmental needs.

Recreation-related projects also have the potential to increase erosion and sedimentation. Increased motor vehicle traffic and foot traffic can increase erosion and sedimentation to adjacent water bodies, negatively affecting water quality for water supply and the environment/habitat purposes. Water quality issues associated with increased erosion and sedimentation can be detrimental to aquatic communities.

Additionally, storm drains and channel modifications that are implemented to manage flood flows can contribute to erosion and sedimentation. Projects that allow use of motorized watercraft may introduce organic contaminants to waterbodies.

#### Reduced groundwater availability and reliability

There are groundwater quality issues in many areas within the Eastern San Joaquin groundwater subbasin, as well as the Cosumnes subbasin. Projects that impact water quality and/or yield could reduce overall groundwater availability and water supply reliability to users depending on the source. Increased groundwater pumping in the Eastern San Joaquin subbasin would contribute to existing overdraft conditions, potentially degrading water quality and further decreasing overall reliability.

#### Land use compatibility (rights-of-way)

A potential impact of any project that includes construction of physical facilities is land use compatibility. The types of projects that could potentially have land use compatibility, or rights-of-way issues, include:

- Water conveyance facilities
- Storage tanks or reservoirs
- Treatment plants
- Wastewater collection
- Recycled water distribution facilities

Construction of new facilities outside of disturbed areas such as roads could result in disturbance of otherwise undisturbed areas and may result in loss of open space and habitat.

#### Disturbance of habitat and endangered species

The MAC Region is a largely natural area with significant portions designated as rural or open space, including large portions of the Stanislaus and El Dorado National Forests. The region provides habitat for numerous species, including special-status species (i.e. endangered, threatened, sensitive, or candidate). Projects that involve facility construction have the ability to disturb surrounding habitat and endangered species, depending on the location, type of construction, and facilities. All projects implemented will comply with CEQA and NEPA, as applicable, and as part of the process, will identify and implement mitigation measures for potential environmental impacts as necessary.

#### Energy consumption

The water sector plays a significant role in California's energy consumption. Implementing certain projects may increase energy use. Water and wastewater treatment projects that require significant amounts of power may result in increased energy consumption in the region. Increased energy consumption can increase greenhouse gas emissions, further exacerbating projected climate change impacts.

#### Reduced discharges to Mokelumne and Calaveras Rivers

Agricultural and urban water use efficiency projects (i.e. water conservation) could reduce the quantity of water discharged to the Mokelumne and Calaveras rivers, effectively reducing streamflows and impacting aquatic habitat.

#### Economic impacts

Implementation of certain projects may have associated long-term economic impacts to agencies and ratepayers. Project financing has historically provided a challenge in the MAC Region. Even when grants and / or low-interest loans are available to subsidize project capital costs, agency rate revenues are sometimes insufficient to properly operate and maintain the project. . Because funds available to

implementing agencies are generally limited it will be important to evaluate financing methods and avenues for potential projects prior to implementation such that potential economic impacts on ratepayers and agencies in the Region can be minimized.

## 4.4. Financing Plan

The Integrated Regional Water Management (IRWM) Plan must plan for implementation and financing of identified projects and programs including potential financing for implementation. The financing discussion must include:

- List of possible funding sources for continued development of the IRWM Plan
- List of funding mechanisms for the projects and programs in the Plan
- Explanation of the certainty and longevity of funding for the Plan and projects/programs in the Plan.
- Explanation of how O&M costs for projects that implement the Plan would be covered and the certainty of the funding

Given the low density development in the MAC region, project financing has always proven to be a major obstacle, often preventing projects from proceeding to implementation. Demands on agencies' and cities' limited funds continue to increase, construction costs continue to rise, existing aging infrastructure requires upgrades to meet growing demands, and future state legislation threatens to shift substantial property tax revenues away from special districts to the state general fund. In this economic climate, agencies are challenged to balance costs associated with supply water for new growth while ensuring the highest standards of water quality and supply reliability for existing customers, protect and enhance the sensitive ecosystems within the region, and minimize costs incurred by end-users. Further, projects that benefit the environment but do not provide new water or a measurable improvement to water supply reliability and/or water quality are wholly dependent upon public assistance for implementation.

### 4.4.1. Funding Sources and Mechanisms for Planning and Implementation

MAC IRWM regional stakeholders recognize the importance of maintaining the highest standards of cost-effectiveness for the development of the MAC Plan, as well as projects and programs considered for implementation. Regional stakeholders are concerned about protecting ratepayers from increasing water and wastewater rates. Agencies within the region have explored a variety of potential funding vehicles including the State Revolving Fund, Proposition 50, 84, and 1E, Hazard Mitigation Grant Program, and other State and Federal grant and loan programs, in addition to the sale of municipal bonds, land assessment, water rates, and other municipal revenue sources. The development of this MAC Plan Update is being funded by Prop 84, Round 1 planning grant monies. Additionally, UMRWA member agency staff contribute time and resources to completing the Plan Update, coordinating and participating on the Regional Participants Committee, and organizing stakeholder outreach efforts. The MAC region is committed to developing a useful and implementable IRWM Plan, which includes updating the Plan in the future to help ensure the Plan responds appropriately to current day conditions and issues.

Estimated costs for each IRWM plan project are shown in Appendix B, along with potential funding sources (exclusive of additional local, state or federal grant monies). It should be recognized that each

implementing organization has a unique set of revenue and financing methods and sources. This IRMWP does not provide an exhaustive list of funding sources available. Many of the same funding sources and/or mechanisms would be used for continued development of the IRWM Plan and for project / program implementation. The various potential funding sources for both updating the IRWM Plan and implementing projects are listed in Table 4-3. The funding mechanisms are further described in the following sections.

**Table 4-3: Funding Sources for Development of the IRWM Plan and Implementation of Projects**

<b>Funding Mechanisms</b>	<b>Continued Development of the IRWM Plan</b>	<b>Project / Program Implementation</b>	<b>Certainty &amp; Longevity of Funding</b>
Capacity Fees		✓	Dependent upon rate structure adopted by project proponents
User Fees		✓	Dependent upon rate structure adopted by project proponents
User Rates / Recovery		✓	Dependent upon rate structure adopted by project proponents
General or Capital Improvement Funds	✓	✓	Dependent upon budgets adopted by project proponents and participating agencies
Bonded Debt Service		✓	Dependent upon debt carried by project proponents & bond market
Local, State, or Federal Grant Programs	✓	✓	Dependent upon future local, state, and federal budgets, and success in application process
<b>Low-interest Loan Programs</b>		✓	Dependent upon future local, state, and federal budgets, and success in application process

### *Capacity Fees*

Capacity fees are used by water agencies almost universally as a measure to achieve and maintain equity among its past, present and future customers. For a growing water agency, capacity fees can represent more than half of the total revenue in any given year, and as such are very important to existing as well as future customers. Capacity fees are typically charged per connection, measured in equivalent dwelling units (“EDUs”). A single connection may encompass more than one EDU. In addition to the connection fee aspect of capacity fees, water agencies may also assess other fees, e.g., Commercial Acreage Fee (per acre) and Other Service Fee (per acre).

In some cases, if a developer builds a water pipeline or large water facility required by a water agency as a condition of development, then as partial or full payment for the water facility, a water agency may give fee credits to the developer in lieu of the developer paying fees. If the value of the water facility exceeds

the amount of credits, a reimbursement agreement is typically executed authorizing payment to the developer of the remaining amount owed over a period of time which does not typically exceed a defined time period.

#### *User Fees*

Monthly user fees are assessed by some water agencies where an argument can be made that new facilities directly benefit existing customers. This is especially true for water agencies that are developing conjunctive use water systems where the existing customers may have paid for the groundwater component when they paid the development fee (through the purchase of the home). The surface water and/or recycled water component is a new water supply for a water agency that is needed for conjunctive use with groundwater supplies. In many cases, income from this monthly revenue source is used to pay debt service on debt financed assets.

#### *User Rates/Rate Recovery*

User rates or rate recovery pays for the operations and maintenance of a water agency or public utility's system. Within a water agency user rate, there is a fixed cost component that covers costs that do not vary with the amount of supplied water, such as labor and overhead expenses, and a variable cost component that covers costs that are based on the amount of pumping and applied chemicals to meet the water demands of the customers and vary with the amount of supplied water, such as the electrical and chemical costs. A water agency customer pays a monthly fixed rate and a variable rate based on the metered usage. In cases in which billing is not based on a metered usage, a single monthly rate is assessed that combines the average of the fixed and variable rates.

#### *General or Capital Improvement Funds*

General or capital improvement funds are monies that an agency sets aside to fund general operations and/or facility improvements, upgrades and, sometimes, development. These funds are usually part of their overall revenue stream and may or may not be project-specific.

#### *Bonded Debt Service (Revenue Bonds)*

In cases in which a large facility is needed to support current services and future growth, revenue bonds are issued to pay for new capital. In this way, a large facility can be paid for by bonded debt service at the time of construction with repayment of the debt service over a 20- to 30-year timeframe. This is a preferred approach to paying for high cost facilities because it avoids the perceived over-collection of fees from past customers that go toward facilities that serve present and future customers. The downside to bonded debt is that it cannot be accomplished with capacity fees alone due to the variability and uncertainty of new development over time. A user rate is needed as a bond document covenant in the event that development fees are not adequate to make the required annual payment for the debt service.

#### *Local, State, and Federal Grant Programs*

Grant programs at either the local, state, or federal level are periodically available to the region. In the past, UMRWA has applied for and received planning grant funding through the Department of Water Resources (DWR) IRWM grant program. This 2011/2012 MAC Plan Update is being funded by Prop 84, Round 1 planning monies. Additionally, UMRWA and members of the MAC Regional Participants Committee (RPC) have applied for and obtained state and federal funding for studies and projects benefiting the region. These monies typically require that local matching funds be available. The matching requirement shows a local commitment to promoting and completing the study or project. A grant is typically administered and contracted by a single agency within the region that works directly with the state or federal granting agency. Grants typically carry relatively high administration cost

because extensive grant reporting may be required, and typically only a small portion of the grant may be used to cover grant administration.

In the past, the region has actively sought external funds for development of the MAC IRWMP and implementation of regional projects and programs. Examples of past sources of funding include:

- Federal Funding (Corps, Reclamation, FEMA)
- State Funding (Proposition 13, CALFED, Proposition 50, Proposition 84)
- Local Funding (impact fees, user rates, tax assessments)

These efforts are expected to continue to fund implementation of the projects and programs developed in the MAC Plan Update.

#### *Low-interest Loan Programs*

Several funding agencies provide low-interest loans for implementation of water resource-related projects. Low-interest loans can save the implementing agency significant amounts of money by reducing interest payments as compared with traditional bonds. SWRCB offers low-interest loans for wastewater and recycled water projects through its Clean Water State Revolving Fund (SRF) loan program, the Department of Public Health (DPH) administers a similar SRF loan program for drinking water-related projects, and the California Infrastructure and Economic Development Bank (I-Bank) administers the Infrastructure SRF loan program for financing implementation projects such as sewage collection and treatment, water treatment and distribution, and water supply projects.

The Clean Water SRF program generally has approximately \$200 to \$300 million available in loans each year to help cities, towns, districts, Native American tribal governments, and any designated and approved management agency under Section 208 of the Clean Water Act to construct publicly-owned facilities including wastewater treatment, local sewers, water reclamation facilities, nonpoint source projects, and development and implementation of estuary comprehensive conservation and management plans. The interest rate is half of the most recent General Obligation (GO) Bond Rate at the time of the funding commitment. Over the last five years, the Clean Water SRF loan interest rate has ranged from 1.8% to 3.0%. Amounts available through the DPH Safe Drinking Water SRF loan program vary, but approximately \$100 to \$200 million is available annually.

Available loan funding is dependent upon federal appropriations to each program. In the past, DWR has also offered low-interest loans for construction and feasibility studies for new local water supplies to local public agencies. The funding source, Proposition 82, has been exhausted for these loans, therefore, they are no longer available.

It is possible that low-interest loans may be available to fund projects and programs included in the MAC Plan Update.

#### 4.4.2. Support and Financing for Operation and Maintenance of Implemented Projects

Ongoing support and financing of the operation and maintenance (O&M) of projects in this Plan Update are expected to derive from many of the same sources that were identified to fund project implementation. Support and financing will likely come primarily from local sources, including user rates, fees and assessments. Since regional projects and programs often involve multiple partner agencies, the range of local sources available is broadened. The details of financing these larger, multi-

partner projects are typically worked out on a project-by-project basis. Large multi-purpose projects typically adhere to standard cost accounting and cost of service principles which are typically described and codified in the agreements for ownership, and operation and maintenance of facilities is typically developed as part of a project financing package.

O&M costs of proposed implementation projects must be evaluated as the overall viability of a particular project effort is determined. Any project that is advanced for implementation consideration must include an analysis to determine ability to operate and maintain the project and project benefits. The annual fiscal impact on user rates, and the willingness of ratepayers to accept any increased cost of service as may be required for project implementation, must be included in this analysis. The need for water and the economic hardship impacts that would occur, should the new source not be available, may also be considered as part of the analysis. Any benefits derived from replacing and/or updating existing systems can also be considered.

For non-water supply projects, alternate criteria must be considered in evaluating the region's ability to provide ongoing support. For example:

- Recycled water production costs, using strict cost-of-service principles, can be considerable (including O&M costs). Cost recovery is primarily a function of an agency's ability to charge user fees for the recycled water use and the degree of treatment required for a particular application. The benefits to customers (i.e., large water users) are often factored into the water costs.
- Watershed improvement projects are designed to minimize the need for ongoing operation and maintenance expenses. Costs associated with monitoring and/or staff support to track and implement projects and studies can potentially be covered through membership contributions, grants, or by other non-profit funding vehicles not necessarily available to governmental agencies.
- Projects focused on providing water quality benefits must be designed to employ a process that allows for low-cost operation and maintenance. For example, debris build-up (and hence the need for its removal) must be a consideration in the system design.

To improve the MAC region's ability to provide ongoing support to priority projects, agencies and stakeholders in the region should work together to minimize associated O&M costs and gain savings from economies of scale.

# Appendix A- PROJECT SUMMARY AND EVALUATION

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Insert project summary table including all projects and brief abstracts. Also insert all project evaluation spreadsheets as shown in Excel

# Appendix B - PROJECT TYPE AND FINANCING SUMMARY

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**Appendix B Project Summary**

<b>Project Proponent</b>	<b>Project Name</b>	<b>Project Type</b>	<b>Capital Cost</b>	<b>Annual O&amp;M Cost</b>	<b>Primary Funding Source(s) for Capital Cost <sup>1</sup></b>	<b>Primary Funding Source(s) for O&amp;M Costs <sup>1</sup></b>
AWA	CAWP & AWS Intertie	Potable Water Supply Project – Conveyance Facilities	\$5,400,000	TBD	TBD	TBD
AWA	CAWP Gravity Supply Line	Potable Water Supply Project – Conveyance Facilities	\$13,500,000	\$5,700	PG&E, USDA Rural Services	Rates
AWA	Treated Water to Residents Using Untreated Water	Potable Water Supply Project – Conveyance Facilities	\$3,870,087	\$3,060	State Revolving Fund	Rates
AWA	Lake Camanche Wastewater Improvement Program	Wastewater Project – Conveyance and Treatment Facilities	\$14,000,000	TBD	SWRCB- Small County Wastewater Grant Program, State Revolving Fund and Rate/Fees	Rates
AWA	Small Diameter Pipeline Raw Water Canal to Pipe Conversion Project	Potable Water Supply Project – Conveyance Facilities	\$3,500,000	TBD	TBD	TBD
AWA	AWS Regional Water Treatment Plant	Potable Water Supply Project – Treatment Facilities	\$20,000,000	TBD	TBD	TBD
AWA	Lower Amador Canal Project	Potable Water Supply Project – Conveyance Facilities	\$1,500,000	TBD	Rates, Private Developers, Utility Cooperation, State, Federal and Grants	Rates
AWA	Backwash Water Reuse Project	Recycled Water Project – Conveyance Facilities		TBD	Buckhorn-rate recovery, City of Lone-local developer and AWA, Tanner-rate recovery.	Rates
AWA	CAWP Fire Storage	Potable Water Project – Conveyance and Storage Facilities	\$5,000,000	TBD	TBD	TBD
AWA	Highway 88 Corridor Wastewater Treatment, Transportation, Disposal	Wastewater Project – Septic to Sewer	\$10,000,000	TBD	TBD	TBD
AWA	Regional Wastewater Project	Wastewater Project – Treatment Facilities	\$20,000,000	TBD	TBD	TBD
AWA	New York Ranch Reservoir Conservation and Management	Ecosystem Restoration and Protection Project – Land Conservation	\$600,000	TBD	TBD	TBD
AWA	AWA Low Pressure Flow Improvements	Potable Water Supply Project – Conveyance Facilities	\$500,000	TBD	TBD	TBD
AWA	Lake Camanche Water Storage Tank & Transmission Main	Potable Water Supply Project – Conveyance and Storage Facilities	\$41,000,000	TBD	Rates, Private Developers, Utility Cooperation, State, Federal and Grants	Rates
AWA	Lake Camanche Water Service Replacement-Phase II	Potable Water Supply Project – Conveyance Facilities	\$1,200,000	TBD	Rates, Private Developers, Utility Cooperation, State, Federal and Grants	Rates
AWA	Wildwood Leachfield Replacement	Wastewater Project – Treatment	\$2,200,000	TBD	Rates, Private Developers, Utility Cooperation, State, Federal and Grants	Rates
AWA	Bear River Reservoir Expansion Project	Potable Water Supply Project – Storage Facilities	\$50,000,000	TBD	Rates, Private Developers, Utility Cooperation, State, Federal and Grants	Rates
UMRWA	Septic System Management Program	Wastewater Project – Treatment and Conveyance Facilities	\$260,000	\$0	Grants	Not applicable
CCWD	Leak Testing and Repair Program	Potable Water Supply Project – Conveyance and Storage Facilities	\$0	\$250,000	Grant Funds	Rates

CCWD	New Hogan Reservoir Pumping Project	Potable Water Supply Project – Conveyance Facilities and Storage Operations	\$22,000	TBD	TBD	TBD
CCWD	New Hogan Phase II Water Distribution Loop Project	Potable Water Supply Project – Conveyance Facilities	\$3,000,000	TBD	TBD	TBD
CCWD	Sheep Ranch WTP Compliance Project	Potable Water Supply Project – Treatment Facilities	\$200,000	TBD	Grant Funding	Rates
AWA-CCWD-EBMUD	Camanche Area Regional Water Supply Project	Potable Water Supply Project – Treatment and Conveyance Facilities	\$0	TBD	Agency funding, loans, grants, user connection fees	Not applicable
CCWD	West Point WTP Drinking Water Compliance Project	Potable Water Supply Project – Treatment Facilities	\$600,000	TBD	State and Federal grants	Rates
Foothill Conservancy	East Panther Creek Restoration Project	Ecosystem Restoration and Protection Project – Restoration	\$200,000	TBD	CA Dept of Fish and Game, PG&E FERC project environmental enhancement funds	Rates
Foothill Conservancy	Restoring the Upper Mokelumne's Anadromous Fish	Ecosystem Restoration and Protection Project – Restoration	\$1,000,000	\$50,000	IRWM funding, EPA grants, foundation grants, Nat'l Fish & Wildlife Foundation, Ecosystems Services programs, EBMUD, volunteer labor	Rates
Foothill Conservancy	Amador Household Water Efficiency Project	Conservation - Economic Incentives and Outreach and Education	\$692,000	\$35,000	IRWM funding, EPA grants, foundation grants	Rates
Stanislaus National Forest, Calaveras Ranger District	Hemlock Landscape Restoration	Ecosystem Restoration and Protection Project – Restoration	\$0	TBD	Grants, Cornerstone, and/or Forest Service Appropriated	Not applicable
City of Jackson	City of Jackson Wastewater Treatment and Disposal Project	Wastewater Project – Treatment	\$5,747,000	TBD	SWRCB, USDA- Rural Development	Rates
Calaveras County Administrative Office	Ponderosa Way Restoration Project	Ecosystem Restoration and Protection Project – Restoration	\$223,000	\$2,000	Calaveras County, BLM, Cal Fire, CalTrans, PG&E FERC project env. Enhancement funds, Dept. of Boating and Waterways	Rates
AWA	Ione Clearwell Cover Replacement	Potable Water Project - Storage Facilities	\$71,376	TBD	Rates, low-interest loans or grants	Rates
AWA	CAWP Tanks Replacement Project	Potable Water Project - Storage Facilities	\$305,000	TBD	TBD	TBD
AWA	Camanche Wastewater System Improvements	Wastewater Project - Conveyance Facilities	\$720,243	TBD	TBD	TBD
AWA	CAWP Retail Distribution Domestic and Fire Protection Improvements	Potable Water Supply Project - Storage and Conveyance Facilities	\$2,633,861	TBD	Grants, Loans, Participation Fees and rates	Rates
AWA	CAWP Disinfection By-Product Reduction Project	Potable Water Supply Project – Treatment Facilities	\$500,000	TBD	TBD	TBD

1. The percent of total cost to be paid by each funding source will be added as information becomes available, and the longevity and certainty of project-specific funding sources will be assessed moving forward and prior to project implementation. This information is provided at a programmatic level in Table 4-3.