Chapter 6 The Projects

This chapter discusses:

- The process used to solicit projects for the IRWM Plan;
- How the projects were reviewed for consistency with IRWMP objectives;
- How the projects were evaluated with respects to integration; and
- How the projects were prioritized.

The results of these activities are included in Appendices I through P of this plan.

Finally, this chapter also includes the potential impact and benefits of implementing this IRWMP and the projects identified within it.

6.1 **Project Solicitation**

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 described in sufficient detail to identify the need being met, infrastructure to be constructed and operated, tasks to be implemented, and the impacts and benefits of the project. However, the projects can be in any stage of development, from conceptual to final design. There are many benefits to submitting a project for inclusion in the IRWMP, including raising local awareness of the potential project and its associated benefits, identification of potential project improvements and/or integration, and positioning the project for potential State funding.

In order to facilitate project solicitation, a project information form, reviewed and approved by the Steering Committee (SC) and Public Advisory Committee (PAC), was prepared (see Appendix I for a copy of the form). Additionally, the OPTI system for online project submittal and management was developed and posted on IRWMP website. The OPTI system allows project information to be submitted, reviewed, organized, and regularly updated electronically by the ESRWMP and project The IRWMP must contain a process or processes to select projects for inclusion in the IRWM Plan. The selection process must include the following components:

Procedures for submitting a project to the RWMG.

Procedures for review of projects considered for inclusion in to the IRWMP. These procedures must, at a minimum, consider the following factors:

- Plan objectives
- o RMS
- Technical feasibility
- DACs & EJ considerations
- Project cost/financing
- Economic feasibility
- o Project status
- Strategic considerations for IRWMP implementation
- Climate change & GHG emissions
- o Plan adoption
- Reducing dependence on the Sacramento-San Joaquin Delta
- A list of the selected projects.

- *Proposition 84 & 1E IRWM Guidelines*, July 2012, Pages 19 & 20

proponents. Access to project summaries is available to all interested parties with the intention of improving IRWMP transparency.

A public meeting was held on April 12, 2012 to announce the project solicitation and to review OPTI and the ways the project proponents could submit projects. This meeting was formally noticed and flyers were distributed. Each project proponent was instructed to provide, at a minimum, basic information about their project, including a project description, contribution to IRWM objectives, water-related benefits, estimated costs, project status and details. It was established that projects could be submitted by anyone, and could have a single proponent or multiple proponents.

The project information form (along with subsequent discussion at the public meeting) explained that projects submitted for consideration would be separated into three categories: Concept Projects, Preliminary Design Complete, and Ready-to-Proceed (RTP) Projects. RTP Projects consist of projects that are ready or close to being ready for implementation. They could be construction projects, research projects, or studies, but must be developed enough to have detailed budget and schedule information available and most planning, design and environmental documentation (if required) completed. Concept Projects are projects that are at a conceptual level and require additional project developed than the Concept Projects, but may not yet ready for implementation. Concept Projects, Preliminary Design Complete projects, and RTP Projects would be included in the IRWMP, but Concept Projects would not be considered for inclusion in applications for funding through DWRs IRWM Grant Program.

The East Stanislaus IRWM Region's first project solicitation period was held from April 2 2012 to May 7, 2012. The solicitation period was subsequently extended until June 10, 2012 at the request of project proponents, stating the need more time to become familiar with the OPTI system. (It should be noted that project proponents also had the option of mailing a hard-copy project solicitation form in lieu of OPTI submittal.) During this solicitation period, 27 projects were submitted, of which 10 were Concept Projects and 17 were either Preliminary Design Complete Projects or RTP Projects (see Appendix J for a summary of projects submitted).

In order to facilitate review and organization of the project submittals, the IRWM project website provides the option of printing or exporting a detailed list of all projects submitted. The ESRWMP used this project list in discussions regarding submitted projects with the SC members, PAC members and other stakeholders. The online project database is open at all times for receipt of new projects as well as for editing and revision of currently submitted projects. As new funding opportunities arise, the ESRWMP will issue a new "Call for Projects" with a deadline appropriate for that funding application. See Chapter 8, Plan Implementation, for more information regarding the frequency of project solicitation.

6.2 **Project Review and Integration**

A project review process was created for determining whether or not the submitted projects would be included in the IRWM Plan. A subcommittee of SC and PAC members was established to review the submitted projects for consistency with the IRWM program (as defined by DWR's Guidelines), confirm independent utility, and to look for opportunities for integration and enhancement. The subcommittee was composed of volunteer members from the East Stanislaus Region, but excluded personnel who represented an agency who had submitted a project (project proponents) for inclusion in the ESIRWMP.

The IRWMP must contain structure and processes that provide opportunities to develop and foster integration.

- *Proposition 84 & 1E IRWM Guidelines*, July 2012, Page 19

The Project Review Subcommittee met on July 26, 2012 to review the projects per the previously mentioned objectives. To be considered for inclusion in the East Stanislaus IRWM Plan, a project was required to fulfill five minimum requirements. Specifically, the project had to:

- Be located at least partially within the East Stanislaus IRWM region;
- Meet at least one Regional objective;
- Fulfill at least one Resource Management Strategy;
- Fulfill at least one Statewide Strategy; and
- Be technically feasible.

Based on the subcommittee's review, all projects submitted during the first call for projects met the minimum requirements. The projects were then evaluated for independent utility and to identify opportunities for integration and/or enhancement. While all projects met the IRWM program's goals, two projects ("Well No. 9 Arsenic Treatment Facility" and "Well No. 9) had overlapping scopes of work and were considered to be interdependent. Due to this lack of independent utility, the Project Review Subcommittee recommended to the projects' proponent (the City of Hughson in both cases) that the projects be combined.

The Subcommittee also made recommendations for integration and/or enhancements to the projects to increase the degree of benefits provided by the projects. For example, the Subcommittee recommended use of renewable energy sources (e.g. solar panels) to offset energy use at the proposed Regional Surface Water Treatment Plant. Recommendations were transmitted back to project proponents, and the project proponents had an opportunity to update the project information was provided.

6.3 Project Prioritization

A project prioritization process developed by PAC, and was subsequently approved by SC, in order to rank and compare the Preliminary Design Complete, and RTP Projects. The project prioritization process was not conducted for Conceptual Projects.

The project prioritization process implemented a two-step approach. The first step considered regional goals and objectives, statewide priorities and other relevant factors such as benefit-cost (B/C) ratio and multiple benefits. The second step qualitatively considered the relative greenhouse gas (GHG) emissions of the project.

6.3.1 Prioritization Process Development

As part of the development of the project solicitation and prioritization process, the PAC developed a process for prioritization the projects submitted for inclusion in the East Stanislaus IRWMP. This process was reviewed by the SC with recommendations made back to the PAC. Following subsequent changes to the prioritization process, both committees approved the prioritization process. The following describes the approved project prioritization process.

<u>6.3.1.1 Project Prioritization Step 1 – Project Ranking with Respect to Regional</u> <u>Goals, Statewide Priorities and other Relevant Factors</u>

In discussing various models for project prioritization, a two-step program was selected for implementation in the ESIRWM region. The first step of project prioritization process considered the projects relative to regional goals and objectives, statewide priorities and other relevant factors such as benefit-cost (B/C) ratio and multiple benefits. Specifically, the regional IRWM planning participants felt that the Region's goals, and therefore the associated objectives, should be the

mostly influential factor in the project prioritization process in order to identify those projects that, when implemented, would best help the Region achieve its vision for regional water resource management. The planning participants also felt the achieving the Statewide Priorities, addressing other project aspects (such as readiness to proceed) and project feasibility also merited consideration in project ranking. The Step 1 project prioritization process as developed thus reflects this thinking. A weighting scoring system was selected as the means of ensuring that the process results reflect the intent of the prioritization. The SC and PAC applied weighting factors to the scoring criteria which included the categories of Regional Objectives, Statewide Priorities, Other Strategies, and Feasibility. This weighting schema allows for flexibility for future changes to the prioritized objectives as regional water resources issues change over time.

With the Region's vision in mind, the Regional Objectives account for half of the total weight applied in the project scoring system. Within that half of the total weight, the goals were then weighted individually. The committees agreed that water supply, flood protection, and water quality are major issues that need to be addressed, as demonstrated by each category accounting for 10% of a project's score. Environmental protection and enhancement, and regional communication and cooperation were each to account for 7% of a project's score, and while lastly, but still importantly, economic and social responsibility accounts for 6% of a project's score. The remaining 50% of the scoring weights were then distributed amongst Statewide Priorities (worth 25% of the remaining weights, with other strategies and project feasibility accounting for 16% and 9% of the weights, respectively. The distributed weights were multiplied by a project score in each category, ranging from 0 to 5 based on its applicability to the project and the magnitude to which the project achieved each objective. A copy of the final project prioritization scoring sheet is included in Appendix K.

In developing scoring weights for the Statewide Priorities, the SC and PAC chose to assign greater weights to those priorities that best supported the 'more important' Regional goals of water supply, flood protection and water quality. Similarly, the SC and PAC determined that other factors, not directly incorporated into either the Regional goals and objectives or Statewide Priorities, should be considered and weighted as part of the prioritization process. Other Strategies, as defined by the SC and PAC in the context of the project prioritization process, included direct benefits to DACs and tribal communities, schedule (i.e. readiness to proceed), whether a project was an inter-regional project and therefore taking advantage of a larger scale of benefits, and/or whether a project provided non-water related benefits such as new jobs in the Region. Finally, the feasibility of a project from the standpoint of costs and benefits was also considered an important factor. Projects were scored based on an indirect benefit-cost analysis conducted on each project and based on the degree to which project financing was available.

The benefit-cost analysis was conducted on all non-Concept projects submitted for inclusion in the IRWM process. The analysis was a semi-numerical analysis designed to rank projects relative to their costs and benefits achieved given, in some cases, relatively gross data. In this analysis, project costs included capital costs, annual 0&M costs (assuming 10% of capital costs when 0&M costs were not supplied), and the cost of items to be replaced during the life of the project. Project life was assigned either given information provided by the project proponent or selected from a list of pre-defined life spans for various water infrastructure, as developed from a list of publically-available resources. This list of infrastructure life spans is included in Appendix M. The present value cost of the project was then calculated in 2012 dollars, assuming a 6% discount factor (for consistency with DWR guidelines), as follows:

Present Value Cost = Capital Cost +
$$O\&M Cost * \sum_{0}^{n} PV Factor$$

where n is the project life and the PV factor is defined as:

$$PV \ Factor = 1/[(1+i)^n)]$$

where i is the discount factor.

Cost scores were then assigned a measure of 'high' or 1 point if the project's present value cost was less than \$2 million, a measure of 'medium' or 2 points if the present value cost was between \$2 million and \$20 million, and a measure of 'low' or 3 points if the present value cost was greater than \$20 million. Project benefits were similarly given high, medium or low rankings based on the number of objectives achieved. A project received a ranking of 'high' or 3 points if it achieved greater than 8 objectives, a ranking of 'medium' or 2 points if it achieved between 4 and 8 objectives, and a ranking of 'low' or 1 point if it achieved less than 4 objectives. Project scores for benefits and costs were then used to calculate a benefit-cost (B/C) ratio for each project, and were then ranked either 'high' if the B/C ratio was greater than 2, 'medium' of the B/C ratio was ranked between 1 and 2, or 'low' if the B/C ratio was between 0 and 1. These high, medium, and low rankings were then assumed point scores of 5, 3 and 1, respectively, with the scores entered into the appropriate line on the project prioritization scoring sheet. A summary of the benefit-cost analyses conducted on the submitted projects is included in Appendix N.

The resulting percentages applied to the various project scoring criteria are summarized below. Projects were subsequently ranked as high, medium or low priority based on their score resulting from application of this prioritization process.

6.3.1.2 Project Prioritization Step 2 – Qualitative Comparison of Project GHG Impacts

As directed by the Guidelines, greenhouse gas (GHG) emissions were considered by the IRWM Region in development of the project prioritization process. After discussions, the Region decided to include GHG impacts and emissions as a secondary criteria (or second step) in developing project rankings. As with the primary (Step 1) prioritization process, only non-Concept projects were evaluated in this Step 2 process.

In developing the Step 2 prioritization process, it was acknowledged that a quantitative calculation of each project's GHG emissions would, most likely, not be available from the project proponent, nor was it in the wherewithal of either the SC or PAC to prepare such calculations. Therefore, a qualitative comparative methodology was developed and applied to the projects. Additionally, it was acknowledged that these quantitative GHG emissions calculations are required as part of the California Environmental Quality Act (CEQA) process and therefore would, for the most part, be available during the grant application process and/or prior to project implementation.

A GHG emissions score sheet was developed by the SC and PAC for use in preparing this secondary evaluation (see Appendix L). Key to the application of this score sheet is the assumption that <u>all</u> projects would require construction and would therefore result in construction-related GHG emissions. Any project that did not require construction (e.g. a paper study) would receive a 'benefit' as a result of no construction. Projects impacts and benefits relative to GHG emissions were then evaluated based on a series of yes/no questions.

Prioritization Factor	Weighting	Comments	
Regional Objectives	50%		
Water Supply	10%		
Flood Protection	10%		
Water Quality	10%	With the Region's vision in mind, the Regional	
Environmental Protection and		Objectives account for nair of the total weight.	
Enhancement	7%	within that half of the total weight, the goals were	
Regional Communication and		importance placed on reaching the Degion's water	
Cooperation	7%	supply flood protection and water quality goals	
Economic and Social		supply, noou protection, and water quanty goals.	
Responsibility	6%		
Statewide Priorities	25%		
Drought Preparedness	5%		
Use and Reuse Water More			
Efficiently	5%		
Climate Change			
Response/Adaptation Actions	3%		
Expand Environmental		Achieving Statewide Priorities was considered an	
Stewardship	2%	achievement only secondary to achieving the	
Practice Integrated Flood		Region's goals and objectives. Statewide priorities	
Management	3%	that also support the Region's primary goals with	
Protect Surface Water and		respects to water supply, flood protection and	
Groundwater Quality	3%	water quality were given greater weights.	
Improve Tribal Water and			
Natural Resources	2%		
Ensure Equitable Distribution			
of Benefits; Provide			
Environmental Justice	2%		
Other Strategies	16%		
Direct Benefit to DAC and/or		Other Strategies were intended to reflect the	
Native American Communities	4%	criteria considered important in project	
Schedule	8%	prioritization but not covered/reflected in either	
Inter-Regional Project	2%	Regional goals or objectives or Statewide	
Provide Non-Water Related		Priorities	
Benefits	2%		
Feasibility	9%		
Benefit-Cost Analysis	6%	The feasibility criteria focused on the cost-	
		effectiveness of the projects (relative to the	
Financing/Economic	_	benefits achieved) and the financial 'security' of	
Feasibility	3%	the project.	

Table 6-1: Project Prioritization Process Weights

Within each prioritization category resulting from application of the Step 1 prioritization process, projects were ordered/ranked based on their relative impacts or mitigation/benefits (or neutrality). The resulting project prioritization therefore reflected the ability of the project to achieve the Region's goals and objectives, Statewide Priorities or important criteria, while providing a secondary prioritization based on GHG emissions, benefits and/or mitigations.

6.3.2 Prioritization Application and Results

The project prioritization process described above was implemented on the projects received for inclusion in the East Stanislaus IRWMP. Information used in evaluating the submitted projects against the prioritized criteria were provided via the project submittal process, as previously described. As previously noted, the Project Review Subcommittee met on July 26, 2012 and applied the scoring criteria (both primary and secondary) to the projects submitted. The results of this prioritization process are included in Appendix P for the primary and secondary scoring process, respectively.

6.4 Impacts and Benefits

The IRWMP must contain a discussion of potential impacts and benefits of Plan implementation. This discussion must include both impacts and benefits within the IRWM region, between regions, and those directly affecting DACs, EJ concerns, and Native American Tribal communities.

- *Proposition 84 & 1E IRWM Guidelines,* July 2012, Page 20 The East Stanislaus IRWM 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. Through implementation of this IRWM Plan, regional and localized benefits will be realized and potential impacts addressed. This section provides an overview of potential benefits and impacts that may result from implementation of projects or programs included in the East Stanislaus IRWM Plan.

It should be noted that inclusion of a project in this IRWM Plan indicates that it passed the screening

requirements outlined in Sections 6.2 and 6.3, but does not necessarily reflect endorsement by the PAC. In addition, inclusion of a project in the IRWM Plan does not commit the ESRWMP or PAC 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 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 East Stanislaus IRWM Plan could achieve are shown in Table 6-2, and are described in more detail in the following sections. A table cross-referencing the submitted projects with the project types noted below is included in Appendix O.

Project Type	Within the East		
	Potential Impacts	Potential Benefits	Potential Impacts
Groundwater Projects			
Groundwater Supply Development	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 a reliability
Conjunctive Use	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 a reliability
Potable Water Supply Projects			
Conveyance Facilities	Land use compatibility (rights-of-way) Disturbance of habitat and endangered species	Improved water supply reliability	None
Storage Facilities or Storage Operations	Land use compatibility (rights-of-way) Disturbance of habitat and endangered species	Improved water quality (through reduced groundwater pumping) Improved water supply reliability	None
Treatment Facilities	Energy consumption Land use compatibility (rights-of-way) Disturbance of habitat and endangered species	Improved water supply reliability Improved water quality Economic benefits	None
Salinity Management	None	Improved water quality Long-term sustainability of water supplies Local prosperity	None
Conservation Projects			
Outreach and Education	Reduced discharges to Tuolumne, Stanislaus and Merced Rivers	Improved water supply reliability Public education and environmental awareness	Reduced discharges to Tuolumne, Stanislaus and Merced Rivers
Economic Incentives	Reduced discharges to Tuolumne, Stanislaus and Merced Rivers	Improved water supply reliability Avoided costs of imported water supply Avoided costs of water supply infrastructure Local prosperity	Reduced discharges to Tuolumne, Stanislaus and Merced Rivers
Wastewater Projects			
Conveyance Facilities	Land use compatibility (rights-of-way) Disturbance of habitat and endangered species	Improved water supply reliability	None
Treatment Facilities	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
Septic to Sewer Conversion	Land use compatibility (rights-of-way) Disturbance of habitat and endangered	Improved water quality Local prosperity	None

Table 6-2: Potential Impacts and Benefits by Project Type

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Interregional			
	Potential Benefits		
nd	Increased groundwater storage/recharge Improved water supply reliability Improved water quality Local prosperity		
nd	Increased groundwater storage/recharge Improved water supply reliability Improved water quality Reduced land subsidence and/or fissuring Improved water management coordination Local prosperity		
	None		
	Improved water quality (through reduced groundwater pumping) None		
	Improved water quality Long-term sustainability of water supplies Local prosperity		
	Improved water supply reliability Public education and environmental awareness Improved water supply reliability Avoided costs of imported water supply Avoided costs of water supply infrastructure Local prosperity		
	None		
	Improved water quality		
	None		

Project Type	Within the East Stanislaus Region			
	Potential Impacts	Potential Benefits	Potential Impacts	
	species			
Recycled/Non-Potable Water Projects				
Conveyance Facilities	Land use compatibility (rights-of-way) Disturbance of habitat and endangered species	Improved water supply reliability Increased nutrient levels for landscape irrigation	None	
Treatment Facilities	Land use compatibility (rights-of-way) Disturbance of habitat and endangered species	Potable water offsets Improved water supply reliability Potable water offsets Improved water quality Local prosperity	None	
Salinity Management	None	Improved water quality Improved water supply reliability Local prosperity	None	
Urban Runoff Management Projects				
Stormwater Capture and Reuse / Recharge	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	
Diversion to Sewer	Disturbance of habitat and endangered species	Improved water quality Flood control enhancement Increased recycled water	None	
Pollution Prevention	None	Improved water quality	None	
Flood Management Projects				
Storm Drains or Channels	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	
Ecosystem Restoration and Protection Projects				
Land Conservation	Economic impacts	Improved water quality Flood control enhancement Habitat protection, restoration, and enhancement Open space preservation	None	
Invasive Species Removal	Disturbance of habitat and endangered species Increased sedimentation and erosion	Improved water quality Flood control enhancement Habitat protection, restoration, and enhancement	None	
Restoration / Revegetation	Disturbance of habitat and endangered species	Improved water quality Flood control enhancement Habitat protection, restoration and enhancement Reduced threat of wildfires	None	
Water-Based Recreation Projects	Weter quality degradation	Enhanced regrestion and mublic second	None	
Reservoir Recreation	water quality degradation	Enhanced recreation and public access	noile	

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Interre	gional
	Potential Benefits
	Improved water supply reliability Potable water offsets
	Improved water supply reliability Potable water offsets Improved water quality Improved water quality Improved water supply reliability Local prosperity
	Increased groundwater storage / recharge Improved water supply reliability Avoided costs of imported water supply Local prosperity None
	None
	Improved water quality
	None
	None
	None
	None
	None

Project Type	Within the East Stanislaus Region		
	Potential Impacts	Potential Benefits	Potential Impacts
Parks, Access and Trails	Disturbance of habitat and endangered species Increased sedimentation and erosion	Local prosperity Enhanced recreation and public access Local prosperity	None
Data Collection/Management Project			
Data Collection and Management	None	Improved data accessibility and dissemination Public access to data Facilitation of projects	None
Outreach Project			
Outreach	None	Improved intraregional coordination and communication Identification of collaboration opportunities Identification of potential project enhancements	None
Public Education	None	Increased public awareness and support of IRWM-related projects Improved consumer response to water resource management requests	None
DAC Support	None	Improved accessibility to regional support for project design and implementation Identification and facilitation of projects that directly improve water supply reliability and water quality for DACs	None

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Interregional

Potential Benefits

None

Improved data accessibility and dissemination Public access to data Facilitation of projects

Improved inter-regional coordination and communication Identification of collaboration opportunities Identification of potential project enhancements Increased public awareness and support of IRWM-related projects Improved consumer response to water resource management requests Improved accessibility to regional support for project design and implementation Identification and facilitation of projects that directly improve water supply reliability and water quality for DACs

6.4.1 Plan Implementation Benefits and Impacts

6.4.1.1 Regional Impacts and Benefits

Implementation of East Stanislaus IRWM Plan 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-benefit 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. Completion of the East Stanislaus IRWM Plan 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 East Stanislaus IRWM 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.

Conversely, should the East Stanislaus IRWMP not be implemented, the impacts to the region, water and wastewater agencies, and residents within it would be vast. The same issues the region is currently experiencing would not be resolved and while individual, localized planning efforts and projects would likely continue, they would not achieve the same magnitude and multitude of benefits delivered from regional planning and implementation.

6.4.1.2 Interregional Benefits and Impacts

Interregional projects such as the North Valley Regional Recycled Water Project stand to provide benefits that extend beyond regional boundaries. The projects included in this Plan benefit not only the local agencies and residents of the East Stanislaus Region, but multiple watersheds (Stanislaus, Tuolumne and Merced River watersheds), the Delta, and members of the public throughout California. Specific ways in which the projects contained in the East Stanislaus IRWM Plan provide benefits beyond the East Stanislaus region include the following:

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

Most likely, project-dependent construction-related impacts would not impact other IRWM regions, as project and program facilities would be implemented within the East Stanislaus Region. These construction impacts would be temporary in nature and will result in predominantly local impacts, if any.

The East Stanislaus IRWM Plan also has the potential to benefit resources beyond local and regional water resources. Improved surface water quality will benefit local ecosystems. 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 and for the proposed San Joaquin River Wildlife Refuge expansion.

6.4.1.3 Benefits and Impacts to DACs and EJ-Related Concerns

Protection of the people and economy of disadvantaged communities (DACs) and correction of environmental justice concerns are priorities for the East Stanislaus IRWM Plan. (Please note, there are no federally- or state-recognized Native American communities in the East Stanislaus Region.) Environmental justice is addressed by ensuring that all stakeholders have access to the IRWM planning decision-making process and that minority and/or low-income populations do not bear disproportionately high and adverse human health or environmental impacts. Working on a regional basis aids in protecting the economy of the East Stanislaus Region and Stanislaus County, and minimizes direct monetary impacts felt by DACs in the region through the stabilization of water and wastewater utility rates. Implementation of the Region's flood control projects will protect the local communities from disastrous flood damage. 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.

Impacts to DACs 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.

6.4.2 Project/Program Impacts and Benefits

The potential benefits and impacts summarized in Table 6-2 are described in more detail in the following sections. Additionally, the projects included in the East Stanislaus IRWMP, by project type, are summarized in the table included in Appendix J. For each project, potential benefits and impacts are assumed to be similar to those identified for the specific project type.

6.4.2.1 Benefits

Increased groundwater storage / recharge

The Modesto and Turlock Subbasins of the San Joaquin Valley Groundwater Basin underlie most of Stanislaus County. Use of groundwater for irrigation and municipal purposes has resulted in historical declines of available groundwater in previous years. In past years, both subbasins have experienced overdraft conditions, with groundwater depressions underlying the cities of Modesto and Turlock. A cone of depression has also formed on the eastern side of the Turlock Subbasin where groundwater is the only available water supply. Groundwater recharge could help improve the state of the subbasins and their long-term sustainability. 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 East Stanislaus Region is a key objective of the Region's water supply goal. 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 Region's water supply reliability. Projects that would achieve this benefit include:

- Water use efficiency and water management 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
- Surface water diversion and treatment projects

- Water storage and treatment projects
- Upgrading wastewater treatment facilities to produce recycled water
- Water quality protection projects

Improved water quality

As described in Chapter 5, Vision, Goals, and Objectives, protecting and improving water quality for beneficial uses consistent with regional interests and the RWQCB Basin Plan is a key regional goal. Different types of projects contribute to different types of water quality improvements. For example, groundwater recharge projects can improve groundwater quality in the Modesto 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. While subsidence has historically not been a concern in the region, projects that will reduce groundwater pumping or increase groundwater recharge will help reduce the potential for land subsidence and fissuring. These projects include:

- Enhanced 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 and economic benefits can be achieved by:

- Avoiding costs of water supply infrastructure with the implementation of water management 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 and ecosystems
- 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 East Stanislaus 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 or man-made. Salinity management is key to ensuring the long-term sustainability of groundwater supplies. Groundwater quality varies throughout the East Stanislaus Region. As new water supplies are developed, recycled water use increases, and groundwater recharge projects are implemented, the importance of salinity management and other water quality management programs 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 efficient management practices, educate about habitat 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 irrigated areas.

Potable water offsets

Potable water offsets can be achieved through stormwater and recycled water projects. New nonpotable water supplies may be used for irrigation or other beneficial uses, helping to increase the region's water supplies. 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 some areas within the East Stanislaus IRWM planning region, especially along the San Joaquin River and the lower Tuolumne River. Flooding can occur from heavy rainfall, rapid snow melt, saturated soils, or a combination of these conditions. In some cases, flooding is due to inadequate storm drainage systems, unable to handle heavy storms during winter and spring seasons, and from increasing development leading to increases in impervious surface areas and decreases 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 existing and new wastewater treatment facilities, creating more recycled water for beneficial uses. Increasing the amount of recycled water available for farmland, 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, as previously discussed.

Habitat protection, restoration, and enhancement

Projects that contribute to habitat protection and restoration have the ability to enhance the 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, riverine environments)
- 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 protection and enhancement 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, wildlife refuges and the wilderness within the East Stanislaus 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.

6.4.2.2 Impacts

Implementation of the projects described in this plan may also have quantitative and/or qualitative impacts if the East Stanislaus IRWM Plan 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 increasingly 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 CEQA and NEPA requirements, if applicable, prior to and throughout implementation.

Negative impacts that could be associated with the implementation of projects and programs included in this IRWM Plan 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 be similarly impacted by projects that encourage recreation and/or intensive development by increasing 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 water bodies.

Reduced groundwater availability and reliability

There are groundwater quality issues in many areas within the Modesto and Turlock groundwater subbasins. 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 subbasins could create 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 East Stanislaus Region contains portions of a large wildlife refuge in addition to many riparian habitats. These areas provide 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 the Tuolumne, Stanislaus and Merced Rivers

Agricultural and urban water use efficiency projects and water recycling projects could reduce the quantity of water discharged to the Tuolumne, Stanislaus and Merced Rivers, effectively reducing streamflows and potentially 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 areas of the East Stanislaus 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.