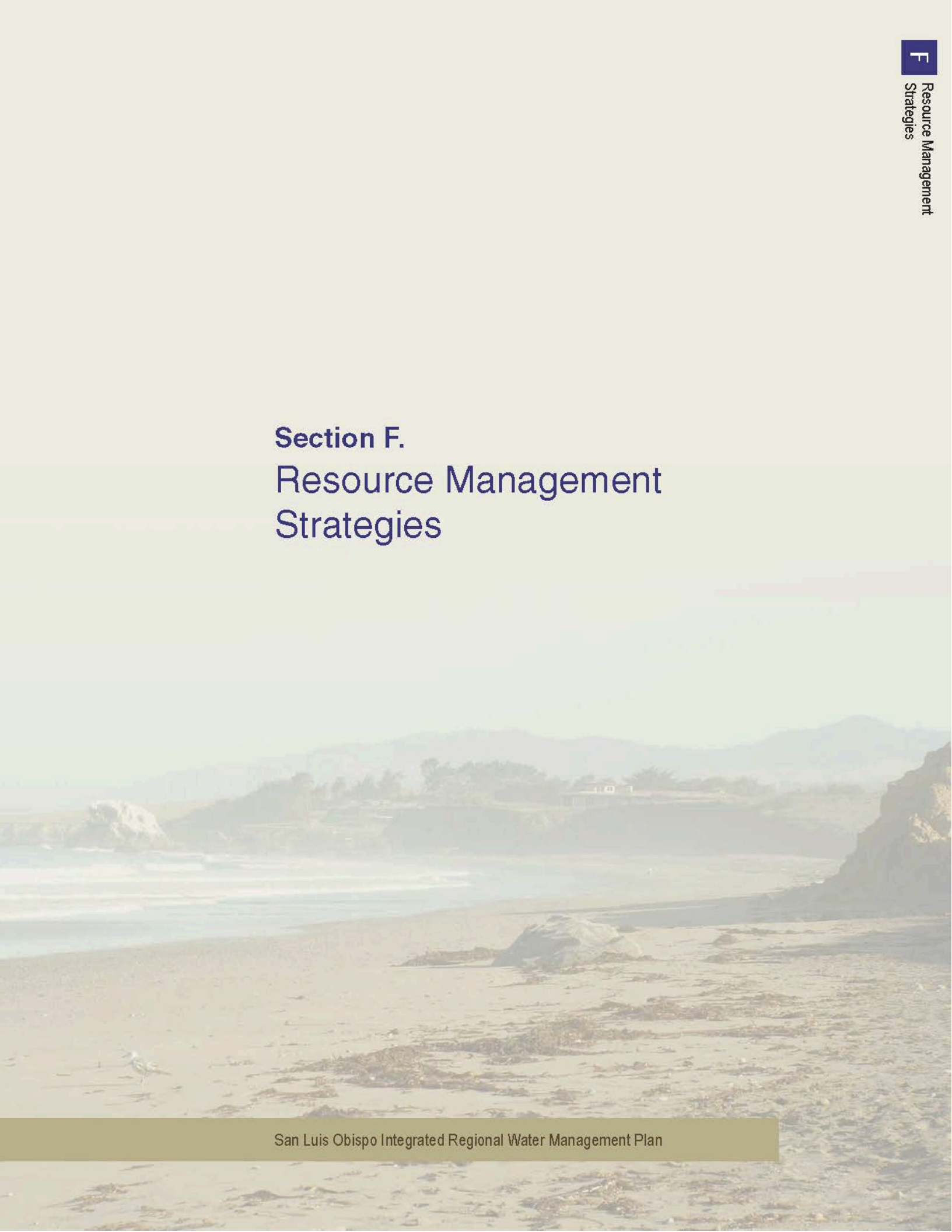
Section F.

Resource Management Strategies



Section F. Resource Management Strategies

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Section F. Resource Management Strategies

F.1 Resource Management Strategy Standards

A resource management strategy (RMS) is defined by the California Department of Water Resources (DWR) as a project, program, or policy that local agencies can implement to manage water and related resources to meet integrated plan objectives. DWR's standard for RMS review is to encourage diversification of water management approaches, to plan for uncertain future circumstances, and to comply with state law.[1] Local groups like the Regional Water Management Group (RWMG) must consider the RMSs identified in the Draft 2013 California Water Plan Update when developing their Integrated Regional Water Management Plan Update (IRWM) Plan.[2]

This section provides a summary of the methodology and results of the RWMG's review and evaluation of the DWR RMSs. Region-specific discussion of these strategies and RWMG Findings and Recommended Project Elements are presented in Sections G through Section O. A thorough discussion of the inter-relationship of the Project Elements, or "Building Blocks," of the specific IRWM Projects is provided in **Appendix G Project Characterization, Solicitation and Prioritization Methodology White Paper**.

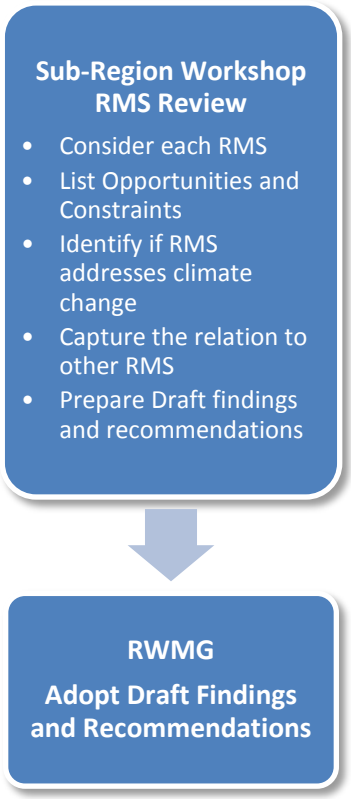

Figure F-1. RMS Review Process

F.2 RMS Review Process

The RWMG considered the DWR RMSs to build and to diversify the San Luis Obispo Region water management portfolio. RMS review was part of the IRWM Plan scoping process to tailor the RMSs to the Region. The RWMG RMS review process is shown in **Figure F-1.** The process allowed the RWMG to add, integrate, adapt, eliminate, and/or re-group strategies to meet the Region's mission, goals, objectives, and needs.

[1] California Public Resources Code §75026(a) and California Water Code §10541(e)(2).
[2] The 2013 Draft California Water Plan Update is used to the extent that the RMS is posted on the DWR website: <http://www.waterplan.water.ca.gov/cwpu2013/ac-draft/index.cfm>. The adopted 2009 Water Plan is used when needed.

F.2.1 Preliminary Review

The RMSs are interrelated and linked to other activities in the SLO Region. The RWMG considered each RMS individually to tailor and regroup the strategies to reflect local conditions. The result of the regrouping and titling is the list of SLO Region Water Management Strategies (WMS). The WMSs differ from the RMSs in titling and grouping, typically providing a higher resolution of strategies for goals relevant to the region. **Table F-1** provides the list of WMSs. Each WMS satisfies one or more RMS and meets one or more of the IRWM Plan Objectives.

Table F-1. San Luis Obispo IRWM Plan Water Management Strategies

San Luis Obispo IRWM Plan Water Management Strategies (WMS)
1. Ecosystem restoration
2. Environmental and habitat protection and Improvement
3. Water supply reliability
4. Flood management
5. Groundwater management
6. Recreation and public access
7. Storm water capture and management
8. Water conservation
9. Water quality protection and improvement
10. Salt and salinity management
11. Water recycling
12. Wetlands enhancement and creation
13. Conjunctive use
14. Desalination
15. Imported water
16. Land use planning
17. NPS pollution control
18. Surface storage
19. Watershed planning
20. Water and wastewater treatment
21. Water transfers
22. Water system optimization
23. Address climate change

Table F-2, Resource Management Strategies as Applied and Grouped for the SLO Region, lists the DWR management objectives, the applicable RMSs, the corresponding SLO WMSs and the SLO Region IRWM Objective(s).[3] **Table F-2** also provides a summary of how the RWMG subdivided, regrouped, and adapted the DWR RMS into the SLO WMSs to reflect SLO Region Objectives and unique challenges.

[3] IRWM Plan Objectives are only listed once based on how well they satisfy the corresponding RMS and WMS. Water Resources Management and Communications Objectives are used to support all RMS and WMS Recommended Project Elements.

Table F-2. Resource Management Strategies as Applied and Grouped for the San Luis Obispo Region

DWR Management Objectives	DWR RMSs[1]	San Luis Obispo WMSs	San Luis Obispo IRWM Objectives[2]
Increase Water Supply	Conjunctive Management and Groundwater (GW) Storage	Conjunctive Use	• GW Recharge/Banking (Obj 5, GW Goal) • Understand GW Issues and Conditions (Obj 1, GW Goal)
		GW Management	• Support Local GW Management (Obj 2, GW Goal) • Support Local Basin Management Objectives (Obj 3, GW Goal) • CASGEM Program (Obj 4, GW Goal) • Enhance Natural Recharge (Obj 3 of Flood Management Goal)
	Desalination		• Diverse Supply (Recycled, Desalination) (Obj 9 of Water Supply Goal)
	Municipal Recycled Water	Water Recycling	
	Surface Storage – CALFED/State	Surface Storage	• Implement Multiple Benefit Projects (Obj 5 of Flood Management Goal)
	Surface Storage – Region/Local		
Improve Water Quality	Drinking Water Treatment and Distribution	Water Supply Reliability	• Adequate Water Supply (Obj 2 of Water Supply Goal) • Water System WQ Improvements (Obj 5 of Water Supply Goal)
		Water and Wastewater Treatment	
	Matching Water Quality to Use	Water Quality Protection and Improvement	• Sustainable Potable Water for Rural (Obj 3 of Water Supply Goal) • Sustainable Potable Water for Agriculture (Obj 4 of Water Supply Goal) • Implement Water Management Plans (Obj 6 of Water Supply Goal)
	Pollution Prevention	NPS Pollution control	• Protect and Improve GW Quality (Obj 6, Groundwater Goal) • Reduce Contaminants (Obj 3 of Ecosystem Goal)
		Storm water Capture and Management	• Improve Infrastructure and Operations (Obj 4 of Flood Management Goal)
	Salt and Salinity Management	Salinity Management	• Protect and Improve GW Quality (Obj 6, Groundwater Goal) • Plan for Vulnerabilities of Water Supplies (Obj 8 of Water Supply Goal)

Table F-2. Resource Management Strategies as Applied and Grouped for the San Luis Obispo Region, Continued

DWR Management Objectives	DWR RMSs[1]	San Luis Obispo WMSs	San Luis Obispo IRWM Objectives[2]
Practice Resource Stewardship	Ecosystem Restoration	Ecosystem Restoration	• Conserve Balance of Ecosystem (Obj 2 of Ecosystem Goal) • Reduce Impacts of Invasive Species (Obj 6 of Ecosystem Goal) • Protect Endangered Species (Obj 5 of Ecosystem Goal) • Restore Streams, Rivers and Floodplains (Obj 6 of Flood Management Goal)
		Wetlands Enhancement and Creation	
	Land Use Planning and Management	Land Use Planning	• Promote Low Impact Development (Obj 2 of Flood Management Goal)
		Recreation and Public Access	• Public Involvement and Stewardship (Obj 4 of Ecosystem Goal)
	Watershed Management	Watershed Planning	• Understand Watershed Needs (Obj 1 of Ecosystem Goal) • Support Watershed Enhancement (Obj 10 of Water Supply Goal)
		Environmental and Habitat Protection & Improvements	
Improve Flood Management	Improve Flood Management	Flood Management	• Understand Flood Management Needs (Obj 1 of Flood Management Goal) • Support DAC Flood Protection (Obj 7 of Flood Management Goal)
Demand Reduction	Agricultural Water Use Efficiency	Water Conservation	• Conservation/Water Use Efficienc (Obj 7 of Water Supply Goal)
	Urban Water Use Efficiency		
Operation Efficiency	Conveyance	Water System Optimization	• Maximize Accessibility of Water (Obj 1 of Water Supply Goal) • Climate Change on Ecosystems (Obj 7 of Ecosystem Goal) • Plan for Vulnerabilities of Water Supplies (Obj 8 of Water Supply Goal)
	System Reoperation	Address Climate Change	
	Water Transfers	Imported Water	

Notes:

1. Not all of the State RMS apply to the San Luis Obispo County region. See **Section F.2.2** and **Appendix F – Resource Management Strategy Screening and Definition Packet** for public review and screening process.
2. Water Resources Management and Communications Objectives are integrated into all water resources programs and implementation projects as follows:
   Obj 1. Public Outreach on IRWM Implementation – include public participation and outreach.
   Obj 2. Funding the IRWM Implementation – inform the public and project sponsors of potential grant and loan programs.
   Obj 3. Support Local Control – promote local control of project concepts and development.
   Obj 4. Consider Property Owner Rights – be sensitive to owner's rights and cultural values.
   Obj 5. Agency Alignment on Water Resources Efforts – be multi-agency oriented in developing projects so as to align common efforts.
   Obj 6. Collaboration Between Urban, Rural, and Ag – seek out the urban, rural, and agricultural stakeholders with each project and solicit their representation in the project development and support.
   Obj 7. DAC Support and Education – when applicable to DAC communities, include education as a portion of implementing and developing community support for projects.
   Obj 8. Promote Public Education Programs – include education as a portion of implementing and developing community support for local projects.

F.2.2 Work Group RMS Review

The Project Work Group (PWG) reviewed each of the RMSs providing a thorough screening process to document the progression from understanding of the strategies to adopting the RMSs to be included in the IRWM Planning effort. If a RMS was not relevant to the region or if the RMS is integrated for the most part in another similar RMS or WMS, a decision was made to not include the RMS in the IRWM Planning process. In developing the final list of specific RMSs for the SLO Region, the PWG considered:

- ***Objectives*** – how well does the strategy work to meet the SLO IRWM Plan objectives?
- ***Complexity*** – does the RMS face complex legal, political, or technical hurdles that would impede the ability to design, permit, or implement the RMS as part of the IRWM Plan's implementation?
- ***Resolution of Conflicts*** – would the strategy help to resolve or prevent conflicts within the San Luis Obispo Region?
- ***Regional Benefits*** – would the strategy provide region-wide benefits to multiple participants?
- ***Timeliness*** – is the strategy well-defined for the San Luis Obispo Region; are potential projects ready to proceed; will a project typically have a feasibility study, preliminary design, and environmental clearance and approvals as part of a project submittal?
- ***Political Acceptability, Local*** – would the strategy be widely supported within the San Luis Obispo Region; could it receive local funding and support?
- ***Political Acceptability, Interregional*** – would the strategy be widely supported; would it generate political controversy; could it receive state or federal funding and support?
- ***Integration Opportunities*** – would the strategy provide additional benefits when combined with other strategies?
- ***Adaptability to Climate Change*** – would the strategy help mitigate climate change within the Region; would it help the Region adapt or respond to climate change?

After answering each of the above questions, a list of findings and recommendations was compiled for each adopted RMS. This effort is documented in **Appendix F – Resource Management Strategy Screening and Definition Packet**. The tables at the back of **Appendix F** summarize the findings and indicate how well the RMSs, WMSs, and Objectives fulfill state Requirements and Priorities for an IRWM Plan. To understand the correlation between IRWM Objectives and RMSs at a glance, a weighted value is assigned to each IRWM Objective for each RMS. The scoring system of how well each of the RMSs satisfies the IRWM Plan Objectives is as follows:

- **Ranking 1** is where objective partially satisfies RMS when integrated with other objectives, but the types and need for projects are not likely to be submitted for the region
- **Ranking 2** is where objective may satisfy RMS, but project types for the region are not likely to be selected
- **Ranking 3** is where objective satisfies RMS when integrated with preferred projects containing required Project Elements
- **Ranking 4** is where objective directly satisfies RMS, but not at a 100 percent level
- **Ranking 5** is where objective directly satisfies RMS

Table F-3 illustrates how well each Goal's Objectives satisfy the RMSs; green indicating a high correlation between the Goal's Objectives and the RMS, and a blank indicating low to none of the Goal's Objectives satisfy the RMS.

F.3 RWMG FINDINGS AND RECOMMENDED PROJECT ELEMENTS

Findings and Recommended Project Elements, along with the list of WMSs, were presented, reviewed, and adopted by the RWMG. By adopting the WMSs, subsequent sections of the IRWM Plan detail and incorporate recommended project elements based on the WMSs and findings of the RMS evaluation. Furthermore, findings adopted by the RWMG in some cases define the scope, and ultimately provide guidance for developing and integrating stakeholder projects, programs and policies.

What follows is a short description of the RMSs adopted by the RWMG. The Recommended Project Elements are provided as a means to implement each RMS throughout the IRWM Planning and project implementation process. The Recommended Project Elements are meant to be actions endorsed by the RWMG to be included in the implementation of IRWM projects, when and where possible, to achieve the highest success in meeting the WMSs and findings of the RMS evaluation.

Table F-3. San Luis Obispo Goals Satisfied by State Resource Management Strategies

San Luis Obispo IRWM Plan GOALS	State Resource Management Strategies																
	Conjunctive Management and Groundwater Storage	Desalination	Municipal Recycled Water	Surface Storage	Drinking Water Treatment and Distribution	Matching Water Quality to Use	Pollution Prevention	Salt and Salinity Management	Ecosystem Restoration	Land Use Planning and Management	Watershed Management	Flood Management	Agricultural Water Use Efficiency	Urban Water Use Efficiency	Conveyance	System Reoperation	Water Transfers
Water Supply Goal - Maintain or improve water supply quantity and quality for potable water, fire protection, environmental, and agricultural production needs. Cooperatively address limitations, vulnerabilities, conjunctive use and water use efficiency.	●	●	●	●	○	●	○	○		◉	●		●	●	○	○	●
Ecosystem and Watershed Restoration Goal - Maintain or improve the health of the Region's watersheds, ecosystems, and natural resources through collaborative and cooperative actions, with a focus on assessment, protection, and restoration/ enhancement of ecosystem and resource needs and vulnerabilities.						◉	○		●	◉	○					◉	
Groundwater Monitoring and Management Goal - Achieve sustainable use of the region's water supply within groundwater basins through collaborative and cooperative actions.	●	◉	◉	◉		◉	○	○									◉
Flood Management Goal - Foster an integrated, watershed approach to flood management and improved stormwater quality through collaborative community supported processes in order to ensure community health, safety and to enhance quality of life.				●			◉		○	○		●					◉
Water Resources Management and Communications Goal - Promote open communications and regional cooperation in the protection and management of water resources, including education and outreach related to water resources conditions, conservation/ water use efficiency, water rights, water allocations, and other regional water resource management efforts.	○	○	◉				○	◉		○			○	●			◉

Percentage of Goal's Objectives Satisfied by State RMSs

- ● – Greater than 20% of Goal's Objectives
- ○ – Greater than 10% of Goal's Objectives
- ◉ – Greater than 5% of Goal's Objectives

F.3.1 Increase Water Supply - Conjunctive Management and Groundwater Storage

The evaluation and development of groundwater storage and banking/recharge projects/programs aligns directly with Objectives of the Groundwater Management Goal, and crosses over to multiple Objectives in other Goals. The primary goal is to enhance recharge to groundwater basins, especially where demand meets or exceeds the existing perennial yield. If banking is an operational strategy needed to address the financial feasibility of implementing a recharge project, then it may also be considered. Supplementing groundwater in storage would help to meet the goal to diversify the regional water supply portfolio and to ensure a long-term, verifiable, reliable and sustainable supply to meet current and future agricultural, urban, rural, and environmental demands. Any projects would need to be implemented in a way that would not harm overlying users in the basin. Groundwater banking/recharge and storage would help meet multiple Objectives by:

- Helping to avoid impacts to existing users
- Providing a firm, verifiable, and sustainable supply
- Supporting protection of surface water rights by making full use of entitlements for groundwater banking/recharge purposes

F.3.1.1 Recommended Project Elements

The following Recommended Project Elements were provided:

- Develop groundwater storage and banking/recharge facilities to enhance recharge to basins and/or capture and protect surface water rights
- Develop groundwater management plan elements to support groundwater storage and banking/recharge projects and to meet requirements for state grant funding
- Conduct needed feasibility studies and/or pilot and demonstration projects to obtain needed data
- Select a preferred groundwater banking/recharge alternative and develop final project designs and funding requirements
- Seek state and federal grant funding to conduct the needed evaluations and pilot projects

F.3.2 Increase Water Supply – Desalinization

Desalination of sea water or brackish groundwater has and can continue to be used to diversify the regional water supply portfolio and to ensure a long-term, verifiable, reliable, and sustainable supply to meet current and future agricultural, urban, and environmental demands. Desalination would help meet objectives by providing a new water source to avoid impacts to

existing users by not increasing water rates and severe rationing. Desalinization of saline water would help meet Objectives by:

- Diversifying supply sources to improve redundancy, water quality, rate stability, and reliability of water supplies
- Helping to avoid impacts to existing water customers by providing a new supply
- Supporting to meet state-mandated 20 percent conservation goals in the region by 2020

F.3.2.1 Recommended Project Elements

The following Recommended Project Elements were provided:

- Desalination of ocean water or brackish groundwater is a near- to mid-term proposition and could be sustainable when integrated with groundwater recharge project elements
- Phased projects should be undertaken to pilot and take advantage of current technologies
- Monitoring and reporting elements should be undertaken to determine the feasibility of large-scale water supply and groundwater recharge projects
- Federal or state funding opportunities for development of pilot projects should be pursued if local funding match can be developed
- Local government and water purveyors should coordinate and adopt appropriate policies to allow for and promote development of desalination projects
- Consider and further evaluate economic and political feasibility for including desalinated water as a source of direct groundwater recharge
- Cooperative public/private partnerships should be investigated for purposes of creating a new water supply for non-agricultural water users using desalination technologies
- Economic incentives and pricing would need to be worked out to finalize a business model, and additional economic evaluations are recommended

F.3.3 Increase Water Supply – Municipal Recycled Water

Recycled municipal wastewater, similar to desalinization, meets the goal to diversify the regional water supply portfolio and to ensure a long-term, verifiable, reliable, and sustainable supply to meet current and future agricultural, urban, and environmental demands. Recycled wastewater would help meet objectives by:

- Diversifying supply sources to improve redundancy, water quality, rate stability, and reliability of water supplies
- Helping to avoid impacts to existing users by providing a new supply
- Supporting disadvantaged and other communities in meeting wastewater disposal

and permit requirements
- Matching water quality to appropriate uses and supplying treated wastewater to extend use of constrained existing water supplies
- Improving wastewater effluent water quality for discharge to fresh water rivers and ocean
- Supporting to meet 20 percent conservation goals in the region

F.3.3.1 Recommended Project Elements

The following Recommended Project Elements were provided:

- Assess the total potential for recycled wastewater in the region
- Support current wastewater facility plant upgrades that propose recycling municipal water for use as part of meeting sustainable water supplies for new growth in urban and agriculture uses
- Create partnerships and meet multiple IRWM Plan goals by using recycled wastewater where cost-effective and timely
- Consider regional municipal water recycling projects to: 1) increase cost-effectiveness (economies of scale) of project development and operation; 2) provide benefits to multiple parties; and 3) improve opportunities and increase the demand for use of reclaimed water
- Provide policy and financial incentives for public/private partnerships to construct municipal recycling facilities and to allow for exchange of treated drinking water with produced water credit for sponsoring entities
- Continue to evaluate the cost-effectiveness and political viability of regional municipal wastewater treatment facilities that include recycling wastewater effluent as part of the mid- and long-term water management strategy
- Continue to monitor the state's draft regulations for recycled water use for direct groundwater recharge through recharge basins and injection

F.3.4 Increase Water Supply – Surface Storage-Regional, Local, and CALFED

Surface storage aligns with many of the Goals and Objectives because of the water supply, flood management, groundwater recharge, and environmental and recreational values. Surface storage is a preferred alternative for creating new water, providing flood management, adapting to climate change, securing additional supplies for drought protection, and accounting for unexpected failures in other supplies. Incidental benefits are recreation, groundwater recharge, and controlled river flows. However, surface storage projects come at a high monetary and a high environmental cost.

The IRWM Plan region currently makes use of four reservoirs: Salinas Reservoir (Santa Margarita Lake), Whale Rock Reservoir, Lopez Lake, and Nacimiento Reservoir. All four benefit the management of water resources by improving water storage operations and flood control,

water supply conveyance operations, necessary instream flows and correct temperatures for aquatic life and ecosystems, and play an important role in groundwater recharge.

F.3.4.1 Recommended Project Elements

The following Recommended Project Elements were provided:

- Conduct a study of the North Coast and South County Sub-Regions for feasibility of utilizing surface water storage in local watersheds for adapting to climate change
- Evaluate the impacts on the SLO Region of forecasted curtailments in State Water Project (SWP) surface water and the state's proposed future plans to build new storage reservoirs north of the Delta
- Consider opportunities for off-stream reservoirs in the North County Sub-Region

F.3.5 Improve Water Quality – Drinking Water Treatment and Distribution

The SLO IRWM region has approximately 180 state-defined public water systems ranging from very small, serving a single complex or industry, to large, serving cities and communities. Each requires continuous monitoring for both available quantity and quality. Many of the Objectives of the Water Supply Goal are aligned with this RMS in some manner, as follows:

- Addresses water system treatment and conveyance deficiencies in all communities
- Improves utilization and operations of existing conveyance systems
- Provides sustainable drinking water supplies to communities, including DACs
- Supports improvements to existing public drinking water systems to meet state and federal drinking water quality standards
- Implements elements of a community's water management plan
- Integrates with system-wide conservation programs

F.3.5.1 Recommended Project Elements

The following Recommended Project Elements were provided:

- Identify and prioritize critical needs for all communities with drinking water system deficiencies, including the ability to meet fire flows and peak summer demands
- Develop water management plan elements to support water system improvements, to promote regionalization of both treatment and conveyance systems, and to meet requirements for state grant funding
- Conduct needed feasibility and environmental studies to develop final project designs and funding requirements
- Seek state and federal grant funding to support critical system improvements

F.3.6 Improve Water Quality – Matching Water Quality to Use

As a resource strategy, full implementation of a "Matching Water Quality to Use" program would require significant investment in regionalization of groundwater, surface water, recycled water, and desalinized water treatment and conveyance facilities. This strategy also includes no-cost seasonal exchanges between urban and agricultural water users.

For instance, surface water supplies could be transferred to agriculture using urban surface water rights during the peak agricultural water demand period. During these periods, agricultural users would use groundwater and possibly face pumping constraints in quantity, quality, and energy costs. In return for access to urban surface water supplies, the agricultural users of the surface water would return a similar amount of higher quality pumped groundwater during the fall-winter period when there is excess groundwater pumping capacity. In cases where place-of-use laws are enacted, transfers would likely have to be within the same region.

Initially, smaller projects can be formulated to push untreated source water to the highest possible beneficial use, then consider the added cost if treatment is required for the same use. This methodology or approach in strategy implementation addresses the following Objectives:

- Matching untreated groundwater with rural drinking water uses
- Matching untreated surface water with rural and agricultural irrigation uses
- Making this strategy a part of a community's water management plan, where indoor and outdoor uses share in the allocation of overall least cost alternatives, such as: developing a recycled water system for outdoor irrigation, rather than extracting additional groundwater (high quality, drought protection); or developing surface water supplies (in cases where there is no groundwater) better suited for potable drinking water supplies and/or maintaining minimum environmental flows

F.3.6.1 Recommended Project Elements

The following Recommended Project Elements were provided:

- New development should support use and development of impaired or lower quality water where such uses are cost-effective and could provide economic benefits to the Region
- Phased projects should be undertaken to begin evaluating regionalization of water systems for purposes of matching water quality to use, and demonstrating economic use of poor quality water to expand the water supply portfolio and support economic growth
- Federal or state funding opportunities for development of pilot projects should be pursued if local funding match dollars can be developed
- Local government and water purveyors should discuss the merits of this strategy and the types of regional partnerships that could be implemented to regionalize raw

water supplies for treatment and conveyance to corresponding best and highest beneficial uses

F.3.7 Improve Water Quality – Pollution Prevention

Pollution prevention is a primary objective of multiple goals with many directed at reducing the amount of pollutants entering the environment and drinking water supply sources. Objectives aligned with this RMS are as follows:

- Support projects to improve water quality in drinking water supplies
- Develop public education and involvement programs for watershed enhancement
- Provide ecosystem enhancement mechanisms to protect water supplies
- Increase watershed management activities to prevent point and non-point discharges to surface water or groundwater to minimize the need for enforcement of additional Total Maximum Daily Loads (TMDLs) actions
- Protect groundwater from point and non-point pollution discharges
- Improve flood control infrastructure to improve water quality and upstream soil erosion
- Support low impact development to reduce pollutant runoff and protect natural recharge areas

F.3.7.1 Recommended Project Elements

The following Recommended Project Elements were provided:

- Develop water management plan elements to support anti-degradation policies
- Conduct feasibility and environmental studies/assessments to support the implementation of non-point source discharge reduction measures and perform needed monitoring
- Seek state and federal grant funding to support public education and practices to reduce manmade and animal-originated pollution discharge
- Continue to participate in state and federal programs that investigate, assess, and monitor how pollution enters both freshwater supplies and the ocean

F.3.8 Improve Water Quality – Salt and Salinity Management

Salt management occurs along the coastal areas where salinity intrusion is being managed. Saline water resulting from the desalinization of pumped groundwater is discharged to the ocean. Future actions are being considered that will treat saline groundwater and inject the treated water to act as a barrier to further intrusion.

In inland areas, groundwater basins are in overdraft due to increased extractions by both urban and agricultural pumping. Saline water (Total Dissolved Solids > 2000 mg/l) is migrating to public, agriculture, and private rural wells. The following excerpt taken from the 2012 Master

Water Report, describes actions the community of Paso Robles is considering to protect its potable water supplies.

> *Nonetheless, salt loading to the groundwater basin is an important long-term concern. Recognizing that the City's wastewater disposal is one source of salt loading, the Paso Robles has made the reduction of salt loading one of their water resource goals. Major means to reduce salt in the city wastewater, include planned use of high-quality Lake Nacimiento supply, reduced use of home water softeners, strategic use of wells with lower salt concentrations, and implementation of an industrial waste discharge ordinance.*

Salinity Management would help meet Objectives by:

- Maximizing the accessibility and diversification of alternative water supplies other than groundwater in areas of salinity upwelling
- Provide sustainable water supplies for agriculture, urban, and rural areas by actively managing groundwater basins
- Develop groundwater management plans including salt and nutrient management plans
- Provide support and education in all communities, including DACs, reliant on threatened groundwater supplies

F.3.8.1 Recommended Project Elements

The following Recommended Project Elements were provided:

- Create groundwater management governance body
- Develop and adopt a GMP for impacted basins
- Increase the use of alternative water supplies such as Lake Nacimiento
- Reduce use of home water softeners that add salt to the treated wastewater stream
- Strategically place urban and agricultural wells in portions of the aquifer with lower salt concentrations and reduce contribution of the salinity upwelling
- Strategically inject desalinized water into aquifers to create hydraulic barriers to reduce further salinity intrusion by the ocean into fresh water coastal aquifers
- Implementation of an industrial waste discharge ordinance for regulating dischargers of high salt concentrations

F.3.9 Practice Resource Stewardship – Ecosystem Restoration

The ecosystems restoration strategy focuses on aquatic, riparian, and floodplain ecosystems restoration because these natural systems are directly affected by water, flood management, and climate change. Ecosystem Restoration is consistent with the primary IRWM Plan Goal:

Maintain or improve the health of the Region's watersheds, ecosystems, and natural resources through collaborative and cooperative actions, with a focus on assessment, protection, and restoration/enhancement of ecosystem and resource needs and vulnerabilities.

Key objectives of implementing this strategy are summarized as follows:

- Development of watershed plans to determine critical issues in targeting restoration actions
- Restore natural systems through conservation practices and place easements on lands to protect water supplies
- Develop public involvement and stewardship programs
- Protect and recover threatened and endangered species
- Reduce invasive species
- Increase monitoring to assess the impacts of climate change on ecosystems

F.3.9.1 Recommended Project Elements

The following Recommended Project Elements were provided:

- Estimate the monetary benefits to ecosystem restoration activities. Cost benefit analysis would consider the improved natural systems contribution in reducing storing, treating, and conveying a quantified amount of a water supply
- Introduce the concept of avoided cost of nature providing natural flood attenuation and sediment control
- Conduct feasibility and environmental studies to identify ecosystem restoration measures for implementation and monitor results
- Seek state and federal grant funding to support public education and activities for restoration practices
- Identify ecosystem restoration and enhancement opportunities appropriate for inclusion in proposed IWRM projects

F.3.10 Practice Resource Stewardship – Land Use Planning and Management

Land use planning is included in multiple IRWM Plan Objectives related to watershed, water management, groundwater management, and low impact development plans. Specific Objectives include:

- Promote low-impact development (LID) and other land use practices designed to reduce flooding and protect water supplies
- Integrate water resources infrastructure into land use planning for flood control and improved water supplies
- Consider water (quantity and quality) rights protection in land use planning to avoid

degradation or the reduction of legally protected water supplies
- Introduce watershed enhancement programs to maintain or increase water supplies with changes in land use over time

F.3.10.1 Recommended Project Elements

The following Recommended Project Elements were provided:

- Strive to have local planning agencies work with water agencies as watershed, water management, flood management, and groundwater management plans are developed and implemented
- Continue to involve agriculture and rural stakeholders in the land use planning process
- Protect natural groundwater recharge areas by incorporating conservation easements over lands that contribute to the recharge of existing groundwater supplies

F.3.11 Practice Resource Stewardship – Watershed Management

Watershed planning and management activities include quantification of watershed attributes including, but not limited to, the following:

- Political Entities
- Groundwater Basins
- Water Bodies
- Demographics
- Hydrology
- Land Use
- Water Supplies and Demand
- Water, Wastewater, and Drainage Infrastructure
- Water Quality
- Physical Setting
- Environmental and In-stream Water Demands

Watershed Management in the SLO Region is at the stage of collecting factual information prior to assessing management opportunities that may allow for efficiencies and increased reliability/sustainability of water supplies. Key Objectives include:

- Further develop watershed plans to determine the existing conditions and critical issues
- Develop water management plans that achieve sustainability with existing and foreseeable development
- Develop a plan for climate change and the associated impacts of droughts and

flooding on urban and agricultural developed areas

F.3.11.1 Recommended Project Elements

The following Recommended Project Elements were provided:

- Complete ongoing watershed management inventory and documentation efforts, and provide a list of opportunities and critical issues facing each watershed
- Integrate watershed plans in regional planning efforts which target vulnerabilities (i.e., climate change effects), improve water quality and supply reliability of water

F.3.12 Improve Flood Management – Flood Management

Flood Management strategies are a primary goal of the IRWM Plan as follows:

- Foster an integrated, watershed approach to flood management and improved storm water quality through collaborative community supported processes in order to ensure community health, safety, and to enhance quality of life

Key Objectives include:

- Understand Flood Management needs in the community
- Promote Low Impact Development to reduce runoff and protect against property damage
- Enhance natural groundwater recharge through deliberate ponding and detention of flood flows in areas of conducive to high recharge rates
- Improve infrastructure and operations to reduce flooding in downstream communities
- Implement multiple benefit projects to achieve the highest and best use of flood projects
- Restore streams, rivers, and floodplains to allow the natural flood paths to attenuate peak flood flows
- Support DAC flood protection

F.3.12.1 Recommended Project Elements

The following Recommended Project Elements were provided:

- Continue to protect against loss of life and property through flood management actions by the Flood Control District
- Stakeholder assessments and a DAC needs analysis are needed to document localized storm water and runoff issues and bring about an awareness of the need for regional solutions
- Seek development of regional, integrated storm water management projects that provide multiple benefits

- Endorse Flood Management projects such as:
  - Total storage approach to providing flood protection
  - Regional detention/retention ponds that have multiple beneficial uses, instead of development-specific detention ponds
  - Improvements to local drains to store additional flow from increased urban runoff

  - Utilize specific plan areas to work with developers to produce drainage master plans

F.3.13 Reduce Water Demand – Agricultural Water Use Efficiency

Water use efficiency programs are stated as Objectives in the IRWM Plan. For agriculture, programs already in place are providing the benefit of reduced strain on regional groundwater basins. Additional education, conservation and use of technology are needed to realize more benefits. The benefits, in addition to water savings, may include water quality improvements, environmental benefits, improved flow and timing, and often increased energy efficiency. The proposed use of IRWM Plan Objectives is as follows:

- Develop and implement conservation programs to increase water use efficiencies in all water use sectors
- Support sustainable water supplies for agriculture

F.3.13.1 Recommended Project Elements

The following Recommended Project Elements were provided:

- Agricultural growers should be encouraged to organize to:
- Develop Agricultural Water Management Plans
- Become eligible for statewide incentive programs
- Take the lead in submitting IRWM projects for purposes of grant funding
- Studies should be conducted to understand the benefits of subsidizing agricultural water use efficiency measures to use the conserved water for purposes of increased reliability in urban water sectors
- Measures should be taken to ensure a grower's freedom in making crop production decisions

F.3.14 Reduce Water Demand – Urban Water Use Efficiency

Water use efficiency programs are stated as Objectives in the IRWM Plan. For many urban users living in California and the SLO Region, water conservation has been a part of their lives, from not wasting water for conservation concerns, to reducing their water bill. As water costs

continue to increase, implementation of new conservation measures can help stabilize a customer's costs.

Key objectives of implementing this strategy are summarized as follows:

- Support sustainable water supplies in all communities
- Develop and implement conservation programs to increase water use efficiencies in all water use sectors

F.3.14.1 Recommended Project Elements

The following Recommended Project Elements were provided:

- Cities should coordinate the 2010 Urban Water Management Plan (UWMP) updates to:
    - Define urban water conservation regional funding mechanisms and approach
    - Develop a Regional UWMP (near-term action)
    - Develop drought management/contingency and catastrophic supply interruption plans
    - Implement a water conservation public information and outreach campaign
    - Review and track progress in implementing measures and implementing local UWMPs, or a regional San Luis Obispo 2010 UWMP
    - Prepare an annual report to document regional progress
    - Target future water uses, emphasizing development of standards that would minimize future water demands and ensure measurable savings when agricultural land is converted to urban uses consistent with existing land use plans
    - Streamline the development review and permitting process and ensure that water conservation practices are implemented at the time of project development and approval

F.3.15 Improve Operational Efficiency and Transfers – Conveyance (Regional/Local)

In 1997, the 100-mile long Coastal Branch of the State Water Project (SWP) was completed to transport SWP water to the counties of Santa Barbara and San Luis Obispo. The Central Coast Water Authority (CCWA) was specifically formed and modified over time for the purpose of designing, building, and operating regional treatment and conveyance facilities needed to deliver water from the Coastal Branch of the SWP to the various entities with contracts to receive that water in Santa Barbara and San Luis Obispo counties. SLO Region water purveyors receiving SWP today include the following:

- WPA 4 - City of Morro Bay, CMC, County Operations Center, Cuesta College
- WPA 6 - San Miguelito Mutual Water Company (MWC), Avila Beach Community Services District (CSD), Avila Valley MWC, San Luis Coastal Unified School District
- WPA 7 - City of Pismo Beach and Oceano CSD
- WPA 14 - Shandon (not currently receiving – anticipated to receive in 2015)

The IRWM Plan related objectives supporting this RMS are as follows:

- Maximizing the accessibility of water through full utilization of regional water facilities
- Supporting watershed enhancement and water management programs meant to convey water into or out of watersheds for beneficial use

F.3.15.1 Recommended Project Elements

The following Recommended Project Elements were provided:

- Conduct a regional conveyance and system reoperation study to develop cost-effective programs allowing for full utilization of SWP contracts and conveyance facilities
- Evaluate groundwater banking outside of San Luis Obispo to take advantage of unutilized SWP capacity and contract amounts during off-peak periods when surface water can be pumped south of the Delta

F.3.16 Improve Operational Efficiency and Transfers – System Reoperation

System reoperation includes the evaluation of water, wastewater, recycled, and desalinized facilities to improve effectiveness and efficiency throughout the region. This includes the evaluation and implementation of approaches to use water system infrastructure to gradually generate and/or use renewable energy to offset impacts from forecasted climate change.

Key objectives of implementing this strategy are summarized as follows:

- Maximize the effectiveness and efficiency of large-scale water supply (potable and non-potable) and wastewater facilities
- Develop strategies of reoperation that account for the possible impacts and vulnerabilities of greenhouse gas emissions, climate change, and droughts

F.3.16.1 Recommended Project Elements

The following Recommended Project Elements were provided:

- Develop studies to identify vulnerabilities in the existing large-scale water and wastewater systems as they relate to climate change
- Recommend opportunities to off-set climate change impacts through optimization and increased efficiency of large-scale water supply and wastewater facilities

F.3.17 Improve Operational Efficiency and Transfers – Water Transfers

Water transfer opportunities include both local and regional transfers of surface water and groundwater. Water transfers offer the ability to move water to places of beneficial use, including environmental and in-stream uses, but must be done in a way that does not harm individuals. Forecasted changes in precipitation patterns resulting from climate change will necessitate storage of water to capture late fall and winter month runoff and offset decreased rainfall in spring and summer months. Importing excess water from the SWP and Lake Nacimiento delivery systems can be used to recharge groundwater supplies in the Paso Basin region.

Key objectives of implementing this strategy are summarized as follows:

- Optimize the accessibility of surface water and groundwater through water transfer agreements and use of existing infrastructure
- Plan for climate change through watershed and ecosystem enhancement programs which make full utilization of available excess water supplies

F.3.17.1 Recommended Project Elements

The following Recommended Project Elements were provided:

- Seek to optimize excess surface water and groundwater through water transfer agreements
- Develop robust water management strategies, which include water transfers, to plan for decreased water supplies resulting from forecasted climate change

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