JULY 2014

San Luis Obispo County
2014 Integrated Regional Water Management Plan

GEI Consultants

Prepared with GEI Consultants and support from Fugro Consultants, Dudek, Gutierrez Consultants, and Hollenbeck Consulting

July 2014

San Luis Obispo Integrated Regional Water Management Plan

San Luis Obispo Regional Water Management Group:

California Men's Colony
Cambria CSD
Central Coast Salmon Enhancement
City of Arroyo Grande
City of Grover Beach
City of Morro Bay
City of Paso Robles
City of Pismo Beach
City of San Luis Obispo
Coastal San Luis Resource Conservation District
Heritage Ranch CSD
Land Conservancy
Los Osos CSD
Morro Bay National Estuary Program
Nacimiento Regional Water Management Advisory Committee
Nipomo CSD
Oceano CSD
San Luis Obispo County
San Luis Obispo County Flood Control and Water Conservation District
San Miguel CSD
San Simeon CSD
S&T Mutual Water Company
Templeton CSD
Upper Salinas - Las Tablas Resource Conservation District

Preface

The California Department of Water Resources (DWR) has established a Plan Review Process (PRP) designed to assess whether IRWM plans are consistent with the 2012 IRWM Plan Standards. The PRP is described in Appendix H of the 2014 IRWM Drought Guidelines.

To be eligible for state funding, IRWM plans must be submitted to DWR for review and meet the requirements listed in the Appendix Q tables below. To assist DWR, we have provided the section numbering and descriptions for those sections which, in whole, or partially address the given requirements.

In most cases, bookmarks in Adobe Acrobat can be turned-on and used for navigation to the various sections called-out below. Please note that some items are addressed throughout the document, with the section called out as having the most focus on the specific requirement. The organization of the IRWM Plan was intentionally structured around the PRP requirements to provide clear intent on what is being addressed.

We hope this helps expedite the review of the San Luis Obispo IRWM Plan.

Taken from Appendix Q – 2012 IRWM Plan Standards Review Form Tables

Table App Q-1. Governance Requirements

Requirement	Evidence of Sufficiency		Sufficient
From IRWM Guidelines	**Location of Standard in Grantee IRWM Plan**	**Brief Evaluation Narrative**	**y/n**
Document a governance structure to ensure updates to the IRWM Plan:			
The name of the RWMG responsible for implementation of the IRWMP	B.2 IRWM Program Participants A1.2 Plan Financial Support A1.3 Point of Contact	These sections identify the RWMG lead agency and the IRWM Program Participants.	
A description of the IRWM governance structure	B.3 Organizational Structure Figure B-3 Governance Structure	This section and figure identify the IRWM organizational structure.	
A description of how the chosen form of governance addresses and ensures:			
Public outreach and involvement processes	B.4 Stakeholder Involvement App C Communications and Outreach Plan	Section B.4 and the Outreach Plan describe the stakeholder involvement and public outreach process.	
Effective decision making	B.3.2 Decision Making Process	This section documents the decision making process used at the RWMG meetings	
Balanced access and opportunity for participation in the IRWM process	B.2 Program Participants B.3 Organizational Structure B.4.6 Public Information	This section identifies the various opportunities for participation in the IRWM Plan and the diverse makeup of the RWMG. Section B.4.6 identifies the variety of ways we communicate (via email and internet) with stakeholders and RWMG members.	
Effective communication – both internal and external to the IRWM region	B.4.1 Communications and Outreach Plan App C Communication and Outreach Plan	This Section and the Outreach Plan establish our communication guidelines to facilitate effective internal and external communications.	
Long term implementation of the IRWM Plan	B.5 Long Term Implementation	This section outlines the long term implementation of the Plan including updates and amendments to the Plan.	
Coordination with neighboring IRWM efforts and State and federal agencies	B.5.4 Coordination with Neighboring Efforts Section O Planning Coordination	These sections address coordination with neighboring IRWM efforts and State and federal agencies.	
The collaborative process(es) used to establish plan objectives	E.1 Process and Determination of G&Os App C Communications and Outreach Plan	This section describes the process using the Sub-Regional workshops to identify the critical water issues which were used to identify the objectives in each Sub-Region.	
How interim changes and formal changes to the IRWM Plan will be performed	B.5.2 Updating or Amending Plan Figure B-5 Re-Adoption Updates Schedule	This section describes the process for updating and amending the list of projects and programs. Figure B-5 identifies the IRWM Plan Update schedule and identifies those activities that constitute Plan re-adoption.	
Updating or amending the IRWM Plan	B.5.2 Updating or Amending Plan Figure B-5 Re-Adoption Updates Schedule	This section describes the process for updating and amending the list of projects and programs. Figure B-5 identifies the IRWM Plan Update schedule and identifies those activities that constitute Plan re-adoption.	
Publish NOI to prepare/update the plan; adopt the plan in a public meeting	B.5.1 NOI to Prepare IRWM Plan	This section describes the process to publish the Notice of Intent to prepare, update, and adopt the IRWM Plan.	

Table App Q-2. Region Description Requirements

Requirement	Evidence of Sufficiency		Sufficient
From IRWM Guidelines	**Location of Standard in Grantee IRWM Plan**	**Brief Evaluation Narrative**	**y/n**
If applicable, describe and explain how the plan will help reduce dependence on the Delta supply regionally	C.8.6.1 Reducing Reliance on the Delta	This section describes how the Plan will help the region reduce its dependency on the delta by providing a more integrated water management system relying less on State Water Project supplies in dry years.	
Describe watersheds and water systems	C.7 Watersheds C.5 Water Planning Areas C.8 Major Infrastructure	Section C.7 describes the watersheds and Section C.5 describes the Water Planning Areas and major water systems within the County. Section C.8 describes the major water infrastructure within the County.	
Describe internal boundaries	C.2 Relevance as a Planning Area	This section describes the primary internal boundaries within the IRWM Plan Area which are the Sub-Region Boundaries.	
Describe water supplies and demands for minimum 20 year planning horizon	D (all) Water Supply, Demand, and Water Budget	This section includes the current and future water demands and supplies through 2035.	
Describe water quality conditions	C.9 Water Quality Conditions	This section describes the current watershed and groundwater quality conditions based on the available information from watershed studies and monitoring results.	
Describe social and cultural makeup, including specific information on DACs and tribal communities in the region and their water challenges.	C.16 Cultural and Social Profile	This section describes the cultural and Social Profile of San Luis Obispo County.	
Describe major water related objectives and conflicts *	C.13 IRWM Plan Regional Issues and Conflicts	This section describes the regional issues and conflicts with San Luis Obispo Region.	
Explain how IRWM regional boundary was determined and why region is an appropriate area for IRWM planning.	C.2 Relevance as a Planning Area	This section describes the relevance and appropriate Regional and Sub-Regional boundaries within the IRWM Plan Area.	
Describe neighboring and/or overlapping IRWM efforts	O.2 Coordination Strategy with Adjacent.. C.17 Relationship to Other IRWM Plan Efforts	These sections describe the coordination strategy with the neighboring IRWMP Regions and the Central Coast Funding Area.	
Explain how opportunities are maximized (e.g. people at the table, natural features, infrastructure) for integration of water management activities	H (all) Project Integration O.1 Coordinate Activities to Avoid Conflict	This section describes the project integration opportunities within the IRWM Plan Area and the coordination of having the right people at the table to improve integration while reducing conflict.	

* Requirement must be addressed.

Table App Q-3. Goals and Objectives Requirements

Requirement	Evidence of Sufficiency		Sufficient
From IRWM Guidelines	**Location of Standard in Grantee IRWM Plan**	**Brief Qualitative Narrative**	**y/n**
Through the objectives or other areas of the plan, the 7 items on pg 41 of GL are addressed.*	E.1.2.3 California Water Code E.2 IRWM G&Os Table E-4 CWC Reqmnts and Consistency	These sections and table describes how the Plan addresses the CWC minimum requirements.	
Describe the collaborative process and tools used to establish objectives: - How the objectives were developed - What information was considered (i.e., water management or local land use plans, etc.) - What groups were involved in the process - How the final decision was made and accepted by the IRWM effort	E.1 Process and Determination of G&Os	This section describes the consensus-based approach used by the stakeholders to update the goals and objectives in each Sub-Region.	
Identify quantitative or qualitative metrics and measureable objectives: Objectives must be measurable - there must be some metric the IRWM region can use to determine if the objective is being met as the IRWM Plan is implemented. Neither quantitative nor qualitative metrics are considered inherently better. *	E.4 G&Os Metrics Tables E-6 to E-10 Goal's Measurements	This section and these tables identify the objectives for each goal and their qualitative or quantitative metric.	
Explain how objectives are prioritized or reason why the objectives are not prioritized	E.5 Prioritization and IRWM G&Os	This section describes how the locally driven objectives are used to develop priorities in each of the three Sub-Regions.	
Reference specific overall goals for the region: RWMGs may choose to use goals as an additional layer for organizing and prioritizing objectives, or they may choose to not use the term at all.	E.2 IRWM G&Os	This section identifies the overall goals for the Region	

* Requirement must be addressed.

Table App Q-4. State Resource Management Strategy Requirements

Requirement	Evidence of Sufficiency		Sufficient
From IRWM Guidelines	**Location of Standard in Grantee IRWM Plan**	**Brief Evaluation Narrative**	**y/n**
Identify RMS incorporated in the IRWM Plan: Consider all California Water Plan (CWP) RMS criteria (29) listed in Table 3 from the CWP Update 2009 *	F.2 RMS Review Process Table F-1 IRWM Plan Water Management Strategies	This section and table show how the 29 RMS were grouped and applied to the Region meeting the 23 regional WMS.	
Consideration of climate change effects on the IRWM region must be factored into RMS	F.2.2 Work Group RMS Review Table F-2 RMS as Applied for Region	This section and table include climate change as part of the RMS evaluation. Climate Change is considered throughout the section and in Section P – Climate Change	
Address which RMS will be implemented in achieving IRWM Plan Objectives	F.3 RWMG Findings and Recommend Proj Elements Table F-2 RMS as Applied for Region Appendix F RMS Screening and Definition Packet	This section and table align the DWR RMS with the IRWM Plan objectives. The packet includes the stakeholder process of considering each of the State RMS and their applicability in the SLO Region	

* Requirement must be addressed.

Table App Q-5. Integration Requirements

Requirement	Evidence of Sufficiency		Sufficient
From IRWM Guidelines	**Location of Standard in Grantee IRWM Plan**	**Brief Evaluation Narrative**	**y/n**
Contains structure and processes for developing and fostering integration [1]: - Stakeholder/institutional - Resource - Project implementation	H.1 Advantages of Region Plan Opposed to Indiv Efforts Figure H-2 Decision Tree for Agency Integration	This section and figure describe the approach for project/agency integration through the use of project elements.	

November 2012 Guidelines, p. 44.

Table App Q-6. Project Review Processes Requirements

Requirement	Evidence of Sufficiency		Sufficient
From IRWM Guidelines	**Location of Standard in Grantee IRWM Plan**	**Brief Evaluation Narrative**	**y/n**
Process for projects included in IRWM plan must address 3 components: - procedures for submitting projects - procedures for reviewing projects - procedures for communicating lists of selected projects	G.2 Project Solicitation Process Figure G-2 Project Scoring and Ranking Process	This section describes, in detail, the approach used to identify, develop, rank, and communicate project selections for each "call for projects" by the RWMG.	
Does the project review process in the plan incorporate the following factors:			
How a project contributes to plan objectives	G.2.2 Objective Worksheet	This section describes how the plan objectives are utilized to identify project concepts.	
How a project is related to Resource Management Strategies identified in the plan.	G.2.5 Phase 2 Long Project Forms App G-5 Project Form Review Paper Table H-1	This section describes how various criteria are used to evaluate projects.	
The technical feasibility of a project.	Section G.3.1 Technical Accuracy Appendix G-5 Project Form Review Paper	This section describes how various criteria are used to evaluate projects.	
A projects specific benefits to a DAC water issue.	Section G.3 Final Evaluation App G-5 Project Form Review Paper	This section describes how various criteria are used to evaluate projects.	
Environmental Justice considerations.	G.3 Final Project Evaluation App G-5 Project Form Review Paper	This section describes how various criteria are used to evaluate projects.	
Project costs and financing	G.3 Final Project Evaluation App G-5 Project Form Review Paper	This section describes how various criteria are used to evaluate projects.	
Address economic feasibility	G.3 Final Project Evaluation App G-5 Project Form Review Paper	This section describes how various criteria are used to evaluate projects.	
Project status	G.3 Final Project Evaluation App G-5 Project Form Review Paper	This section describes how various criteria are used to evaluate projects.	
Strategic implementation of plan and project merit	G.3 Final Project Evaluation App G-5 Project Form Review Paper	This section describes how various criteria are used to evaluate projects.	
Project's contribution to climate change adaptation	P.13 Project Ratings based on Climate Change Table P-9 Project Notes and Rankings	This section ranks the current projects on climate change.	
Contribution of project in reducing GHGs compared to project alternatives	P.13 Project Ratings based on Climate Change Table P-9 Project Notes and Rankings	This section ranks the current projects on GHG emissions.	
Status of the Project Proponent's IRWM plan adoption	B.5.3 IRWM Plan Adoption Figure 5-3 Adopting Agencies (to be completed when approved by DWR)	Dates will be provided upon plan adoption.	
Project's contribution to reducing dependence on Delta supply (for IRWM regions receiving water from the Delta).	G.3 Final Project Evaluation Appendix G-5 Project Form Review Paper	This section describes how various criteria are used to evaluate projects.	

Table App Q-7. Impacts and Benefits Requirements

Requirement	Evidence of Sufficiency		Sufficient
From IRWM Guidelines	**Location of Standard in Grantee IRWM Plan**	**Brief Evaluation Narrative**	**y/n**
Discuss potential impacts and benefits of plan implementation within IRWM region, between regions, with DAC/EJ concerns and Native American Tribal communities	Table I-6 Other Resource Impacts and Benefits	This table identifies the impacts and benefits of plan implementation by goal by project element and other resources.	
State when a more detailed project-specific impact and benefit analysis will occur (prior to any implementation activity)	G.3 Final Evaluation Appendix G-5 Project Form Review Paper I.2 Project Element Method of Impacts and Benefits	This question is answered as part of the Project Form Review Document but no timing is specified due to lack of firm construct date for individual projects, maintaining a programmatic analysis until projects are identified for construction.	
Review and update the impacts and benefits section of the plan as part of the normal plan management activities	I (entire section) Figure Q-4 Plan Management and Update Schedule	This figure shows when this section will be revisited as part of the regular IRWM Plan Update schedule.	

Table App Q-8. Plan Performance and Monitoring Requirements

Requirement	Evidence of Sufficiency		Sufficient
From IRWM Guidelines	**Location of Standard in Grantee IRWM Plan**	**Brief Evaluation Narrative**	**y/n**
Contain performance measures and monitoring methods to ensure that IRWM objectives are met *	J.2 Program Level Performance Measures and Monitoring Table J-1 to J-5 – Performance Measures and Monitoring Methods	This section and tables include the objectives, performance measures, and monitoring methods for each IRWM Plan goal.	
Contain a methodology that the RWMG will use to oversee and evaluate implementation of projects.	J.4 Evaluating and Reporting Plan of Performance J.4.2 Project Monitoring and Reporting	This section describes the methodology used to monitor project implementation.	

* Requirement must be addressed.

Table App Q-9. Data Management Requirements

Requirement	Evidence of Sufficiency		Sufficient
From IRWM Guidelines	**Location of Standard in Grantee IRWM Plan**	**Brief Evaluation Narrative**	**y/n**
Describe data needs within the IRWM region	K.2 Overview of Data Needs K.3 Description of Data Needs Table K-2 Data Collection Efforts	These sections provide a brief description of the data needs to support ongoing updates and monitoring of the IRWM. Section K.3 identifies some of the data needs and State databases where selected data is already or to be uploaded.	
Describe typical data collection techniques	K.4 Current Data Programs Table K-2 Data Collection Efforts and Techniques	This section lists all of the Regions data collection activities, data collection techniques, and how the data is generally used.	
Describe stakeholder contributions of data to a data management system	K.4 Current Data Programs K.8.3 Public Comments on Acceptance of Single DMS K.8.4 Proposed Implementation of a DMS	This section describes the various monitoring programs and the local agencies that participate in those programs along with public outreach results.	
Describe the entity responsible for maintaining data in the data management system	K.1 Introduction K.8.4 Proposed Implementation of a DMS	This section describes the role of the District and other agencies in data management activities.	
Describe the QA/QC measures for data	K.8.1.1 QC and Assurances Measures	This section describes the data collection QA/QC control measures. Although QA/QC is throughout this section given the importance of good data.	
Explain how data collected will be transferred or shared between members of the RWMG and other interested parties throughout the IRWM region, including local, State, and federal agencies *	K.4 Current Data Programs K.4.1 Existing Communication with State and Federal Database K.8.1 Formatting Data and Interacting with State and Federal	This section identifies anticipated features of a data management system.	
Explain how the Data Management System supports the RWMG's efforts to share collected data	K.7 Preferred Features in a DMS	This section identifies anticipated features of a data management system to support data sharing and accessibility	
Outline how data saved in the data management system will be distributed and remain compatible with State databases including CEDEN, Water Data Library (WDL), CASGEM, California Environmental Information Catalog (CEIC), and the California Environmental Resources Evaluation System (CERES).	K.4.1 Existing Communication with State and Federal Database K.8.1 Formatting Data and Interacting with State and Federal	These sections identify the statewide databases that the region is working with and features of a future DMS to be compatible with and how they will support the exchange of information.	

* Requirement must be addressed.

Table App Q-10. Finance Requirements

Requirement	Evidence of Sufficiency		Sufficient
From IRWM Guidelines	**Location of Standard in Grantee IRWM Plan**	**Brief Evaluation Narrative**	**y/n**
Include a programmatic level (i.e. general) plan for implementation and financing of identified projects and programs* including the following:			
List known, as well as, possible funding sources, programs, and grant opportunities for the development and ongoing funding of the IRWM Plan.	L (entire section) Tables L-4 to L-13 Grant Funding Matrix	This section and accompanying tables identify sources of local funding as well as State and federal grant programs to support planning activities and implementation if IRWM Plan projects.	
List the funding mechanisms, including water enterprise funds, rate structures, and private financing options, for projects that implement the IRWM Plan.	L.2 Local Government Funding	This section identifies various sources of local government funding that support capital projects as well as operation and maintenance.	
An explanation of the certainty and longevity of known or potential funding for the IRWM Plan and projects that implement the Plan.	L.2 Local Government Funding	This section identifies various sources of local government funding that support capital projects as well as operation and maintenance.	
An explanation of how operation and maintenance (O&M) costs for projects that implement the IRWM Plan would be covered and the certainty of operation and maintenance funding.	L.2 Local Government Funding Appendix G-5 Project Form Review Paper	This section identifies various sources of local government funding that support capital projects as well as operation and maintenance.	

* Requirement must be addressed.

Table App Q-11. Technical Analysis Requirements

Requirement	Evidence of Sufficiency		Sufficient
From IRWM Guidelines	**Location of Standard in Grantee IRWM Plan**	**Brief Evaluation Narrative**	**y/n**
Document the data and technical analyses that were used in the development of the plan*	M (entire section) Technical Analysis	This section identifies all the existing technical documents which were available to support the Regional and Sub-Regional decisions made by the RWMG members and stakeholders. This list includes existing studies, studies completed under a Proposition 50 planning grant, and the current Proposition 84 planning grant.	

* Requirement must be addressed.

Table App Q-12. Relation to Local Water Planning Requirements

Requirement	Evidence of Sufficiency		Sufficient
From IRWM Guidelines	**Location of Standard in Grantee IRWM Plan**	**Brief Evaluation Narrative**	**y/n**
Identify a list of local water plans used in the IRWM plan	N.1 Relation to Planning Documents Table N-1	This section identifies the local agencies and the water planning documents produced in the Region in setting land and water use policies which were used by local agencies to support their participation in the IRWM Plan.	
Discuss how the plan relates to these other planning documents and programs	N.2 Plan Linkages with Local Water and Land Use Studies Table N-1 Planning Document Utilized for Plan	This section identified the planning documents and describes how the Plan relied upon the existing documents which document the local agency policies, goals and actions etc. used to develop the Plan	
Describe the dynamics between the IRWM plan and other planning documents	N.6 IRWM Dynamics with Local Planning Agencies	This section describes how the IRWM Plan was designed to combine and build upon the strategies and recommendations of the local planning documents.	
Describe how the RWMG will coordinate its water mgmt planning activities	N.7 Issues and Relationships between Local Planning and Water Entities	This section identifies several of the regulatory issues that are high priority to the water purveyors. This section also identifies the role of the IRWM Plan to provide a forum to encourage communication on water management issues.	

Table App Q-13. Relation to Local Land Use Planning Requirements

Requirement	Evidence of Sufficiency		Sufficient
From IRWM Guidelines	**Location of Standard in Grantee IRWM Plan**	**Brief Evaluation Narrative**	**y/n**
Document current relationship between local land use planning, regional water issues, and water management objectives	N (entire section) Relation to Local Water and Land Use Planning	This section starts by looking at opportunities to improve the sustainability of the region's water resources. It includes a comprehensive list of the most current and relevant local land and water use plans. These plans and their relationship to the IRWM Plan are described on Table N-1.	
Document future plans to further a collaborative, proactive relationship between land use planners and water managers	N.6.1 Consensus with Local Stakeholders N.7.1 How the RWMG will Coordinate Management Planning Activities		

Table App Q-14. Stakeholder Involvement Requirements

Requirement	Evidence of Sufficiency		Sufficient
From IRWM Guidelines	**Location of Standard in Grantee IRWM Plan**	**Brief Evaluation Narrative**	**y/n**
Contain a public process that provides outreach and opportunity to participate in the IRWM plan *	B.4 Stakeholder Involvement and Public Outreach Process Appendix C Communications and Outreach Plan	This section describes how all RWMG meetings and workshops are open to the public. Meeting and workshop announcements are noticed by email to stakeholders and posting on the County website.	
Identify process to involve and facilitate stakeholders during development and implementation of plan regardless of ability to pay; include barriers to involvement *	B.4 Stakeholder Involvement and Public Outreach Process Appendix C Communications and Outreach Plan	The Public Outreach Plan describes the six DAC Visioning Workshops and Focus Group meetings were held at the outset of the Plan Update to encourage active and sustained participation of representatives of DACs in a manner that is consistent with their cultural economic and social considerations.	
Discuss involvement of DACs and tribal communities in the IRWM planning effort	B.4 Stakeholder Involvement and Public Outreach Process B.4.8 Use of Existing Orgs and Communication Channels Appendix C Communications and Outreach Plan	All DAC's are signatory to the San Luis Obispo County Region Integrated Regional Water Management Program Memorandum of Understanding (MOU). Existing channels of communication are relied upon heavily because of the high success of regional and local cooperation.	
Describe decision-making process and roles that stakeholders can occupy	B.3.2 Decision Making Process Appendix C Communications and Outreach Plan	This section describes the approach for stakeholder participation, and decision making by the RWMG members.	
Discuss how stakeholders are necessary to address objectives and RMS	B.4.3 RWMG Working Group and Workshops Appendix C Communications and Outreach Plan	This section describes stakeholder participation in Sub-Regional workshops where data, issues, and information is presented, and draft goals and objectives, resource management strategies, and other items are developed.	
Discuss how a collaborative process will engage a balance in interest groups	B.2 IRWM Program Participants Figure B-2, IRWM Planning Region Appendix C Communications and Outreach Plan	This section describes how the IRWMP builds upon long-term water resources planning activities in County including use of the Water Resources Advisory Committee (WRAC). The diverse Regional Water Management Group) (RWMG) includes 24 members from throughout the County. In addition, the Public Outreach Plan identifies additional interest stakeholders beyond both the WRAC and RWMG.	

* Requirement must be addressed.

Table App Q-15. Coordination Requirements

Requirement	Evidence of Sufficiency		Sufficient
From IRWM Guidelines	Location of Standard in Grantee IRWM Plan	Brief Evaluation Narrative	y/n
Identify the process to coordinate water management projects and activities of participating local agencies and stakeholders to avoid conflicts and take advantage of efficiencies *	O.1 Coordinate Water Activities to Avoid Conflict O.5 Water Service Cooperative Agreement and Other Efforts	This section identifies various water resource related agencies and stakeholders that are important to coordinate with and provides examples of cooperative agreements and other inter-agency coordination efforts within the IRWM Region.	
Identify neighboring IRWM efforts and ways to cooperate or coordinate, and a discussion of any ongoing water management conflicts with adjacent IRWM efforts	O.2 Activity Coordination Strategy O.5 Water Service Cooperative Agreement and Other Efforts	This section identifies the coordination activities with adjacent regions (Section O.2) and cooperative agreements and coordination efforts (Section O.5)	
Identify areas where a state agency or other agencies may be able to assist in communication or cooperation, or implementation of IRWM Plan components, processes, and projects, or where State or federal regulatory decisions are required before implementing the projects.	O.3 Coordination with State and Federal Agencies Table O-2 Potential Permits Table O-3 Project Coordination with State and Federal Agencies	This section identifies State and federal agencies that may play a role in implementing IRWM projects, including potential permitting responsibilities	

* Requirement must be addressed.

Table App Q-16. Climate Change Requirements

Requirement	Evidence of Sufficiency		Sufficient
From IRWM Guidelines	Location of Standard in Grantee IRWM Plan	Brief Evaluation Narrative	y/n
Evaluate IRWM region's vulnerabilities to climate change and potential adaptation responses based on vulnerabilities assessment in the DWR Climate Change Handbook for Regional Water Planning *	P.10 Vulnerability Assessment Table P-6 Vulnerability Rating Categories	This section identifies and ranks the Sub-Region's vulnerabilities to climate change.	
Provide a process that considers GHG emissions when choosing between project alternatives *	P.13.2 Mitigation Analysis Table P-8 Baseline Emissions from Water Related Activities	This section identifies how the top 15 projects were evaluated using a qualitative mitigation potential to address GHG emissions.	
Include a list of prioritized vulnerabilities based on the vulnerability assessment and the IRWM's decision making process.	P.10 Vulnerability Assessment	This section provides a list of prioritized vulnerabilities by Sub-Region.	
Contain a plan, program, or methodology for further data gathering and analysis of prioritized vulnerabilities	P.12 Future Data Gathering and Analysis	This Section summarizes the highlights of the current and future data collection and monitoring process.	
Include climate change as part of the project review process	G.3 Final Project Evaluation Table G-3 Final Project Selection P.13.3 Ranking Projects based on Climate Change Table P-9 Project Notes and Rankings	This section provides a climate change ranking based on relative levels of adaption and mitigation.	

* Requirement must be addressed.

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Acronyms

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2012 CDWR IRWM Guidelines	California Department of Water Resources' Guidelines for the Integrated Regional Water Management proposition 84 and 1E (November 2012)
AC	Acre(s)
ACEC	Area of Critical Environmental Concern
AF	Acre-Feet
AFY	Acre-Feet per Year
ARRA	American Recovery and Reinvestment Act of 2009
Basin Plan	Central Coast Basin Plan
BMP	Best Management Practices
CalTAP	technical assistance providers
CASGEM	California Statewide Groundwater Elevation Monitoring
CCD	Census County Division
CCWA	Central Coast Water Authority
CDB	Community Development Block Grants
CDD	Cooling Degree Days
CDFG	California Department of Fish and Game
CDPH	California Department of Public Health
CDWR	California Department of Water Resources
CEC	California Energy Commission
CEDS	The Comprehensive Economic Development Strategies
CEQA	California Environmental Quality Act
CIMIS	California Irrigation Management Information System
CIP	Capital Improvement Plan
CMIP	Coupled Model Inter-comparison Project
CRWA	California Rural Water Association
CSD	Community Service District
CWC	California Water Code
CWP	California Water Plan
CWSRF	Clean Water State Revolving Fund
DAC	Disadvantaged Community
DFA	Division of Financial Assistance
District	San Luis Obispo County Flood Control and Water Conservation District
DWSRF	Drinking Water State Revolving Fund
EERE	Energy Efficiency and Renewable Energy
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
ESA	Endangered Species Act of 1973
ET	Evapotranspiration

FAR	(IPCC IS92a Scenario) First Assessment Report (1990)
FEMA	Federal Emergency Management Agency
FPGP	(Water Recycling) Facilities Planning Grant Program
GDD	Growing Degree Days
GFDL	Geophysical Fluid Dynamics Laboratory model
GMA	Groundwater Management Area
GMP	Groundwater Management Plan
GO	General Obligation (Bond Rate)
gpd	Gallons Per Day
Guidelines	2012 Proposition 84 and 1E IRWM Program Guidelines
HDD	Heating Degree Days
HCP	Habitat Conservation Plan
HUD	Housing and Urban Development
HUC	Hydrologic Unit used for delineating watersheds
IPCC	Intergovernmental Panel on Climate Change
IRWM	Integrated Regional Water Management
JPAs	Join Powers Authorities
KAF	Thousand Acre-Feet
LAFCO	Local Agency Formation Committee
LDC	Legacy Data Center
Lead Agency	San Luis Obispo County Flood Control and Water Conservation District
LID	low-impact development
LLNL	Lawrence Livermore National Labs
MAF	Million Acre-Feet
MGD	Million Gallons per Day
MHI	Median Household Income
MOU	Memorandum of Understanding
MSL	Mean Sea Level
MWC	San Miguelito Mutal Water Company
NEPA	National Environmental Policy Act
NFIP	National Flood Insurance Program
NFWF	National Fish and Wildlife Foundation
NMMA	Nipomo Mesa Management Area
NOP	Notice of Preparation

NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollution Discharge Elimination System
NPS	nonpoint sources
PEIS	Programmatic Environmental Impact Settlement
Plan	Integrated Regional Water Management Plan
PSP	Proposal Solicitation Package
PUD	Public Utility District
PVC	Polyvinyl Chloride
PWG	Project work group
RAP	Region Acceptance Process by DWR
RCAC	Rural Community Assistance Corporation
Region	San Luis Obispo County Region
RMS	Resource Management Strategy
RO	Reverse Osmosis
RWMG	(San Luis Obispo) Regional Water Management Group
RWQCB	Regional Water Quality Control Board
SAR	IPCC IS92a Scenario, Second Assessment Report, 1995
SB	Senate Bill
SBA	Small Business Administration
SCADA	Supervisory Control and Automated Data Acquisition
SCWG	Small Community Wastewater Grant (Program)
SDWSRF	Safe Drinking Water State Revolving Fund
SHE	Self-Help Enterprises
SLO	San Luis Obispo
SLR	sea-level rise
SLOC	San Luis Obispo County
SRES	Special Report on Emissions Scenarios
SRF	State Revolving Fund
SSCSD	San Simeon Community Services District
SSMP	Avila Beach CSD 2010 Sewer System Management Plan
State Guidelines	2012 Proposition 84 and 1E IRWM Program Guidelines
STORET	Data storage and retrieval system tracking commercial/industrial uses
SWDA	Safe Drinking Water Act
SWFM	Stormwater Flood Management
SWP	State Water Project
SWRCB	California State Water Resources Control Board
SWS	small water system
t	Trace, flow volume greater than 0 AF and less than 500 AF

TDS	Total Dissolved Solids
THMs	Trihalomethanes
TMDL	Total Maximum Daily Load
USACE	U.S. Army Corps of Engineers
USBLM	U.S. Bureau of Land Management
USBR	U.S. Bureau of Reclamation
USDA	U.S. Department of Agriculture
USDOE	U.S. Department of Energy
USDOI	U.S. Department of the Interior
USEDA	U.S. Economic Development Administration
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UST	Underground Storage Tank
UWMP	Urban Water Management Plan
VOC	Volatile Organic Carbon
WCRP	World Climate Research Programme
WEP	Water and Environmental Programs
WCRP	World Climate Research Programme
WRAC	Water Resources Advisory Committee
WRCP	Water Recycling Construction Program
WSA	Senate Bill 610 Water Supply Assessment
WSAmt	State Water Project Water Service Amount
WSV	Water Supply Verification
WWD	Wastewater Disposal (Program)
WWTP	Wastewater Treatment Plant

Section A.
Introduction

Section A. Introduction

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Section A. Introduction

This section describes the purpose of the San Luis Obispo County Integrated Regional Water Management Plan (IRWM Plan) and the regulatory guidelines and requirements driving much of the content and material included in the plan. In addition, this section serves as a roadmap for the IRWM Plan and includes brief descriptions and references to those portions of the plan where topic-related information is located. This section describes how the IRWM Plan meets the overall 2012 California Department of Water Resources (DWR) Guidelines (State Guidelines), and requirements for DWR approval specified in Appendix H of the State Guidelines, *The Final Plan Review Process*.

A.1 PURPOSE OF THE IRWM PLAN

This IRWM Plan presents a comprehensive water resources management approach to managing the region's water resources, focusing on strategies to improve the sustainability of current and future needs of San Luis Obispo County. It is built on the existing foundation of the region's longstanding inter-agency cooperation and stakeholder collaboration.

This plan was written to meet the latest IRWM requirements, balancing the needs of the participating agencies with the State's need to have a full, well thought-out plan on which to base implementation of future water resources projects/programs and provide the maximum benefit wherever and whenever needed.

A.1.1 Regions and Sub-Regions Included in the IRWM Plan

The region covered by this IRWM Plan is the whole of San Luis Obispo County, whose boundary is concurrent with that of the San Luis Obispo County Flood Control and Water Conservation District (District) (see **Figure A-1**). The County's 3,304 square mile area is further divided into three sub-regions: the North Coast Sub-Region, the North County Sub-Region, and the South County Sub-Region. Within the sub-regions, there are 16 Water Planning Areas (WPAs) and 26 watersheds. Sub-regions and WPAs are both useful in differentiating among local issues and allowing for meaningful, focused stakeholder involvement. A detailed description of the IRWM region, Sub-Regions, WPAs, and watersheds are included in **Section C – Region Description**.

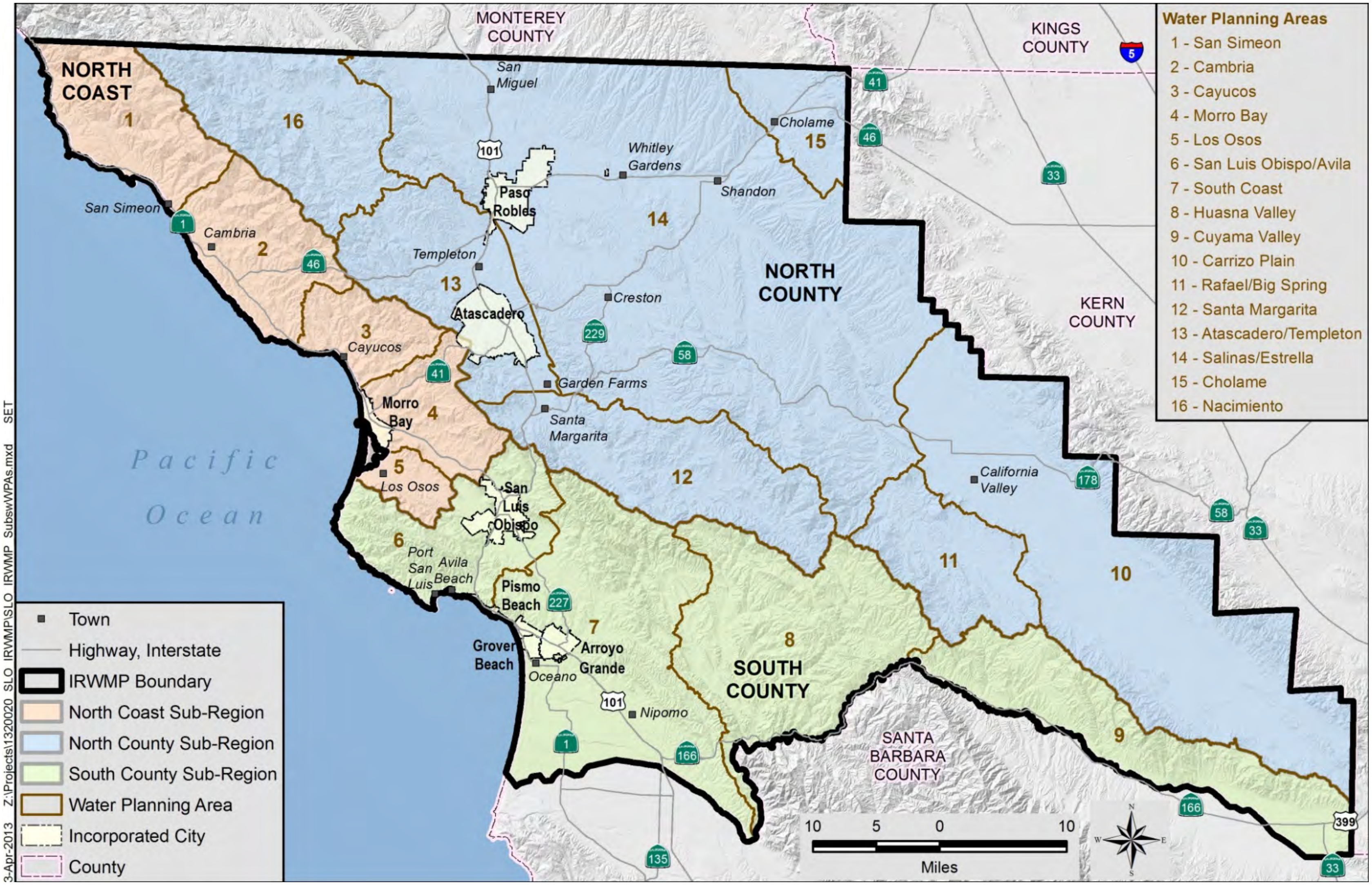

Figure A-1. IRWM Plan Region, Sub-Regions, and Water Planning Areas

A.1.2 IRWM Plan Financial Sponsorship

The San Luis Obispo County IRWM Plan is being produced and sponsored in significant part by the District. The update is also funded in part through a Proposition 84 IRWM Plan Planning Grant from the California DWR. Additional sponsors include San Luis Obispo County, San Luis Obispo County Flood Control Zone 1/1A, and the Nipomo Community Services District. All RWMG member agencies and organizations provided in-kind services associated with contributions of information, meeting attendance and document review.

Additional information is available at the following Internet website:

<http://www.slocountywater.org/site/Frequent%20Downloads/Integrated%20Regional%20Water%20Management%20Plan/>

A.1.3 Point of Contact

Questions and comments on this IRWM Plan can be directed to:

IRWM Program Manager
County of San Luis Obispo, Department of Public Works
County Government Center, Room 206
San Luis Obispo, CA 93408
(805) 781- 5252
(805) 781-1229(fax)
cberg@co.slo.ca.us

A.1.4 IRWM Plan Adoption

The District Board of Supervisors adopted this IRWM Plan by resolution _____ on ____. A copy of the resolution can be found in **Appendix A – Resolution of Adoption**. Each individual participating member agency (see **Table A-1**) of the Regional Water Management Group (RWMG) is required by the State Guidelines to also adopt the DWR-approved plan to be eligible to receive future state grant funding. Plan adoption by a member agency also ensures regional support for locally-sponsored water resources projects funded through all state, federal, and local grant and loan programs. The IRWM Plan is considered to be a living guidance document for all member agencies to support, and re-adopt, with each IRWM Plan update (approximately every 5 years).

The 2013/14 San Luis Obispo County IRWM Plan was published as a draft document for public review on June 4, 2014. It was duly noticed in accordance with §6066 of the Government Code in the local media. The public was provided opportunities to comment in writing during a public meeting and/or at a regular RWMG meeting. RWMG members were responsible for taking the document back to their respective stakeholder groups for review and comment, consolidating comments and bringing the information back to the RWMG. Public comments were reviewed and reconciled by the RWMG and a final IRWM Plan was produced for adoption by resolution. Once the RWMG adopted the IRWM Plan, the final document was taken to the Water Resources Advisory Committee (WRAC) for approval and recommendation to the County's Board of Supervisors for their approval.

Table A-1. List of Participating Member Agencies

Regional Water Management Group	
San Luis Obispo County	Heritage Ranch CSD
San Luis Obispo County Flood Control and Water Conservation District	Land Conservancy
California Men's Colony	Los Osos CSD
Cambria Community Services District (CSD)	Morro Bay National Estuary Program
City of Arroyo Grande	Nacimiento Regional Water Management Advisory Committee
City of Grover Beach	Nipomo CSD
City of Morro Bay	Oceano CSD
City of Paso Robles	Templeton CSD
City of Pismo Beach	San Miguel CSD
City of San Luis Obispo	San Simeon CSD
Central Coast Salmon Enhancement	S&T Mutual Water Company
Coastal San Luis Resource Conservation District	Upper Salinas - Las Tablas Resource Conservation District

Note: Currently, there are 24 members to the RWMG; most are participating as project sponsors and intend to adopt this plan after adoption by the District Board of Supervisors and the San Luis Obispo County Board of Supervisors.

A.2 AN IRWM PLAN FOR SAN LUIS OBISPO COUNTY

IRWM is a collaborative effort to manage all aspects of water resources in a region. IRWM crosses jurisdictional, watershed, and political boundaries; involves multiple agencies, stakeholders, individuals, and groups; and attempts to address the issues and differing perspectives of all entities involved through mutually beneficial solutions. An IRWM Plan is a significant document that:

- Describes the Region and its water management strategies
- Reviews the Region's water issues (e.g., supply, quality, storage, conveyance, etc.)
- Puts forward strategies to address solutions for those issues
- Suggests actions, programs, and capital projects to carry out those strategies

- Prioritizes and integrates those actions, programs, and capital projects
- Establishes metrics to measure and manage collected data to show the potential improvements, benefits, and impacts of the plan
- Provides a methodology to carry out those actions, programs and capital projects
- Monitors the plan's progress and makes adjustments when needed

It is a plan for near-term water management in a particular region that includes a stakeholder-driven short list of the best integrated water projects for the region as identified within this update of the plan. The use of the phrase "near-term" is indicative of the fact that the plan is updated on a fairly regular cycle (typically five year intervals), and thus the plan of the future will continue to evolve while addressing water management issues beyond the current planning horizon.

The process, procedures, and requirements of an IRWM Plan are provided in the California DWR IRWM Grant Program Guidelines (2012 IRWM Plan Guidelines or 2012 Guidelines). The 2012 Guidelines document establishes what DWR will use to implement the IRWM Implementation Grant Program authorized under Proposition 84 (The Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act of 2006) and the related Storm Water Flood Management (SWFM) Grant Program funded under Proposition 1E (The Disaster Preparedness and Flood Prevention Act of 2006). The 2012 Guidelines specify the standards of review and includes a specific list of requirements that must be included in the plan prior to the State's acceptance and approval of the plan.

While IRWM Plans had been governed by earlier Proposition 50 statutes for general items, a plan developed under the more recent Proposition 84 requirements must also address the following:

- Climate change
- Flood and storm water management
- Outreach to Disadvantaged Communities (DACs)
- Integration with Land Use planning

A.3 IRWM Plan Benefits and Need for Updates

An IRWM Plan provides a number of benefits for the Region and its participants. An IRWM Plan:

- Provides an in-depth listing of regional water resources problems
- Helps focus funding priorities and estimate staffing requirements
- Provides opportunities for diverse and integrated solutions to water resource problems

- Makes a concerted and documented effort to include the entire community in water resources planning, including disadvantaged communities (DACs)
- Provides opportunities to formulate integrated programs and projects for multiple benefits for the Region
- Allows the Region to apply for and accept State funding to address water issues
- Makes the Region participants eligible for planning and implementation grants
- Provides a consolidated and inclusive planning process
- Aligns participants to support projects that benefit the region as a whole
- Presents a more economic approach to tackle regional problems by combining administrative and planning costs of several agencies for some regional issues
- Enhances the foundation for "good" regional planning

A.3.1 Update to the IRWM Plan

The San Luis Obispo County IRWM Plan was originally adopted in December 2005 and amended in July 2007. The 2005 IRWM Plan identified planning efforts to fill data gaps in four areas to support the overall plan goals, objectives, and strategies, and improve the IRWM Plan itself. The timing of these projects are illustrated in **Figure A-2** and listed below:

- Data Enhancement Plan
- Flood Management Plan
- Groundwater Banking Plan
- Regional Permitting Plan

The 2007 IRWM Plan was the first to provide a cornerstone document for future integrated planning efforts that lead to more collaboration among water resources agencies and efficiencies in water resources problem-solving. These planning efforts were awarded $500,000 to complete the focused studies included in the Proposition 50 Chapter 8 IRWM Planning Grant application. The resulting plans were completed in 2008 and thus, were not incorporated into the 2007 IRWM Plan update. The 2007 IRWM Plan updated regional and project information to better represent the existing conditions and priorities for the region.

In 2011, the IRWM Region was awarded an implementation grant to construct three projects, including:

1. Los Osos Community Wastewater Project,
2. Flood Control Zone 1/1A Waterway Management Program, 1st Year Vegetation and Sediment Management Project, and
3. Nipomo Waterline Intertie Project.

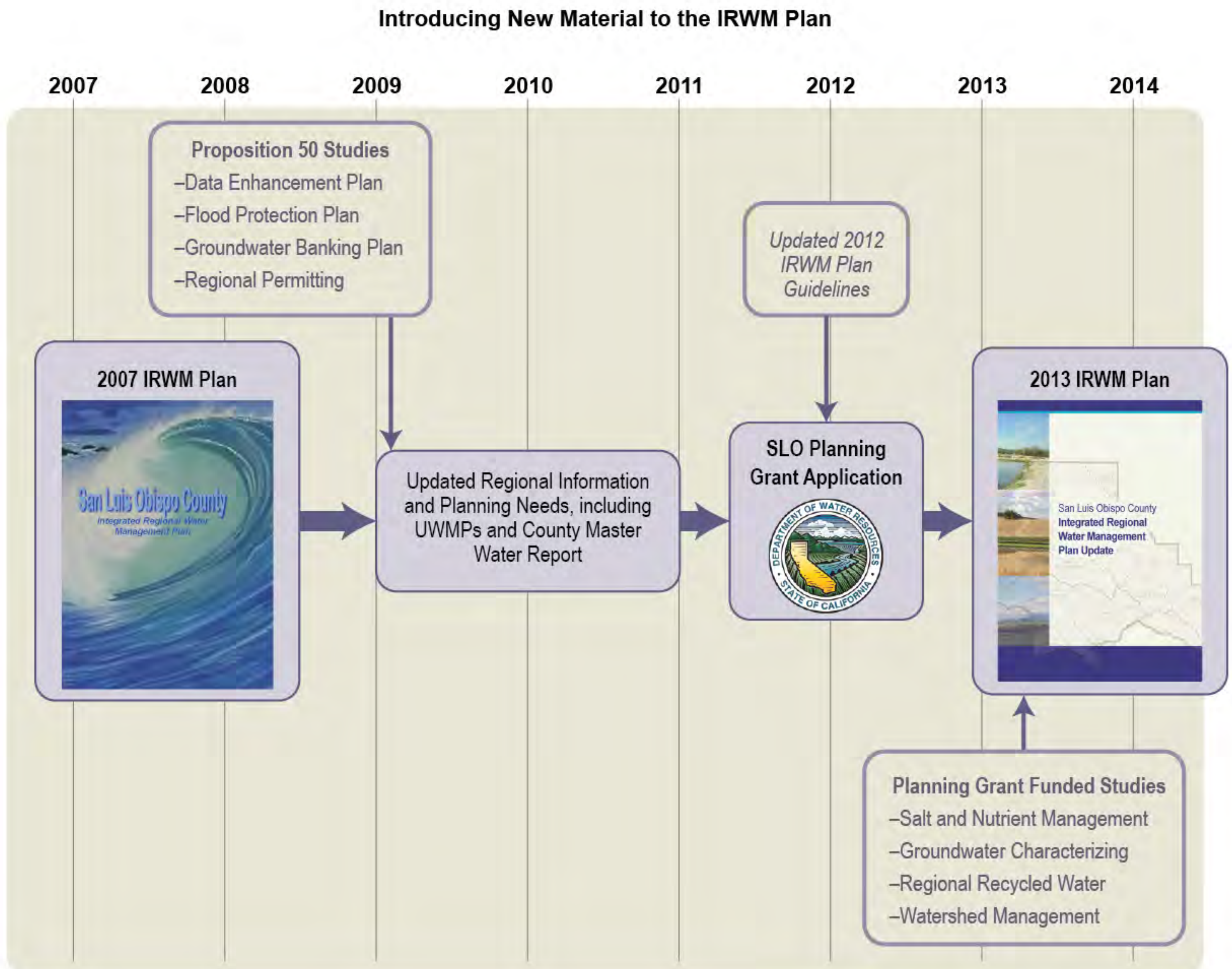

Figure A-2. Introducing New Material to the IRWM Plan

A condition of the implementation grant was to update the 2007 IRWM Plan to meet ongoing updates to the 2012 IRWM Plan Guidelines eventually published by the State in November 2012. Given the seven-year period since the last update, the District is capitalizing on the requirement to update the IRWM Plan by addressing the changed conditions and needs in the region as depicted in **Figure A-2**.

The objectives of this 2014 IRWM Plan Update to incorporate changes that have occurred since 2007 are as follows:

- Build on the successful collaboration and planning presented in the 2007 IRWM Plan
- Incorporate the four Proposition 50 planning studies
- Address the enhanced IRWM planning standards
- Include changed regional conditions (i.e., groundwater/surface water availability and increased agricultural and urban water demands) and enhanced planning approaches, including a revised governance approach
- Address the highest priority data gaps and planning needs as determined through a public solicitation and review process

A.4 IRWM Plan Development Process

The Region's stakeholders have followed a systematic 8-Step process for developing project-level elements for inclusion in the plan as shown in **Figure A-3**.

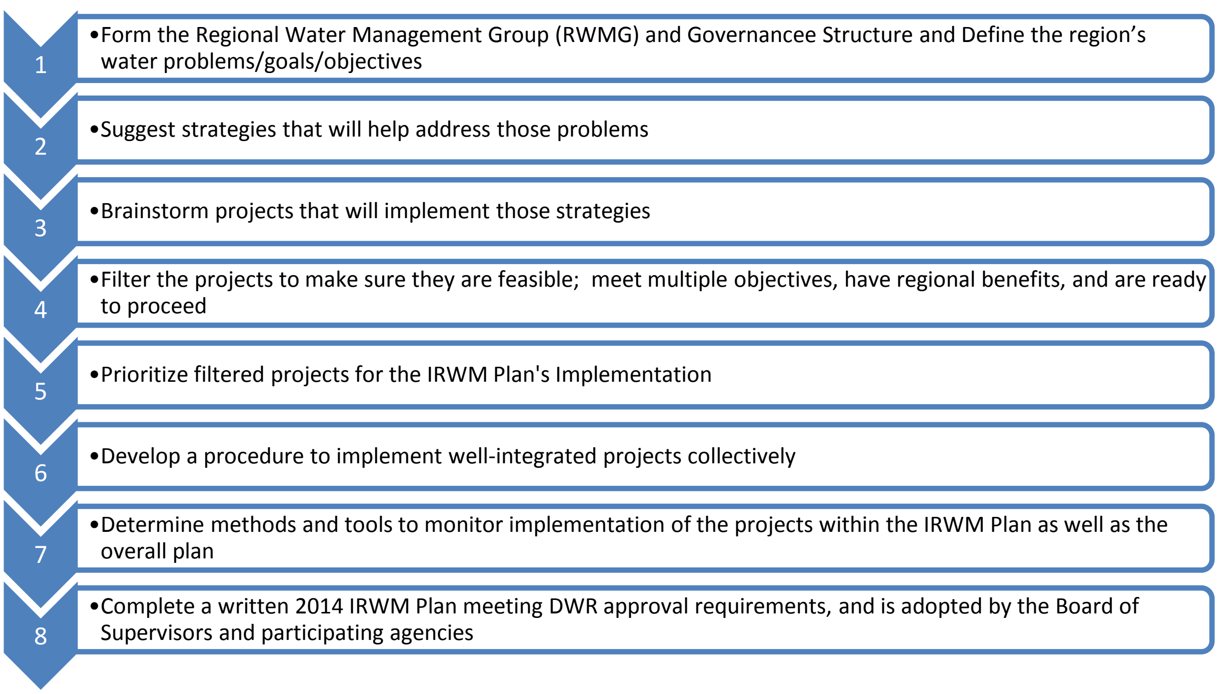

Figure A-3. Simplified 8-Step Approach to Updating the IRWM Plan

A.5 Prioritized Changes

For purposes of the update to the 2007 IRWM Plan, section deficiencies were categorized into three tiers and listed in **Figure A-4**:

- **Tier 1** – Sections that require significant modification to address new standards that were not included in the previous guidelines (e.g., climate change) and the sections that need to reflect the revised governance approach for improved IRWM Planning
- **Tier 2** – Sections that require a moderate amount of modification to more fully address the plan standards and reflect current conditions
- **Tier 3** – Sections that require limited modification and the updates are primarily additional information/modification to reflect current conditions in the IRWM planning area

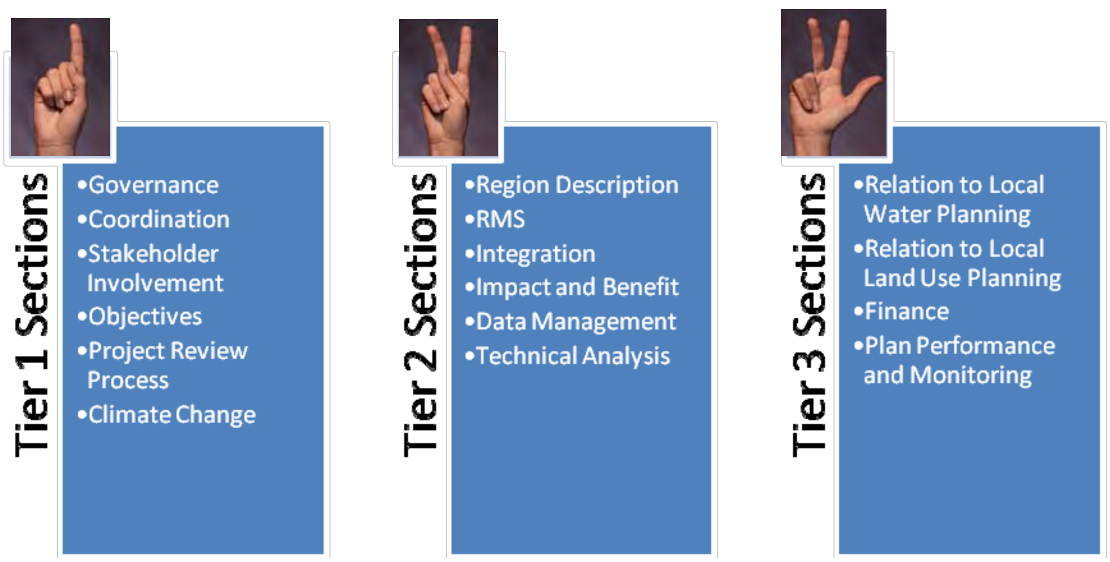

Figure A-4. Tiered Improvements to IRWM Sections

All sections in each Tier require updating; however, Tier 1 includes the most critical needs including climate change, governance, and the standards most affected by the changes in governance.

A.6 Meeting the 2012 IRWM Plan Guideline Requirements

As the IRWM Plan was developed, the RWMG maintained the list of requirements developed using the November 2012 IRWM Plan Guidelines to ensure acceptance and approval by the

State after completion of the IRWM Plan Update. **Table A-2** summarizes how the IRWM Plan satisfies Appendix H of the 2012 Guidelines. Detailed tables addressing specific requirements of the 2012 Guidelines are compiled and incorporated as **Appendix Q – State Guideline Requirement Tables. Appendix Q** also provides a short narrative on how each requirement is met, along with the various sub-sections where information can be found in the IRWM Plan.

Table A-2. IRWM Plan Update Standards Reference

IRWM Plan Standard	Section
Governance	B
Region Description	C, D
Goals & Objectives	E
State Resource Management Strategy	F
Integration	H
Project Review Process	G
Impacts and Benefits	I
Plan Performance and Monitoring	J
Data Management	K
Finance	L
Technical Analysis	M
Relation to Local Water Planning	N
Relation to Local Land Use Planning	N
Stakeholder Involvement	B, E, F, G, K, Q
Coordination	O
Climate Change	P

Section B.
Governance, Stakeholder Involvement, and Outreach

Section B. Governance, Stakeholder Involvement, and Outreach

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Section B. Governance, Stakeholder Involvement, and Outreach

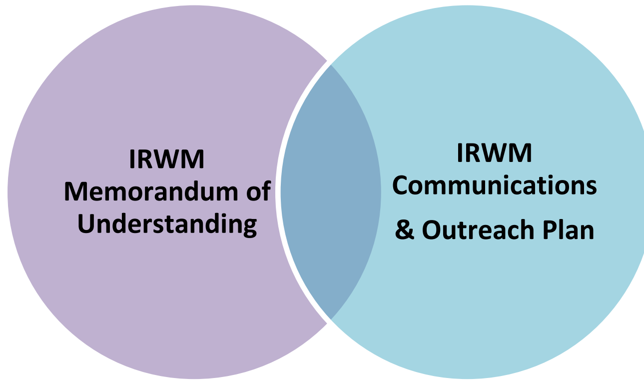
This section summarizes the San Luis Obispo County Integrated Regional Water Management Plan Update (IRWM Plan Update)[1] Region governance structure, as well as the stakeholder involvement and outreach process. Per the 2012 California Department of Water Resources (DWR) Integrated Regional Water Management (IRWM) Guidelines, hereinafter referred to as the "State IRWM Guidelines" or "State Guidelines", the governance structure serves to define the processes, structures, and organizational traditions that determine how power is exercised, how stakeholders are involved in IRWM Plan development, how decisions are made, and how the IRWM Plan is updated over time. This section also provides discussion of:

- State IRWM Guidelines: Governance and Stakeholder Involvement Standards
- IRWM Program Participants, including the Regional Water Management Group (RWMG), Lead Agency, Water Resources Advisory Committee (WRAC), Implementation Affiliates, and Interested Stakeholders
- IRWM Organizational Structure, including governance, and decision making processes
- Stakeholder involvement and public outreach processes, including the Communications and Outreach Plan, outreach to disadvantaged communities, and administration of IRWM Plan Update
- Long-term implementation of the IRWM Plan, including the steps for updating and adopting the plan, and coordination with neighboring IRWM efforts, as well as state and federal agencies

Governance and stakeholder involvement during the development of the IRWM Plan offers the education and awareness needed for active participation in the IRWM development and implementation process. Decisions are made after recording and reviewing the questions, concerns, and recommendations formalized in public workshops and working groups at the

[1] The abbreviated version IRWM Plan, as used in this plan, refers to San Luis Obispo's IRWM Plan, in general; whereas, IRWM Plan Update refers to the 2013/14 Update of the current 2007 IRWM Plan.

watershed, Water Planning Area, Sub-Region, and regional levels. This process allows all participants to be heard and concerns to be considered before decisions are made.



This IRWM Plan section is based on two documents created to define governance and participation in the local IRWM program (see **Table B-1**). The *San Luis Obispo County Region Integrated Regional Water Management Program Participants Memorandum of Understanding* (MOU) establishes the Regional Water Management Group (RWMG) and essential governance structure inclusions. Based upon this MOU, the Region's Program Participants developed a *Communications and Outreach Plan* – further defining details of governance, outreach, and communications processes prior to formation of the RWMG. A copy of this plan is included as **Appendix C – IRWM Communications and Outreach Plan**. The content of the plan is also summarized in this section.

Table B-1. Supporting Documents Related to IRWM Governance, Stakeholder Involvement and Outreach Section

Supporting Document Title	Relation to IRWM Plan Governance, Stakeholder Involvement, and Outreach Section
1. SLO Region IRWM Program Participants Memorandum of Understanding (2012)	The MOU establishes: • Definitions of IRWM common terms • Program participant roles and responsibilities • Decision-making processes
2. San Luis Obispo County IRWM Communications and Outreach Plan (2013) [2]	The Communications and Outreach Plan establishes how communication will flow and be managed throughout the life of the IRWM Plan Update. The Communications and Outreach Plan was developed in response to the DWR outreach requirement to build a solid, inclusive, and representative agency. The plan also addresses including local stakeholders and disadvantaged communities, as required as part of the IRWM planning process.

[2] IRWM Plan and program updates concerning communications and current efforts can be found at: <http://www.slocountywater.org/site/Frequent%20Downloads/Integrated%20Regional%20Water%20Management%20Plan/>

B.1 State IRWM Guidelines: Governance and Stakeholder Involvement Standards

The 2012 Proposition 84 and 1E IRWM Program Guidelines (State Guidelines) provided the lead document for the approach and content required for the Region's IRWM Plan Update. These Guidelines update prior IRWM Guidelines and reflect current legislation impacting what should be included in IRWM Plans throughout the state of California. The Guidelines' IRWM Plan Standards discuss specific elements that must be part of an IRWM Plan, and are included in the IRWM Plan requirement tables located in **Appendix Q – State Guideline Requirements Tables**.

B.2 IRWM Program Participants

Development and implementation of the Region's IRWM Plan is a collaborative effort undertaken by the Region's Program Participants.

The governing body, known as the Regional Water Management Group (RWMG), consists of local agencies and IRS 501(c)3 nonprofit organizations from the SLO Region and one Lead Agency that represents the SLO IRWM Region in interregional and statewide coordination. The IRWM Program Participants, governance structure, and stakeholder involvement are described herein.

B.2.1 Regional Water Management Group

The legislation and the State IRWM Guidelines defines a RWMG as a group that includes three or more local agencies, at least two of which have statutory authority over water supply or management, as well as those other persons necessary for the development and implementation of the IRWM Plan. This section describes the water management powers and authorities that satisfy the requirements for a RWMG. The member agencies are listed to the right.

The purpose of the RWMG is to: 1) engage elected officials and water resource management leaders, 2) represent public and stakeholder groups, 3) resolve conflicts, 4) build political support, and 5) achieve a unified front for the IRWM Plan's implementation of Regional water projects. Through the *San Luis Obispo County Region Integrated Regional Water Management Program Participants Memorandum of Understanding* (MOU), included as **Appendix B**, San Luis Obispo Local Agencies[3] or IRS 501(c)(3) nonprofit organizations came together and formed the RWMG. The MOU establishes the RWMG as follows:

> *The Region's RWMG members are signatories to this MOU, have adopted the current Plan, and may designate a representative to participate in RWMG activities and its Working Group. The entities must be either a Local Agency or an IRS 501(c)(3) nonprofit organization. The RWMG has the capacity to carry out projects (i.e., financial resources, management structure, adequate staffing). The agencies/organizations that form the RWMG may have planning or implementation projects eligible for State IRWM grants.*

The MOU signatories are again listed in **Table B-2** to establish the cross section of agency types. Each has designated a RWMG member to represent their respective agencies and to work collaboratively in providing the expertise and timely information in the review and development of the IRWM Plan. **Figure B-1** shows how the RWMG meets California Water Code (CWC) §10539 and is sufficient in breadth of membership and participation to develop and implement the IRWM Plan. The MOU is primarily used as a method of clarifying the governance structure and allowing members and other stakeholders to understand how to participate in the IRWM Plan development and implementation.

The categorical make-up of the RWMG among municipalities (includes land-use), water resources agencies, environmental/non-profit organizations, and special districts is shown in **Figure B-1**. The figure provides the percentage of each agency category based on membership in the RWMG. **Table B-2** indicates all four agencies designated as disadvantaged communities[4] (DACs) in San Luis Obispo County are represented in the RWMG.

[3] Any city, county, special district, joint powers authority, or other political subdivision of the state, a public utility as defined in Section 216 of the Public Utilities Code, or a mutual water company as defined in Section 2725 of the Public Utilities Code.

[4] DAC definition provided in DWR's Proposition 84 and 1E IRWM Guidelines: "a community with an annual median household income that is less than 80 percent of the statewide annual median household income (PRC §75005 (g))." <http://www.water.ca.gov/irwm/grants/guidelines.cfm>

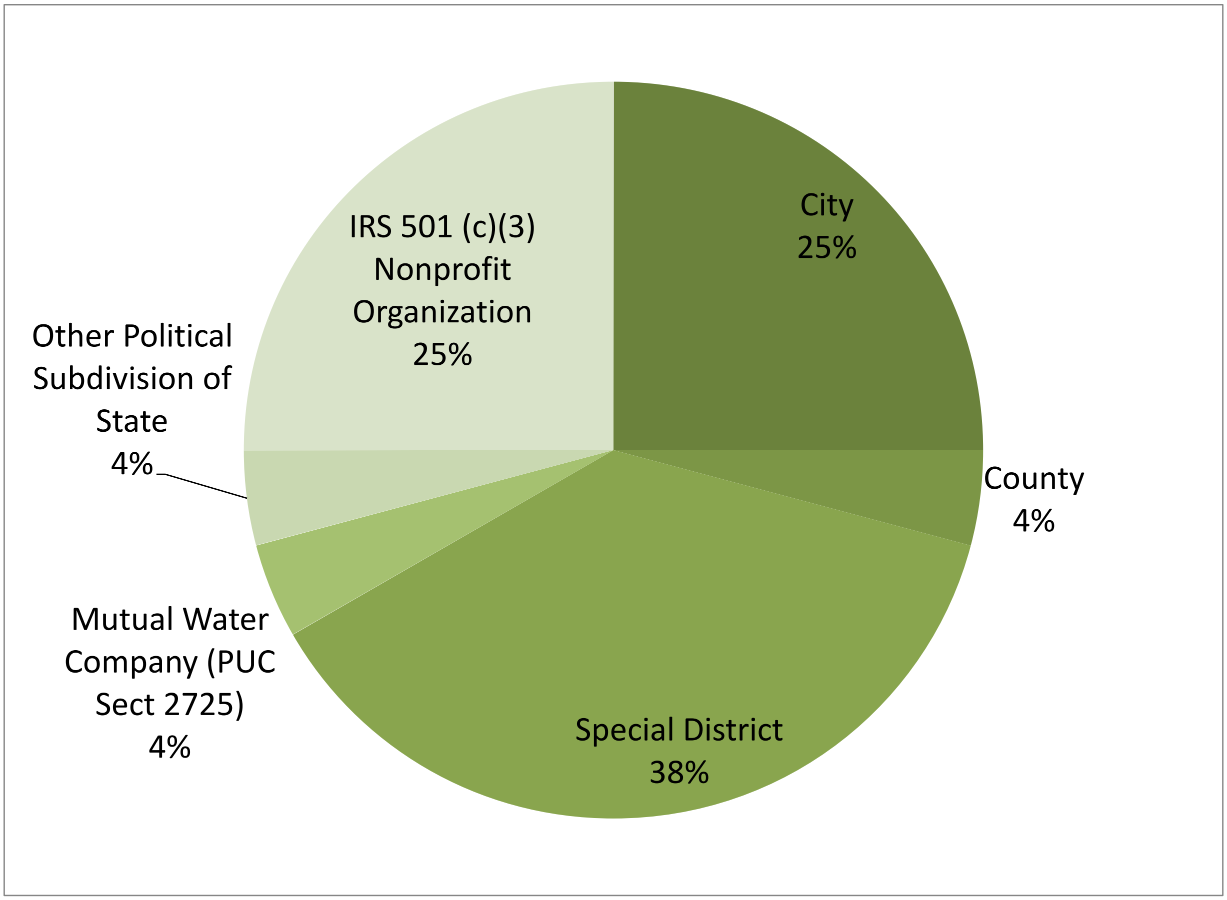


Figure B-1. General Composition of the RWMG based on Membership

Table B-2. Regional Water Management Group Membership List (as of April,7 2014)

Agency or Organization	Local Agency							IRS 501 (c)(3) Nonprofit Organization	San Luis Obispo IRWM Sub-Regions Represented		
	City	County	Special District	Public Utility (PUC Sect 216)	Mutual Water Company (PUC Sect 2725)	Joint Powers Authority	Other Political Subdivision of State		North Coast	North County	South County
1. San Luis Obispo County		X							X	X	X
2. San Luis Obispo County Flood Control and Water Conservation District			X						X	X	X
3. California Men's Colony							X		X		
4. Cambria CSD			X								
5. City of Arroyo Grande	X										X
6. City of Grover Beach	X										X
7. City of Morro Bay	X								X		
8. City of Paso Robles	X									X	
9. City of San Luis Obispo*	X										X
10. Central Coast Salmon Enhancement								X	X	X	X
11. Coastal San Luis Resource Conservation District								X	X		X
12. Heritage Ranch CSD			X							X	
13. Land Conservancy								X	X	X	X
14. Los Osos CSD			X						X		
15. Morro Bay National Estuary Program								X	X		
16. Nacimiento Regional Water Management Advisory Committee								X		X	
17. Nipomo CSD			X								X
18. Oceano CSD*			X								X
19. City of Pismo Beach	X										X
20. San Miguel CSD*			X							X	
21. San Simeon CSD*			X						X		
22. S&T Mutual Water Company					X				X		
23. Templeton CSD			X							X	
24. Upper Salinas - Las Tablas Resource Conservation District								X	X	X	

* State Designated DAC <http://www.water.ca.gov/irwm/grants/resourceslinks.cfm>

B.2.1.2 RWMG Members

New members can be incorporated into the RWMG by executing the MOU and adopting the IRWM Plan.

B.2.2 Lead Agency – San Luis Obispo County Flood Control and Water Conservation District (District)

The District is a member of the RWMG, but also serves as the approving body and Lead Agency for the IRWM Plan's development. Given its regional framework and geographic scope, the District was viewed as an appropriate agency to act as RWMG Lead Agency. The District was established by the California Legislature in 1945 with the passage of the "San Luis Obispo County Flood Control and Water Conservation District Act." The District is governed by a Board of Supervisors; its boundaries are co-terminus with the County of San Luis Obispo (see **Figure B-2** for IRWM Region and 3 Sub-Regions), and its board members and staff are the same as those who act separately on behalf of the County of San Luis Obispo. Pursuant to the 1945 legislation, the primary services of the District include or cover:

1. Management of flood and storm waters
2. Conserving waters for beneficial purposes
3. Protecting life and property
4. Preventing waste or diminution of the water supply
5. Obtaining, retaining, and reclaiming waters for beneficial use, including the purchase and sale of water within the district
6. Providing for incidental recreational activities

As the Lead Agency with responsibility for San Luis Obispo County's regional water planning and the implementation of Regional water supply projects, the District essentially acts in two capacities:

1. gathers data, identifies issues, coordinates stakeholder review, and recommends solutions. The general regional data gathering, planning, and coordination efforts are funded in the District's budget from its general property tax allocations;
2. implements specific projects and programs, typically on a sub-regional basis, relating to the services identified above. Sub-regional projects, programs, and services are typically funded from revenues provided by participating agencies, organizations, and other parties benefiting from the services.

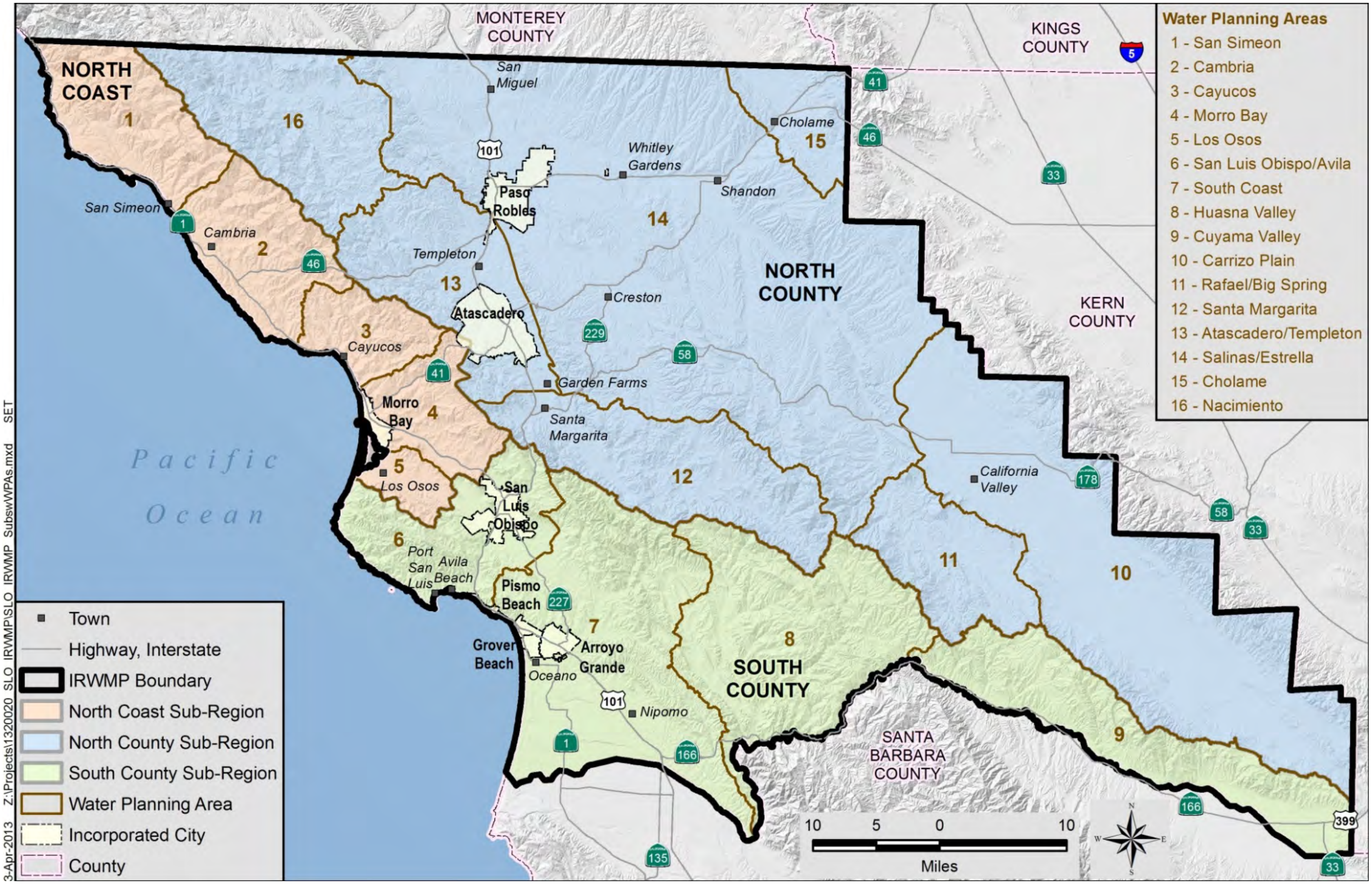


Figure B-2. San Luis Obispo County Integrated Regional Water Management (IRWM) Region and Three Sub-Regions

B.2.3 Water Resource Advisory Committee (WRAC)

The Water Resources Advisory Committee (WRAC) is an advisory body made up of citizens and governmental representatives, including elected officials, appointed by the District's Board of Supervisors to advise the Board on water resource projects and policies in the Region. The WRAC has 34 members representing 23 agencies, organizations, or associations, along with at-large members representing the agricultural, environmental, and developmental communities. For more than 50 years, WRAC hearings have been the primary forum for the regional review of water resource issues and details. The WRAC's many purposes include developing recommendations for the District's Board. This makes the WRAC the most obvious forum for stakeholder participation in IRWM planning. **Table B-3** identifies the member agencies of the District's WRAC.

The District, in conjunction with the WRAC, developed the original 2005 IRWM Plan and 2007 IRWM Plan update. The WRAC offered a broad stakeholder base, as well as solid regional perspectives on the water resources. The WRAC will continue to serve as an important stakeholder base, as well as critical advisor to the District Board of Supervisors.

B.2.4 Implementation Affiliates

The Implementation Affiliates include Local Agencies and IRS 501(c)(3) nonprofit organizations that eventually adopt the IRWM Plan by resolution, but are not to be signatories of the MOU. The purpose of this participant tier is to allow agencies and organizations to submit projects and programs for consideration in the IRWM Plan, even if they cannot participate in the IRWM Plan development. The Implementation Affiliates have the capacity to carry out projects (i.e., adequate financial resources, developed management structures, and adequate staffing). In order to have a planning or implementation project eligible for state IRWM grants, agencies must be an Implementation Affiliate if they are not a part of the RWMG.

B.2.5 Interested Stakeholders

The interested stakeholders include individuals, organizations, and nonprofits (including those that are not IRS 501(c) (3) nonprofit organizations) who are interested in the IRWM program. The interested stakeholders may sign a letter of support for the IRWM Plan, or otherwise provide input to the RWMG, but would not be eligible for directly receiving state IRWM grant funds.

Table B-3. Water Resource Advisory Committee Membership List

Agency/Organization Represented	Agency/Organization Interests
Agriculture At-Large	Agriculture
Atascadero Mutual Water Company	Water Purveyor
California Mens Colony	Water and Wastewater
Cambria CSD	Municipal water and wastewater
Camp San Luis Obispo	Water and wastewater
City of Arroyo Grande	Municipal water and wastewater
City of Atascadero	Municipal water and wastewater
City of Grover Beach	Municipal water and wastewater
City of Morro Bay	Municipal water and wastewater
City of Paso Robles	Municipal water and wastewater
City of Pismo Beach	Municipal water and wastewater
City of San Luis Obispo	Municipal water and wastewater
Coastal San Luis RCD	Natural Resources Conservation
County Board of Supervisors District 1	Water Resources
County Board of Supervisors District 2	Water Resources
County Board of Supervisors District 3	Water Resources
County Board of Supervisors District 4	Water Resources
County Board of Supervisors District 5	Water Resources
County Farm Bureau	Agriculture
Cuesta Community College	Water and wastewater
Development At-Large	Development
Environmental At-Large	Environmental
Golden State Water	Water Purveyor
Heritage Ranch CSD	Municipal water and wastewater
Los Osos CSD	Municipal water and wastewater
Nipomo CSD	Municipal water and wastewater
Oceano CSD	Municipal water and wastewater
San Miguel CSD	Municipal water and wastewater
San Simeon CSD	Municipal water and wastewater
Templeton CSD	Municipal water and wastewater
Upper Salinas Las Tablas RCD	Natural Resources Conservation
Flood Control District staff	Regional water interests

B.3 IRWM Organizational Structure

B.3.1 Governance Structure

The MOU defines the purpose of the RWMG, its membership, other Program Participants, and each participant's role and responsibility in program development and implementation. **Figure B-3** illustrates the IRWM Plan's governance and organizational structure, as well as functional relationships of the various IRWM Program Participants.

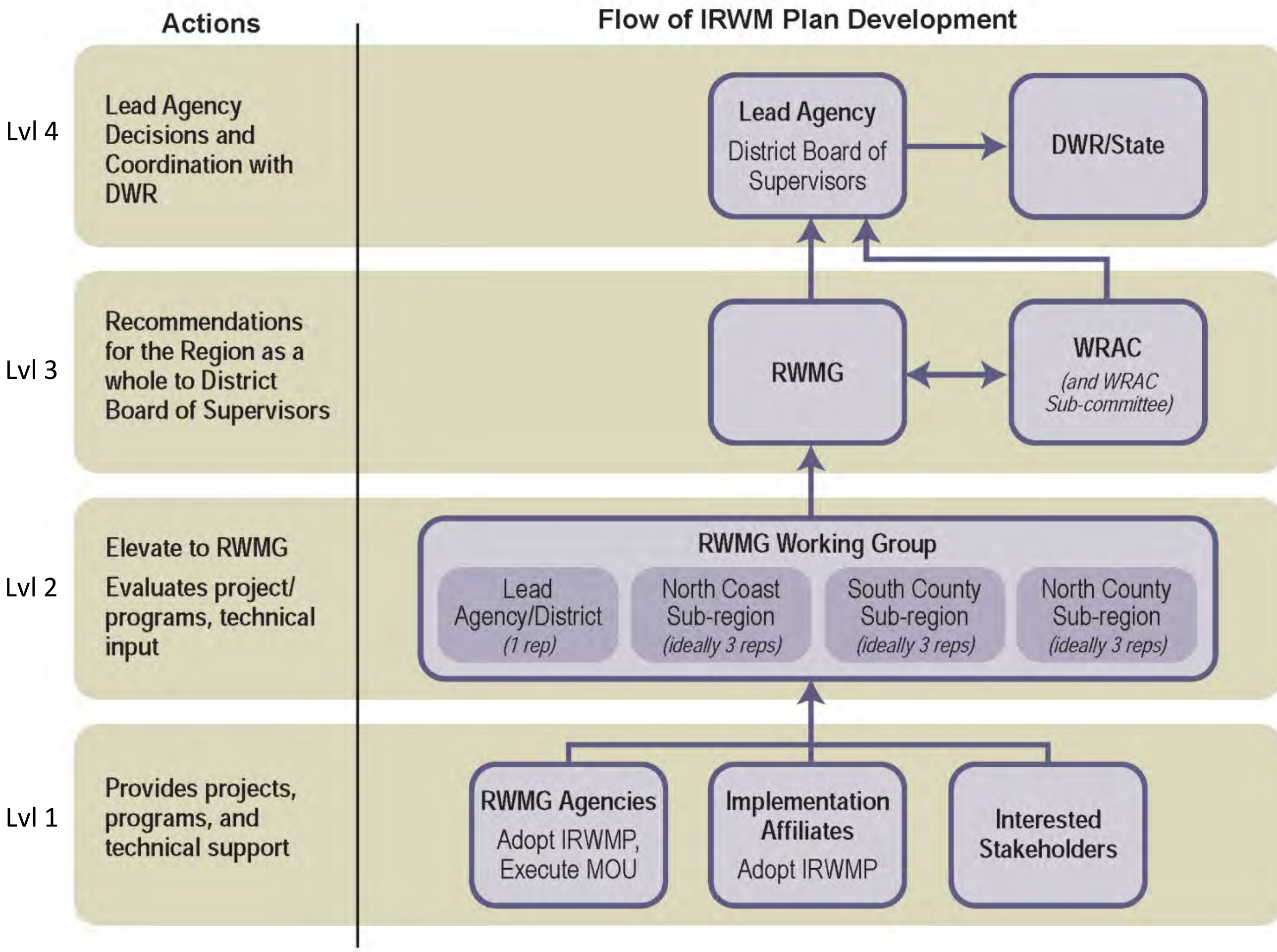


Figure B-3. IRWM Program Governance Structure

Starting at the bottom level (Lvl 1) of **Figure B-3**, three categories are provided to capture the entire population of stakeholders and interest groups. Information filters up to the Lead Agency decision-makers through a "bottom-up-approach," where stakeholders and individual agencies/organizations provide input to a RWMG Working Group (Lvl 2) at the sub-regional level. This is done through a number of communication conduits, described in **Section B.3.2** below. This group of RWMG representatives then uses stakeholder input to draft IRWM Plan section updates and refine the IRWM program.

The second level from the top (Lvl 3) of **Figure B-3** focuses on regional review and decision making for the IRWM program. Via public meetings, the RWMG considers draft IRWM Plan sections, documents, and recommendations. The RWMG provides a regional perspective, as compared to the RWMG Working Group focused on each distinct Sub-Region. Because of its broad stakeholder composition and direct link as advisors to the Lead Agency's Board of Supervisors, the WRAC provides review of content and at key decision points of the IRWM Plan. The RWMG will seek WRAC support of its recommendations at key decision points (e.g., for IRWM Plan approval and adoption by the District Board of Supervisors). Once the IRWM Plan is approved (Lvl 4) and adopted by the District Board of Supervisors (Board of the Lead Agency) and San Luis Obispo County Board of Supervisors, other RWMG members and Implementation Affiliates will adopt the IRWM Plan. As a final step, the District will submit the IRWM Plan to DWR for approval.

The Communications and Outreach Plan ensures that all relevant communications are elevated from the RWMG Working Group and Sub-Region discussions to the RWMG for consideration. The RWMG members will consider all comments and concerns recorded from these discussions, and weigh them during their review of the IRWM Plan. The Communications and Outreach Plan defines processes for interactions between participant tiers, which is further described in **Section B.4.1**.

B.3.2 Decision Making Process

Decisions are made by simple majority vote at the RWMG meetings and then elevated to the Lead Agency Board of Supervisors as needed for final approval and coordination with DWR. Decision-making protocol defined in the MOU states:

> *The RWMG shall develop IRWM program materials and will make recommendations to the Lead Agency at key decision points of the IRWM program. Written input from the member representatives will be sought between the RWMG members in the event the need for a decision arises that cannot be brought forth to the RWMG before a decision needs to be made. The*

District, by way of its Public Works Department, shall notify the RWMG agencies of recommendations being taken to the District's Board of Supervisors for action.

The Communications and Outreach Plan further defines the RWMG quorum as a simple majority of the RWMG representatives attending any meeting. Decisions are made by a simple majority vote of the RWMG member representatives present at a meeting. Of course, consensus is the goal and will be achieved whenever possible. Stakeholders are invited to attend and provide input at all RWMG meetings; however, decision making votes will only include RWMG member representatives.

If decisions cannot be made, the governance structure allows for a public hearing process to consider the differing perspectives, as stated in the MOU:

The District's Board of Supervisors may approve, alter, or return any said recommendation of the RWMG. Furthermore, if the District's Board of Supervisors intends to alter an item or proposition approved by the RWMG, the District's Board of Supervisors shall set forth in writing its findings, after which the Board will hold a public hearing. The RWMG agencies shall have the right to appear and address the District's Board of Supervisors.

B.4 STAKEHOLDER INVOLVEMENT AND PUBLIC OUTREACH PROCESSES

Public and stakeholder involvement have been integrated into the decision-making process in a manner that ensures education, awareness, balanced opportunity to participate, and clear communication conduits. One of the goals of the public and stakeholder involvement is to strengthen overall regional capacity to move forward toward the goals of IRWM over a longer term planning horizon.

It is the expressed aim to both fortify the core group of active and engaged regional and sub-regional representatives, i.e., the WRAC, who are motivated and equipped to meet the formidable challenges involved in planning for increased water reliability, water sustainability, flood management, water quality, water supply, environmental benefits, among others within the context of a rapidly changing climate, increased political pressure, and diminishing resources as well as stretch the membership and extend meaningful stakeholder participation.

Apart from building relationships and capacity, stakeholder involvement facilitates overall assimilation of information to achieve a more water-aware culture that moves beyond traditional alliances to a more comprehensive vision which is realistic in relation to the watersheds in which we live and the water resources we share. As of the most recent census, San Luis Obispo County had just over a quarter of a million people (just over 274,000[5]), all of whom consume water and all of whom are stakeholders. While it unrealistic to reach every single person in the county, the IRWM Plan takes into account each and every person in its inclusive Planning process, particularly in recognition of the fact that the majority of water consumption is in rural areas.

B.4.1 Communications and Outreach Plan

The first task undertaken in the IRWM Plan Update as it related to Stakeholder Involvement was the development and generation of a Communications and Outreach Plan. This Plan was developed over a number of months with the participation of the WRAC as well as stakeholders and the public. It was reviewed at several public meetings, augmented and finally adopted by the RWMG in May, 2013.

One of the two IRWM governance guidance documents is the Communications and Outreach Plan. The Communications and Outreach Plan is a simple guide on how communication will flow and be managed through the life of the IRWM Program.

> *The purpose of the Outreach Plan is to satisfy DWR outreach requirements and build a solid, inclusive, and representative agency, stakeholder, and DAC base that is supportive of the aims of the IRWM Plan.*

The Communications and Outreach Plan is built upon the MOU (See **Appendix B**) and identifies the IRWM Program Participants (RWMG, WRAC, RWMG Working Group, Implementation Affiliates and stakeholders) involved in the IRWM Plan Update, and describes the planned and periodic communications to occur between the entities. The Communications and Outreach Plan is not intended to prescribe new protocols for the entities, i.e., the Communications and Outreach Plan does not establish communication guidelines for the WRAC, but instead characterizes what types of communication are used and how communication proceeds to facilitate the overall goals of the IRWM Plan Update.

The Communications and Outreach Plan also discussed:

- Scheduled written and oral communications and forums
- Responses to requests for information
- Open questions to the IRWM entities and questions that come up in the work groups

[5] <http://quickfacts.census.gov/qfd/states/06/06079.html>

- Frequency of scheduled communications
- Responsible person(s) for providing information

The Communications and Outreach Plan identifies the procedures to be used to manage communication for the project. The Communications and Outreach Plan focuses on formal communication elements. Other communication channels exist on informal levels and enhance those discussed in the Communications and Outreach Plan. This Communications and Outreach Plan was not intended to limit, but rather to enhance the exchange of information. Open, ongoing communication among actively engaged stakeholders is critical to the success of the overall IRWM.

B.4.2 Program Management Team (PMT)

The PMT provides oversight and coordination of the IRWM Plan development. The PMT includes District staff, consultants (as needed), and Sub-Region leads. The roles and responsibilities of the PMT includes scheduling RWMG meetings, directing tasks, setting milestones and reviewing progress, providing resources, forming work groups, sponsoring workshops, managing internal and external IRWM Plan communications, and ensuring that DWR IRWM Plan requirements are met.

B.4.3 RWMG Working Group and Workshops

The purpose of the RWMG Working Group is to coordinate technical resources, agency staff, and stakeholders for addressing specific topics or assignments, and to provide draft findings and recommendations to the RWMG (and WRAC). All RWMG members and interested parties are given an opportunity to participate or invite others to participate at Working Group-led workshops. RWMG Working Group activities may include:

- defining the project review process and criteria
- reviewing and defining water resources management strategies, etc.

Workshops in each of the three IRWM Sub-Regions are convened to engage community members who have relevant expertise and/or an interest in water resources management. Initially, workshops served as an outreach function to inform stakeholders and other organizations about the IRWM Plan and program. Other workshops purposes included:

- obtain data,
- identification of issues and opportunities related goals and objectives development, and project review process,
- review of draft findings on resource management strategies and on Sub-Region project review solicitation and prioritization,

- review of draft findings on Sub-Region project review solicitation and prioritization, and/or
- to provide input to the PMT and RWMG.

To ensure that the IRWM Plan remains relevant and includes current information, future workshops will be held to review and update the project/program list, and review changes in State Guidelines relative to the IRWM Plan.

B.4.4 Public Outreach to Disadvantaged Communities (DACs)

The IRWM Region has four (4) designated DACs as follows:

Community of San Miguel	**Community of Oceano**
Community of San Simeon	**City of San Luis Obispo**

All four DACs are signatories to the MOU and are represented in the RWMG. All public outreach and communication efforts include and support the involvement of the SLO IRWM Region's DACs. Targeted outreach was conducted with DACs as well as rural water users, ranchers, and other water users within agriculture and agricultural-related industries.

Targeted Visioning Workshops were organized in March 2013 to kick-off workshops organized for sub-regional participation. As such, the targeted outreach was organized and executed to accomplish the following goals:

- To inform the public about the existence of the IRWM Program, its history and benefits
- To re-engage and activate the public and stakeholders in the IRWM Plan Update, encouraging participation by new stakeholders and members of the public

Targeted outreach to DACs, rural and agricultural communities has presented its own set of challenges and opportunities because water use and usage patterns differ greatly from uses in urban centers. Typical barriers to DAC participation in the IRWM planning process are different from other communities and extend well beyond just technical issues to include economic, cultural, and social considerations. In recognition of this, each workshop/focus group was geographically distributed within the Sub-Region to ensure the ability of the largest number of DAC stakeholders to participate. The first step was to identify DACs that had an interest and stake in the planning outcome. This is accomplished by developing and maintaining a comprehensive listing of DAC representatives, and as applicable, community organizations, environmental stewardships organizations, and advocacy groups as part of the overall project stakeholder list. Newly identified stakeholders are then added to the existing list of environmental and community stakeholders.

The RWMG was active in organizing and assisting in leading these workshops. The sub-regional meetings were conducted in a manner consistent with the needs of the Sub-Region and a minimum of two Visioning Workshops were conducted in each of the Sub-Regions, for a grand total of seven public and DAC Visioning Workshops. The workshops were located in familiar venues, such as community centers and other locations frequented by local groups, and the meeting scheduling and arrangements were designed to maximize participation. The RWMG worked with trusted community partners, including community organizations, homeowners associations, schools and advocacy groups who assisted in grassroots participation in the workshops. The anticipated outcome of the workshops was the education of the DAC communities and public about the IRWM program, the opportunities for participation, and the need for on-going engagement. The workshops were well-promoted, well-attended, and resulted in a great amount of public comment, dialogue, and information exchange that ultimately assisted in the formation of sub-regional goals and priorities.

As an additional outreach task, a presentation of the IRWM Plan was given to the San Luis Obispo County Cattlemen's Association in September 2013. The purpose was to engage and solicit input from a group of stakeholders that had historically not been active in the IRWM process.

B.4.5 IRWM Plan Update Administration

The District, as the Lead Agency, provides consultant contract administration and program management, as well as overall grant contract administration. This includes issuing task orders to consultants, acting as liaison to the State, reviewing consultant's work, managing project budget and schedule, and coordinating with agencies, neighboring IRWM regions, and other stakeholders.

The District is the submitting agency for selected grant applications. Additionally, the District is acting as fiduciary agent during IRWM Plan development, as well as acting as the Project Proponent for the Proposition 84 Plan Update Planning Grant awarded in 2012.

B.4.6 Public Information - Logo, Website, Brochures

The District staff coordinates and facilitates regional outreach and public relations functions. Through this process, presentations and briefing materials are developed for use by RWMG members at regularly scheduled stakeholder business meetings. The District periodically provides public notice in local newspapers inviting all members of the public to attend outreach meetings that are being held.

A San Luis Obispo IRWM Plan logo (right) was selected to create brand recognition for the IRWM Plan effort.

A variety of media is used for the public outreach efforts to publicize the IRWM process and encourage participation, including the development of the IRWM Plan website.[6] The website (**Figure** B-4) is maintained by the District and used to publish meeting announcements and notes, presentations, briefings, and draft and final technical work products, including the draft and final IRWM Plan. Contact information is posted on the website so the public may contact with comments, questions, and concerns.

Brochures and documents used to raise awareness are prepared intermittently (e.g., to address frequently asked questions, to provide a status report). The RWMG members are encouraged to use their agencies' newsletters to publicize the IRWM activities and IRWM Plan development.

[6] <http://www.slocountywater.org/site/Frequent%20Downloads/Integrated%20Regional%20Water%20Management%20Plan/>

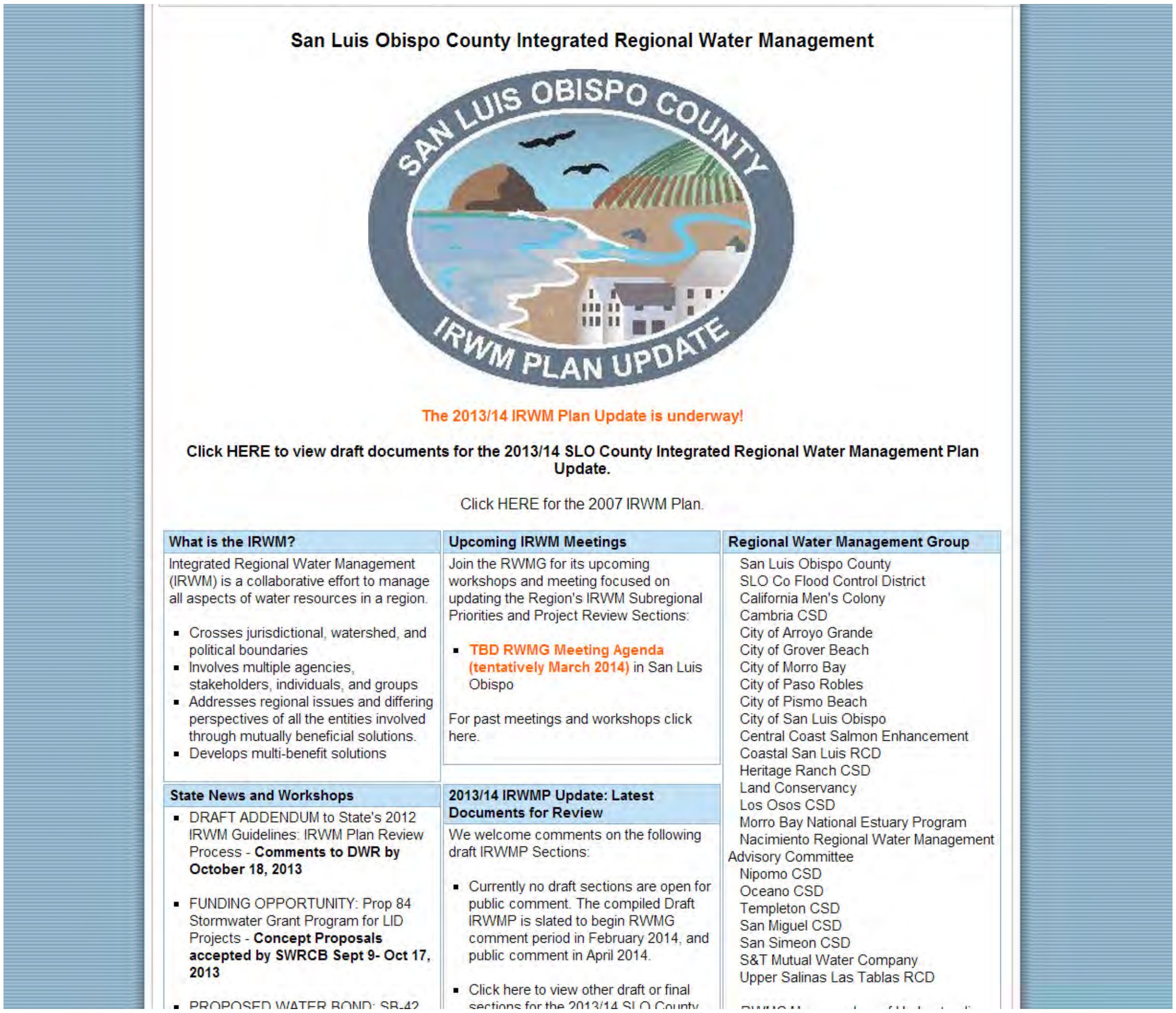


Figure B-4. San Luis Obispo IRWM Plan Website

B.4.7 Public Meetings–Kickoff, Working Group Workshops, and RWMG Meetings

In an effort to provide opportunities for all stakeholders to give input to the IRWM Plan Update, all RWMG meetings and Sub-Region Workshops are open to the public. Interested members of the public have provided input throughout the IRWM Plan process at these public forums, and through written comments to District (acting as Lead Agency) staff and/or to the RWMG.

B.4.7.1 San Luis Obispo IRWM Plan Kick-off Meeting

A kick-off meeting[7] was held to increase public awareness of the proposed IRWM Plan, solicit input from the community, and describe the planning process and anticipated outcome. Invitations to the kick-off meeting were prepared to explain the IRWM planning process and the purpose of the RWMG. The meeting was publicly noticed and a press release was

[7] March 6, 2013, San Luis Obispo City Library

distributed (**Appendix D-1 – Notice of Public Meetings, Comments and Outreach Material, Public Meeting Notices**). The kick-off presentation described the San Luis Obispo County IRWM Region and proposed IRWM Plan Update 2013/14 work plan, oversight, and established governance. The PMT and facilitator solicited input and addressed questions.

B.4.8 Use of Existing Organizations and Communication Channels

In order for the District and RWMG to fairly and comprehensively represent the cities, communities, and agencies of the Region, it incorporated public outreach through existing programs and communication channels. Members of the RWMG relay information to their elected bodies and groups for further input. RWMG members are encouraged to continually inform their agencies/ organizations about IRWM Plan development activities. The list of contact information is updated periodically by the District, always maintaining a current list of contacts for outreach notices.[8]

B.4.8.2 Environmental Justice

Representation and communication from and to the five categories of resident-based contacts (i.e., special interest groups, water resources and environmental stakeholders, cities, and local communities) satisfy the need for the IRWM Plan's recognition of Environmental Justice (EJ) in San Luis Obispo County, as it is defined in **Section I – Plan Benefits and Impacts**. Continued outreach using the list of contacts will ensure the highest level of interaction with potential residents affected by EJ issues.

B.4.8.3 Tribal Councils

The two prominent Native American Tribes of San Luis Obispo are the Salinan and Northern Chumash Indian tribes. The Tribal Councils both meet on a regular basis and encourage active involvement by their members in the land use, construction, and policy decision making taking place by the RWMG, WRAC, and County Board of Supervisors levels. Contact information can be found on their websites provided in **Section C – Region Description**.

B.5 LONG TERM IMPLEMENTATION OF THE IRWM PLAN

The RWMG worked successfully throughout the IRWM planning process, encouraged stakeholder involvement and defined an effective decision making process. The RWMG will

[8] The list is not posted on the SLO IRWM Plan website since many stakeholders request not to have their personal contact information made public.

continue to utilize the existing governance structure and decision process during implementation of the IRWM Plan.

In order to ensure the effectiveness of the IRWM Plan, the RWMG and IRWM Program Participants agree to monitor the IRWM Plan implementation (see **Section J – Plan Performance and Monitoring**). This combined with the adaptive nature of the IRWM program will allow changes to be made throughout the life of the program. If significant changes are necessary in the future, the RWMG and Lead Agency are required to follow the same steps as taken with this IRWM Plan to update and then re-adopt a revised IRWM Plan.

B.5.1 Notice of Intent to Prepare the IRWM Plan

The Lead Agency, on behalf of the RWMG, published a notice of intention to prepare the IRWM Plan Update 2013/14 in accordance with Section 6066 of the Government Code.

B.5.2 Updating or Amending the IRWM Plan

An adaptive management process creates a balance between a stable plan that guides action, and a flexible plan that allows for responding to changed circumstances. The approach to updating and amending the IRWM Plan is intended to ensure its effective implementation over time and to make the IRWM Plan a living document. The MOU differentiates between the need for formal IRWM Plan adoption *versus* interim changes as follows:

> *Plan approval and adoption will be required of the governing bodies of RWMG members and Implementation Affiliates.*
>
> *Plan updates to meet new State guidelines, add new RWMG Members, add or remove and evaluate regional projects and programs, or other updates to information do not require Plan re-adoption.*
>
> *Significant changes to the Plan, including revised goals and objectives, revised methodologies (such as methodology for evaluating, ranking, and prioritizing projects and programs), revised regional boundaries, or other changes deemed significant by the RWMG and the Lead Agency, will require Plan re-adoption via the decision-making process described in MOU Section 4.5.*

Figure B-5 delineates common revisions expected to the IRWM Plan over time, and whether they would constitute re-adoption or a simple interim update. The main difference will lie in whether the change is significant or not. If information can be updated under the IRWM Plan's defined methodologies, then a simple process of convening the RWMG members and vetting updated information can be used.

For example, the RWMG will need to maintain a priority list of projects and programs over time. Updating the Project Priority list will follow the adopted methodology defined in **Section G Project Solicitation, Selection, and Prioritization** to publicly solicit for projects and programs, review project abstracts, and select the highest ranking of those projects for implementation in the IRWM Plan as project alternatives; further described in **Section H – Project Integration-Project Alternatives,** and **Section I – Plan Impacts and Benefits**.

Lastly, the Plan's appendices are established by the RWMG as the mechanism for keeping the IRWM Plan current as reports are updated and baseline descriptive information changes over time. This keeps the Plan a living document after its adoption without having to re-adopt and republish the entire Plan with each reported change.

B.5.3 IRWM Plan Adoption

Pursuant to California Water Code 10543(c), upon completion of the IRWM Plan Update 2013/14, the Lead Agency, on behalf of the RWMG, will publish a Notice of Intention to adopt the plan in accordance with Section 6066 of the Government Code, and will adopt the plan in a public meeting with its governing board.

Once approved and adopted by the District Board of Supervisors (Lead Agency), other RWMG members, and Implementation Affiliates will adopt the IRWM Plan. As a final step, the District will submit the IRWM Plan to DWR for review and approval.

Future IRWM Plan updates will be noticed in accordance with the relevant California laws.

Figure B-6 includes the RWMG Member Agencies and Implementation Affiliates who adopted the IRWM Plan in 2014. To be done at very end.

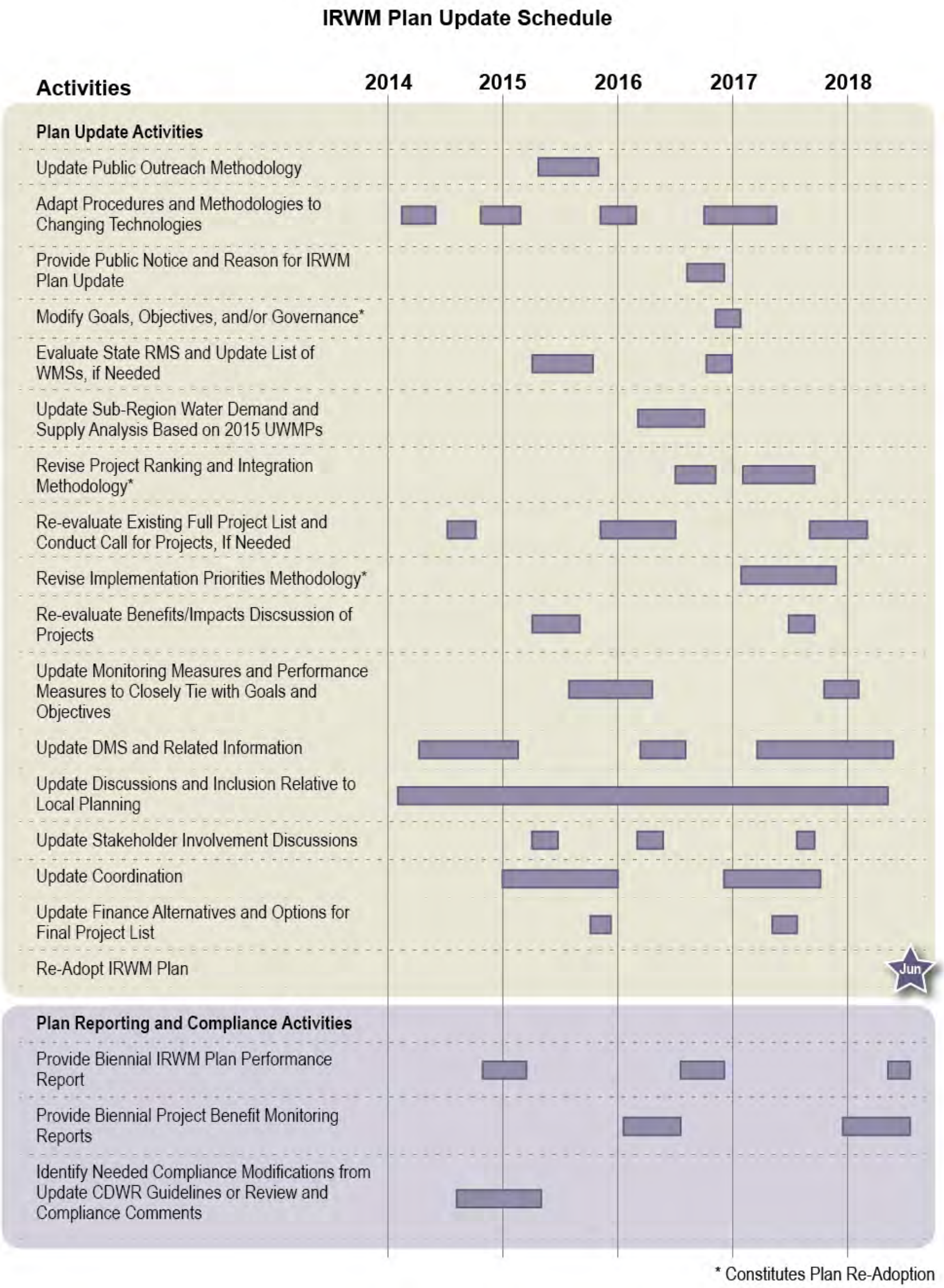


Figure B-5. San Luis Obispo IRWM Plan Re-Adoption vs. Interim Updates

Graphic Placeholder for Adopting Agencies

Figure B-6. RWMG Member Agencies and Implementation Affiliates who Adopted the IRWM Plan (2014)

B.5.4 Coordination with Neighboring IRWM Efforts and State and Federal Agencies

The IRWM Program's success relies on internal and regional coordination and collaboration, as well as inter-regional and statewide coordination. To the extent feasible, the Lead Agency coordinates with neighboring IRWM Regions and state and federal agencies. This is further discussed in **Section O – Coordination**.

The SLO County IRWM Region is bordered by the Greater Monterey County IRWM Region to the north, the Santa Barbara County and Watersheds Coalition of Ventura County IRWM Regions to the south, and the Kern County IRWM Region to the east. The Lead Agency participates in Roundtable of Regions conference calls and meetings throughout the year in order to keep apprised of current activities in other regions. As needed, water resources issues that overlap neighboring region's boundaries are either covered by existing cooperative water management plans, adjudication, and/or operational agreements, or have no defining water resources management issue. The RWMG will continue to coordinate with neighboring regions to address additional water resources issues and possible integrated water management strategies in our respective IRWM Plans.

On a broader scale, coordination with state and federal agencies allows the Region to seek input on the IRWM Plan and program. The RWMG coordinates with state and federal agencies as needed to form project partnerships, consider state and federal priorities and programs, and funding for IRWM projects. From a state and federal standpoint, the U.S. Army Corps of Engineers, Regional Water Quality Control Board, State Water Resources Control Board, and State Department of Water Resources are all current stakeholders of the IRWM program. All of the agencies are invited to participate, and/or were involved to the degree time and resources would allow. As discussed below, even where the agencies were not able to be actively engaged in all the IRWM Plan meetings, the available information, data, and agency plans were consulted. The resource agencies like California State Department of Fish and Wildlife Services and U.S. Fish and Wildlife Services are currently not actively engaged. If any of the IRWM projects require federal permit, use federal money or involve federal lands, then the individual agencies implementing the projects will seek early consultation with the appropriate state and/or federal agencies. This will ensure that requirements, impacts, and potential mitigations are identified during planning and allow local interests to anticipate mitigation costs into projects designs. This will also help avoid costly scheduling delays.

Section C.
Region Description

Section C. Region Description

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Section C. Region Description

C.1 Purpose and Organization of Section

The November 2012 State Guidelines for this section include the following elements:

IRWM Plan Standard from November 2012 IRWM Guidelines: ***An IRWM Plan must include a description of the region being managed by the RWMG. This description should include a comprehensive inclusion of the following:***
• *A description of the **watersheds** and the **water systems**, natural and anthropogenic (i.e. "man-made"), including **major water related infrastructure, flood management infrastructure,** and **major land-use divisions.** Also include a description of the **quality and quantity of water resources** within the region (i.e. surface waters, groundwater, reclaimed water, imported water, and desalinated water). As relevant, describe **areas and species of special biological significance and other sensitive habitats,** such as **marine protected areas** and **impaired water bodies** within the region.*
• *A description of **internal boundaries** within the region including the **boundaries of municipalities, service areas of individual water, wastewater, flood control districts, and land use agencies**. The description should also include those not involved in the Plan (i.e. **groundwater basin boundaries, watershed boundaries, county**, State, and international boundaries).*
• *A description of **water supplies and demands for a minimum 20-year planning horizon.** Include a discussion of important **ecological processes and environmental resources** within the regional boundaries and the associated **water demands to support environmental needs**. This includes a description of the **potential effects of climate change** on the region.*
• *A descriptive comparison of **current and future (or proposed) water quality conditions** in the region. Describe any water quality protection and improvement needs or requirements within the area of the Plan.*
• *A description of the **social and cultural makeup** of the regional community. Identify important **cultural or social values**. Identify **DAC**s in the management area. Describe **economic conditions and important economic trends** within the region. Describe efforts to effectively **involve and collaborate with Tribal government representatives** to better sustain Tribal and regional water and natural resources (if applicable).*
• *A description of **major water related objectives and conflicts** in the defined management region, including clear identification of problems within the region that lead to the development of the objectives, implementation strategies, and implementation projects intended to provide resolution.*
• *An explanation of **how the IRWM regional boundary was determined** and why the region is an appropriate area for IRWM planning.*
• *Identification of **neighboring and/or overlapping IRWM efforts** (if any) and an explanation of the **planned/working relationship that promotes cooperation and coordination between regions***
• *For IRWM regions that receive water supplied from the Sacramento-San Joaquin Delta, an explanation of **how plan will help reduce dependence on the Sacramento-San Joaquin Delta** for water supply (SB 855 (Committee on Budgets), Section 31.(c)(1)).*

In an effort to fully address each of the State Guideline requirements and maintain a concise amount of section content, thereby minimizing the number of pages, the section relies heavily on providing data in a tabular format; in most cases, a table is used to summarize more detailed information located in the IRWM Plan's Appendices. The following appendices support this section:

- Appendix L – Detailed Description of Groundwater Basins
- Appendix M – Detailed Description of Water Planning Areas and Local Water Districts
- Appendix N – San Luis Obispo County Watershed Management Planning Project Report

Section C is organized to assist in the understanding for splitting the IRWM Region up into three Sub-Regions, 16 Water Planning Areas (WPAs), and 25 watersheds. Completion of the *San Luis Obispo County Watershed Management Planning Project Report* (Coastal San Luis RCD 2014 & Upper Salinas-Las Tablas RCD, January 2014), included as **Appendix N**, provides the first phase of describing the region at the watershed level. The next phase improves this description by populating areas identified in the report as prioritized data gaps. For purposes of the IRWM Plan Update, the WPAs are still the primary boundaries for purposes of water supply planning and summarizing water supplies and demands; whereas, watershed-level descriptive information is provided in **Section C.7** with reference to **Appendix N** if additional details are needed.

C.2 SAN LUIS OBISPO COUNTY RELEVANCE AS AN IRWM PLANNING AREA

The region covered by this San Luis Obispo IRWM Plan is co-terminus with the boundaries of the San Luis Obispo County Flood Control and Water Conservation District (District) and is the same as the County of San Luis Obispo (see **Figure C-1**). The County's 3,304 square miles is broken down further into the North Coast Sub-Region, the North County Sub-Region, and the South County Sub-Region. The 2012 Guideline includes the following regarding the definition of a region:

> *CWC §10541(f) states the guidelines shall include a standard for identifying a region for the purpose of developing and modifying an IRWM Plan, and DWR shall develop a process to approve the composition of a region for the purposes of sections 75026 – 75028 of the PRC. DWR developed the Region Acceptance Process (RAP) to approve region composition for the purpose of developing or modifying an IRWM Plan…Through the RAP, IRWM planning regions are accepted into the IRWM Grant program. IRWM planning regions can then apply for IRWM Grants subject to conditions on the acceptance through the RAP and the criteria and review process set up for each funding cycle.*

The County's boundary encompasses the appropriate geographic region and composition for integrated regional water management planning. As a result, all aspects of water management generally lie within the same physical, political, environmental, social, and economic boundaries. The County's boundary ensures active stakeholder involvement at the local and sub-region level based on the Region's shared experience and community values. By linking water resources management to local land use planning, local communities can better balance economic well-being, social equity, and environmental protection needs within their respective sub-regions. The larger region defined as the County is the most effective size to integrate these planning efforts within the context of local community shared values and sense of place.

There are no regional water agencies within or overlapping the County. All of the water resources interested entities within the region participate, or are invited to participate, on the Water Resources Advisory Committee (WRAC) or on flood control advisory committees, as described in **Section B – Governance, Stakeholder Involvement, and Outreach**. The relationship between the County and bordering IRWM Regions is described in **Section O – Coordination**.

Defining the IRWM region as the County has enabled the San Luis Obispo County Flood Control and Water Conservation District (District) and stakeholders to use existing infrastructure, management systems, funding mechanisms, partnerships, and planning documents as a scaffold upon which to build the IRWM Plan. This approach has resulted in an effective, synergistic, and efficient approach to regional water resources management that provides an overarching framework for sound and sustainable Water Management Strategies (WMSs).

C.3 Importance of Sub-Region Separation

The County, split into its three Sub-Regions (see **Figure C-2**), is an appropriately governed region because its boundaries exactly match those of the District. Sub-regionalization facilitates water resources analysis by facilitating integrated water management between jurisdictions that overlie common groundwater basins and watersheds. The Sub-Regions are also grouped to reflect watershed outflow directions and common climatic features. The three Sub-Regions are connected by the District's/County's jurisdiction as well as the regional water projects such as the Nacimiento Water Project (NWP), Salinas Reservoir system, Whale Rock Reservoir system, Lopez Water System and State Water Coastal Branch, which continue to be evaluated for their potential to be optimized to better meet the Region's water needs.

Understanding that regional water planning is a collaborative process of many cultures and socioeconomic backgrounds of urban, rural and agricultural uses, developed and undeveloped lands, the District has found that setting the emphasis of the planning unit boundaries to match three unique and separate Sub-Regions rightfully places the responsibility for leadership at the sub-regional level. Ownership of the IRWM Plan implementation process at the level of each

Sub-Region, where IRWM projects are conceived, will ensure that the project sponsors shape their projects to address the Sub-Regional Priorities selected by the Sub-Region stakeholders for each of the objectives covered in **Section E – IRWM Goals and Objectives**.

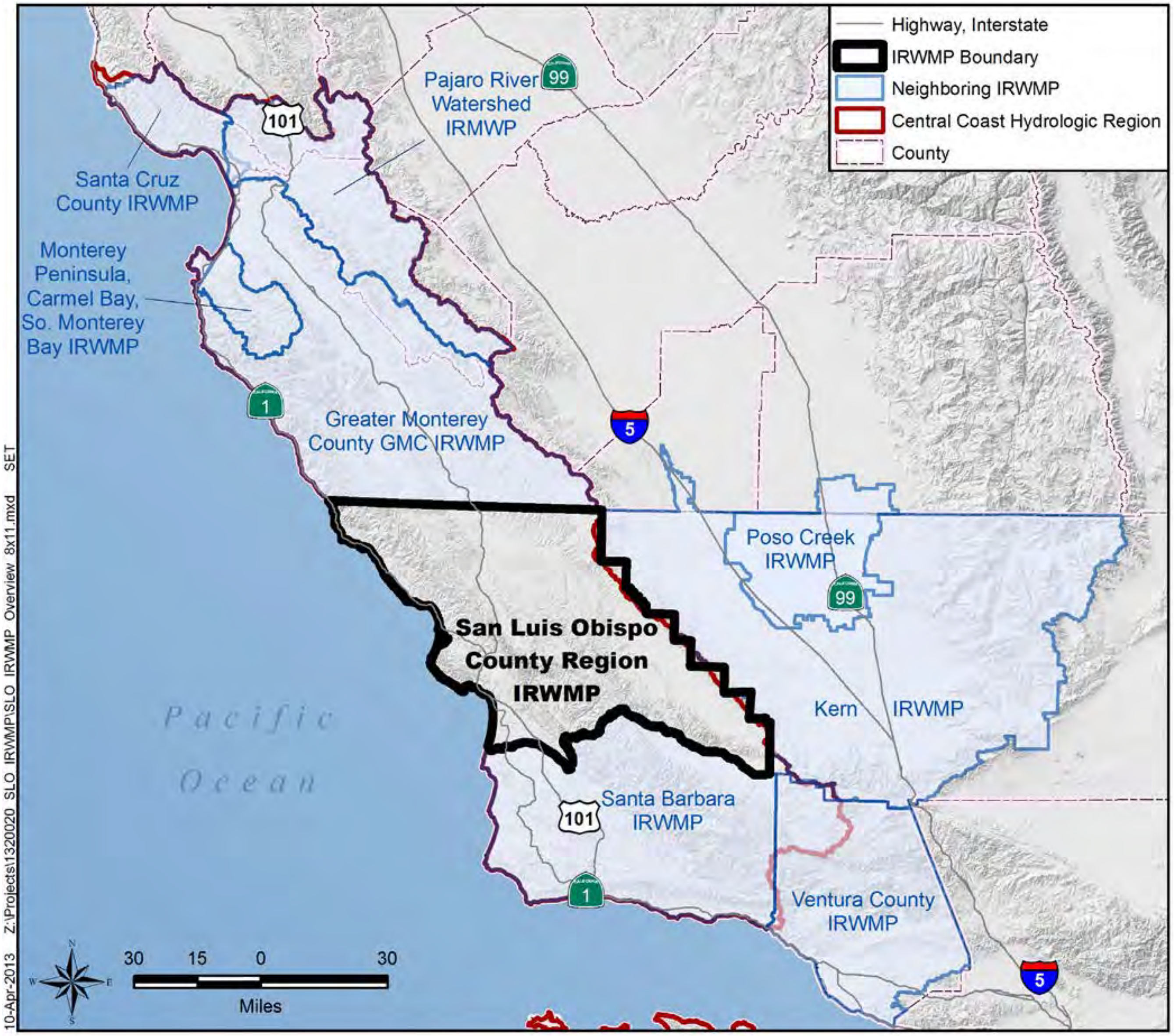

Figure C-1. Regional Setting and Neighboring IRWM Plans

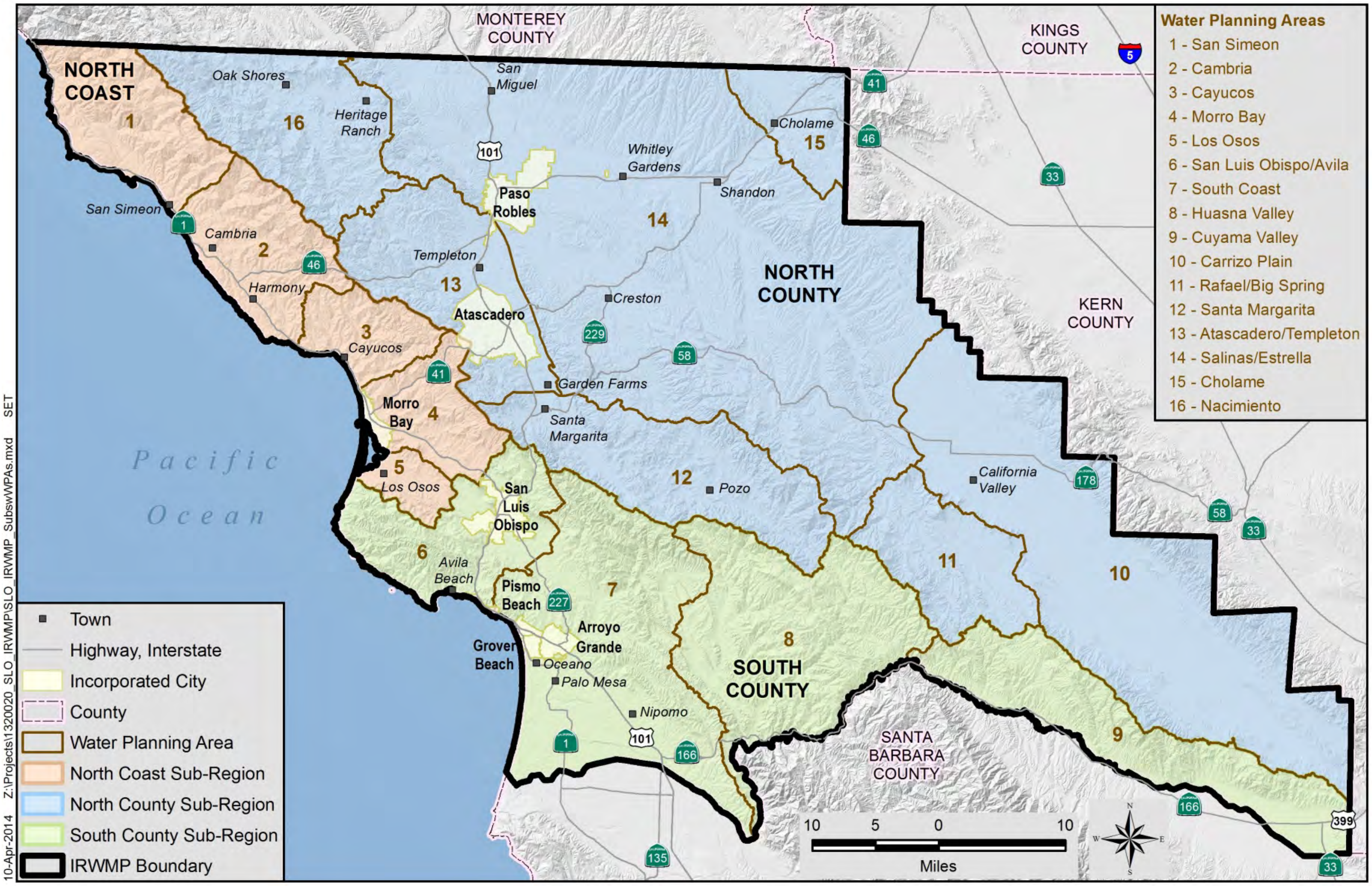

Figure C-2. Sub-Regions and County Overview

The County's three sub-regions are also appropriately sized for the inclusion of environmental values in integrated water resource management because they are neither too small to effectively manage complete ecological systems, nor too large to deal with sometimes complex biological relationships taking place at the local level (e.g., fish passage or non-native plant species on local streams).

The information in this chapter is based primarily on the San Luis Obispo County 2012 Master Water Report. Other sources used include the 2007 San Luis Obispo Region Integrated Regional Water Management Plan, other County documents and plans, and area Urban Water Management Plans, as noted. The 2012 Master Water Report further divides the Sub-Regions into Water Planning Areas (WPA) in order to organize data collection, analysis and reporting.

C.3.1 North Coast Sub-Region

The North Coast Sub-Region spans from the San Luis Obispo/Monterey County line southward to the community of Los Osos, bounded to the west by the Pacific Ocean and to the east by the crest of the Santa Lucia Range (see **Figure C-3**). The North Coast Sub-Region includes San Simeon (WPA 1), Cambria (WPA 2), Cayucos (WPA 3), Morro Bay(WPA 4), and Los Osos (WPA 5).

C.3.2 North County Sub-Region

The North County Sub-Region essentially includes the WPAs that do not drain directly to the ocean through the County's coastal regions, and includes WPAs 10 through 16 (see **Figure C-4**). The North County Sub-Region extends inland from the San Luis Obispo/Santa Barbara County line north to the San Luis Obispo/Monterey County line, bounded to the east by Kern and Fresno Counties, and to the west, in part, by the Santa Lucia range. The North County Sub-Region includes Carrizo Plain (WPA 10), Rafael/ Big Spring (WPA 11), Santa Margarita (WPA 12), Atascadero/Templeton (WPA 13), Salinas/Estrella (WPA 14), Cholame (WPA 15), and Nacimiento (WPA 16). The North County Sub-Region includes, but is not limited to, the larger urban areas of Paso Robles and Atascadero.

C.3.3 South County Sub-Region

The South County Sub-Region spans from the City of San Luis Obispo south to the San Luis Obispo/Santa Barbara County line, east to the Cuyama Valley, and west to the community of Avila Beach. It includes WPA 6 through 9 (see **Figure C-5**). The South County Sub-Region includes the urban areas of San Luis Obispo, Arroyo Grande, Grover Beach, Oceano, and Nipomo.

Figure C-3. North Coast Sub-Region

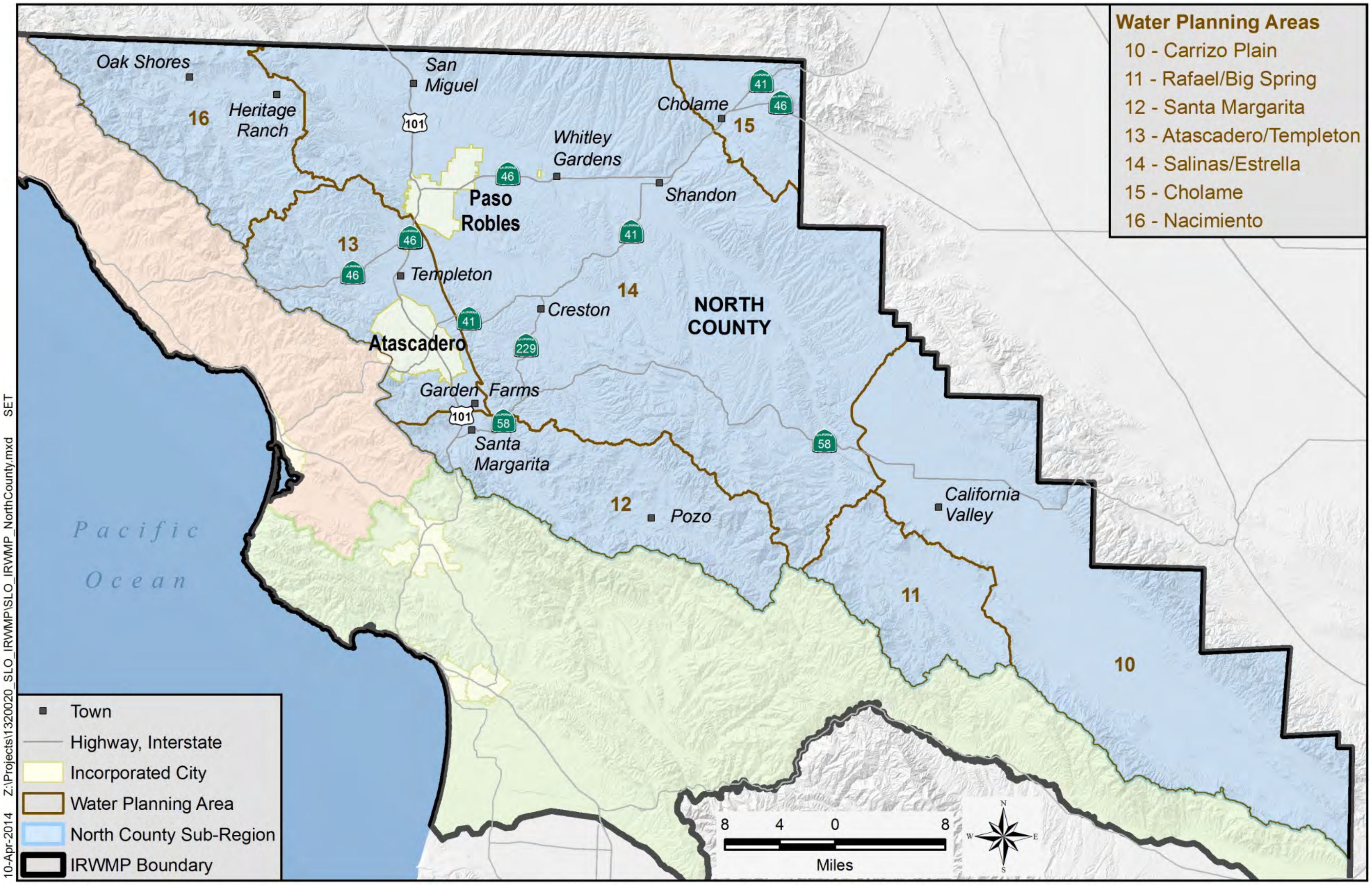

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Figure C-4. North County Sub-Region

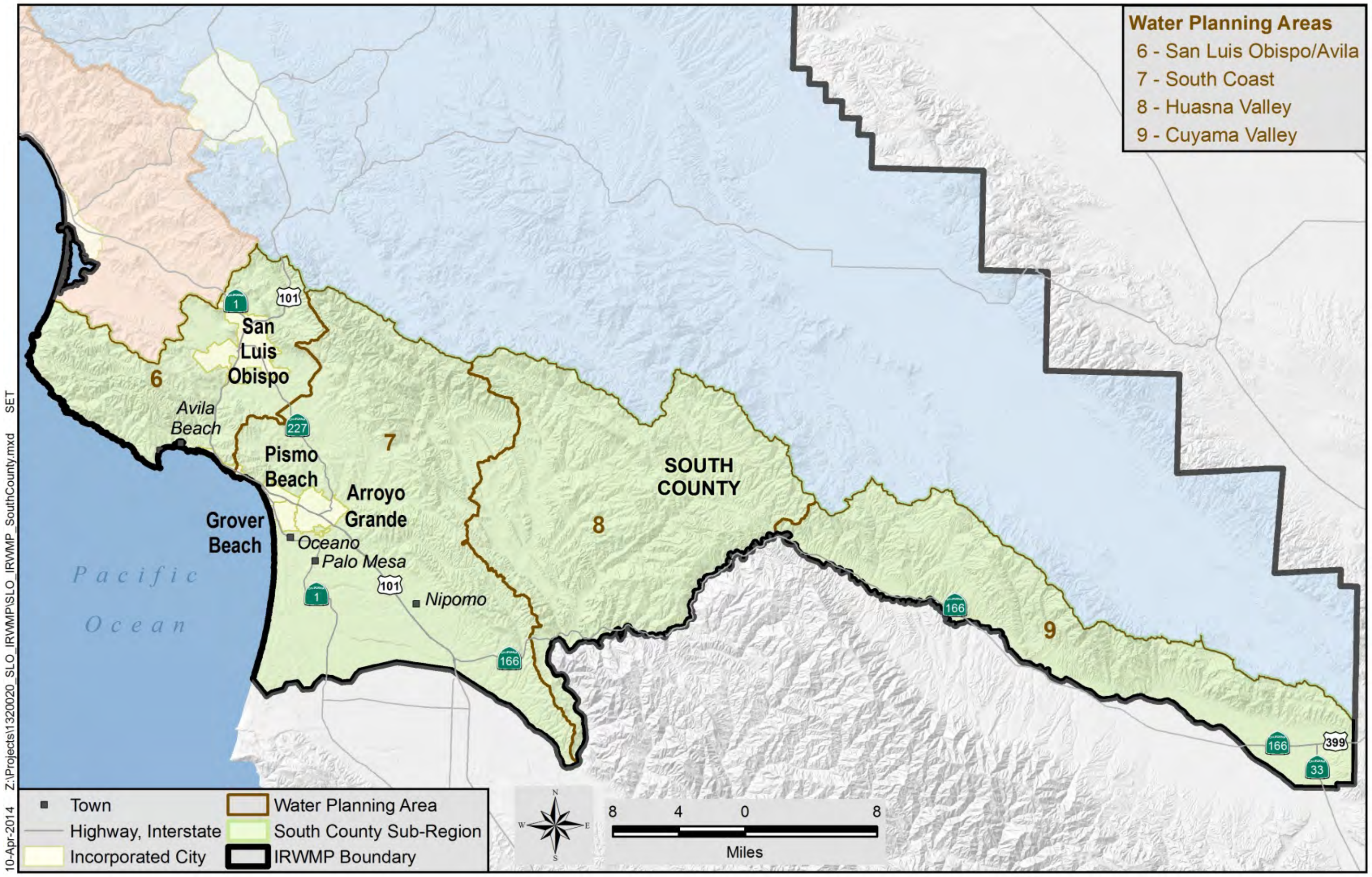

Figure C-5. South County Sub-Region

C.3.4 Internal Boundaries within Each of the Sub-Regions

Table C-1 below summarizes the relationship between the Sub-Regions, the Water Planning Areas and other notable boundaries that assist in defining the IRWM region. Watershed and Water Supplier descriptions follow the brief description of the WPAs.

Table C-1. Internal Boundaries within the San Luis Obispo IRWM Region

Sub-Region	WPA	Local Governments, Communities, Places of Interest	Watersheds	Water Suppliers
North Coast	1. San Simeon	• Community of San Simeon • Hearst Ranch	2. San Simeon-Arroyo de la Cruz	• San Simeon CSD
	2. Cambria	• Town of Cambria	1. Big Creek – San Carpoforo 3. Santa Rosa Creek	• Cambria CSD
	3. Cayucos	• Community of Cayucos	4. Cayucos Creek- Whale Rock Area	• Morro Rock MWC • Paso Robles Beach Water Association • CSA 10A • Cayucos Cemetery District
	4. Morro Bay	• California Men's Colony • Cuesta College • Camp San Luis Obispo (National Guard) • County Office of Education • County Operational Center • City of Morro Bay	4. Cayucos Creek- Whale Rock Area 5. Morro Bay	• California Men's Colony • Cuesta College • Camp San Luis Obispo (National Guard) • County Office of Education • County Operational Center • City of Morro Bay
	5. Los Osos	• Community of Los Osos	5. Morro Bay	• Los Osos CSD • S&T MWC • Golden State Water Company
South County	6. San Luis Obispo/ Avila	• Cal Poly San Luis Obispo • Community of Avila Beach • Port San Luis • City of San Luis Obispo	6. Irish Hills Coastal Watershed 7. San Luis Obispo Creek	• Cal Poly San Luis Obispo • Avila Beach CSD • Avila Valley MWC • San Miguelito MWC • CSA 12 • Port San Luis • City of San Luis Obispo

Sub-Region	WPA	Local Governments, Communities, Places of Interest	Watersheds	Water Suppliers
	7. South Coast	• Community of Nipomo • Community of Oceano • Palo Mesa Village • City of Pismo Beach • City of Arroyo Grande • City of Grover Beach	9. Arroyo Grande Creek 11. Nipomo Suey Creeks 8. Pismo Creek 10. Santa Maria River	• Oceano CSD • City of Pismo Beach • City of Arroyo Grande • City of Grover Beach • Golden State Water Company • Nipomo CSD • Rural Water Company • Woodlands Mutual Water Company • Conoco Phillips
	8. Huasna Valley		13. Alamo Creek 14. Cuyama River 12. Huasna River	
	9. Cuyama Valley		14. Cuyama River	
North County	10. Carrizo Plain	• Community of California Valley	15. Black Sulphur Spring 16. Soda Lake	
	11. Rafael/ Big Spring		17. Upper San Juan Creek 18. Lower San Juan Creek	
	12. Santa Margarita	• Village of Pozo • Community of Santa Margarita • Santa Margarita Ranch	19. Upper Salinas-Santa Margarita Area	• CSA 23 • Santa Margarita Ranch
	13. Atascadero/ Templeton	• Community of Templeton • Community of Garden Farms • City of Atascadero	20. Mid Salinas- Atascadero Area	• Garden Farms CWD • Templeton CSD • Atascadero MWC
	14. Salinas/ Estrella	• Community of San Miguel • Community of Shandon • Village of Whitley Gardens • Village of Creston • Camp Roberts • City of Paso Robles	23. Estrella River 22. Huer Huero Creek 18. Lower San Juan Creek 17. Upper San Juan Creek	• San Miguel CSD • Camp Roberts • CSA 16 (Shandon) • City of Paso Robles
	15. Cholame	• Community of Cholame	24. Cholame Creek	
	16. Nacimiento	• Heritage Ranch • Community of Oak Shores	25. Nacimiento River	• Nacimiento Water Company • Heritage Ranch CSD

C.4 Groundwater Basins

There are 24 groundwater basins and 10 sub-basins[1] in the San Luis Obispo IRWM Region. See **Figure C-6** for a comprehensive view of both DWR-listed groundwater basins and smaller

[1] The Santa Maria Groundwater Basin was divided into three Management Areas as a result of adjudication

unlisted groundwater basins essential to the region's water supply. This section condenses the highly detailed descriptions of the groundwater resources based on the 2012 Master Water Report and 2014 Watershed Management Planning Project Study (Watershed Snapshot Study).

Groundwater is essential to the region's water supply portfolio, so this IRWM Plan includes discussion of:

- current sustainable yield (if available)
- known active storage volumes
- known water quality
- supply quantity challenges
- on-going management efforts

For additional groundwater basin detail, please see **Appendix L – Groundwater Basin Descriptions**. Additional information of the region's geology can be found in **Section C.7 Watersheds**.

Table C-2 provides a very brief description of the various groundwater basins and sub-basins within the IRWM region, and is organized based on Sub-Region, WPA, and then by Groundwater Basin (or Sub-Basin) listed in the order of each of the WPAs. See larger size groundwater basin delineations in each of the WPA figures in the following section.

Any asterisk following any basin in **Table C-2** indicates the County of San Luis Obispo Planning Department has determined that the basin is currently at a Level III severity rating (resource capacity has been met or exceeded) due to poor water quality, and/or historic groundwater level declines and resulting groundwater storage losses. Consequently, water conservation measures, basin management activities, and new growth restrictions are taking place in those basins. The term "Not Available" is used where information is not available and studies should be done to develop a baseline of information (e.g., current water quality characteristics for each basin). Any listed Sub-Basin's are italicized and indented, and share information with the primary groundwater basin unless a significant separation exists and data is available. A thorough water budget accounting of groundwater, including other water supplies, is provided in **Section D – Water Supply, Demand, and Water Budget**.

proceedings – the Nipomo Mesa Management Area, the Northern Cities Management Area and the Santa Maria Valley Management Area.

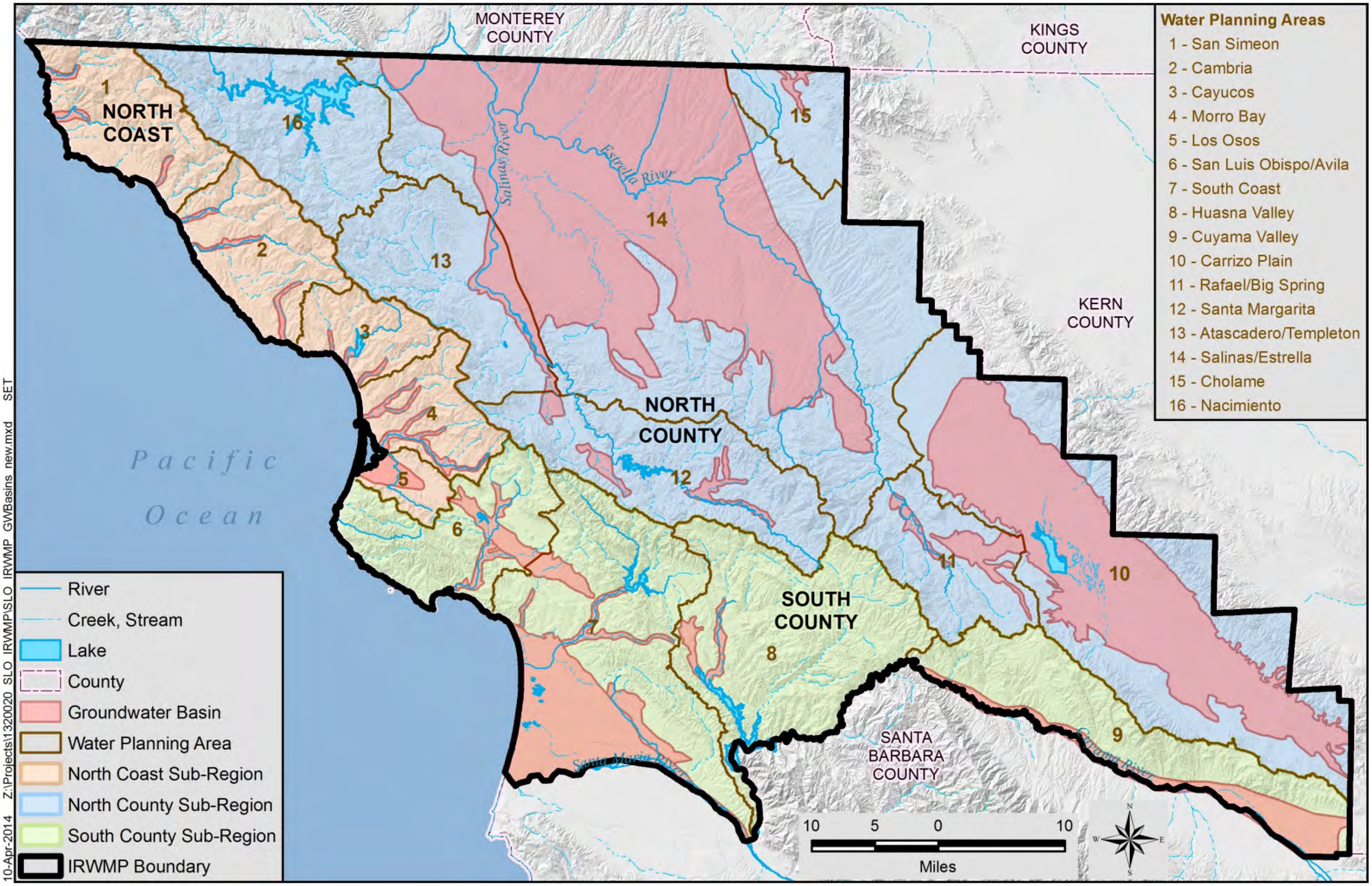

Figure C-6. Groundwater Basins

Figure C-7. North Coast Groundwater Basins

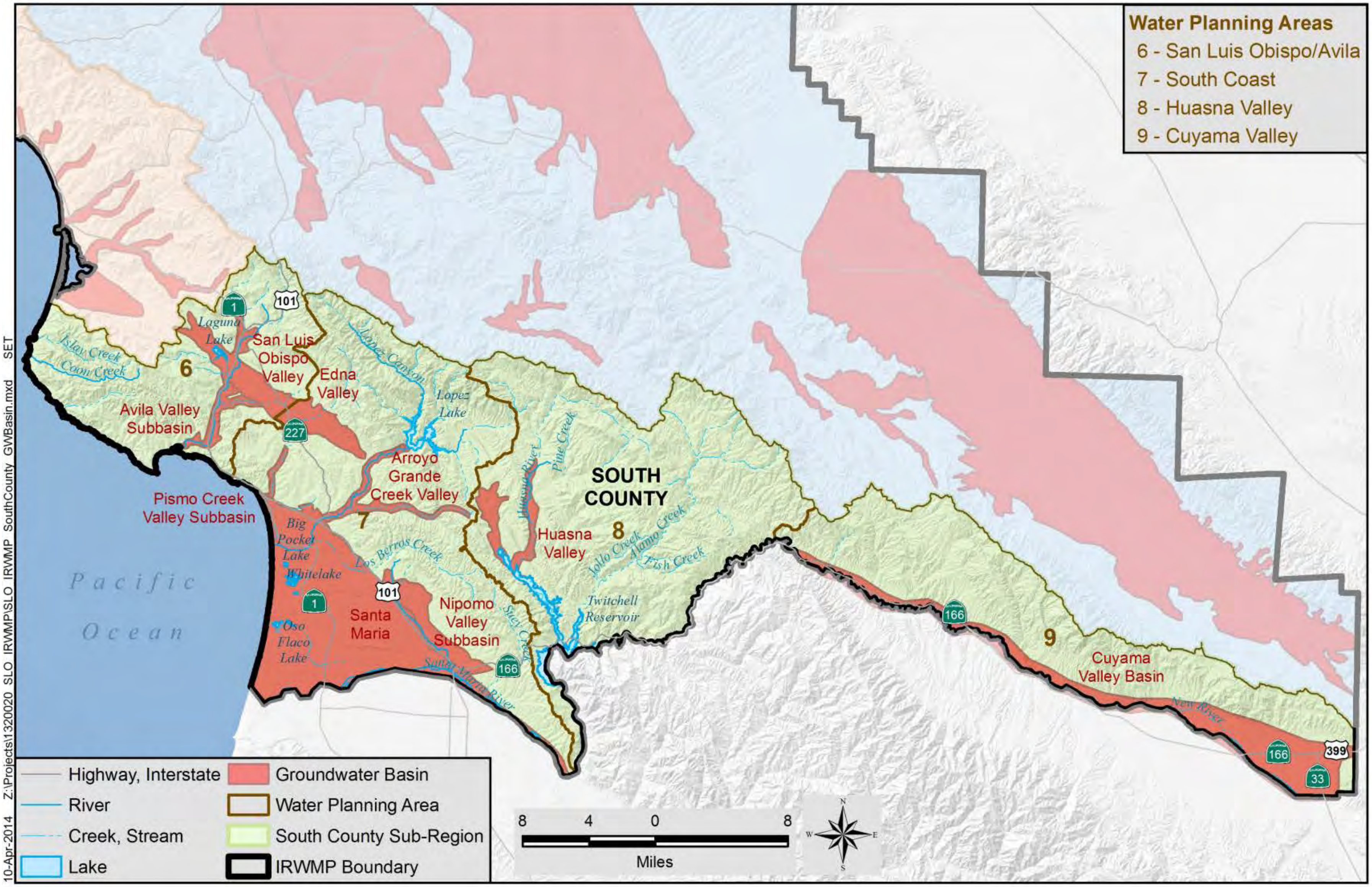

Figure C-8. South County Groundwater Basins

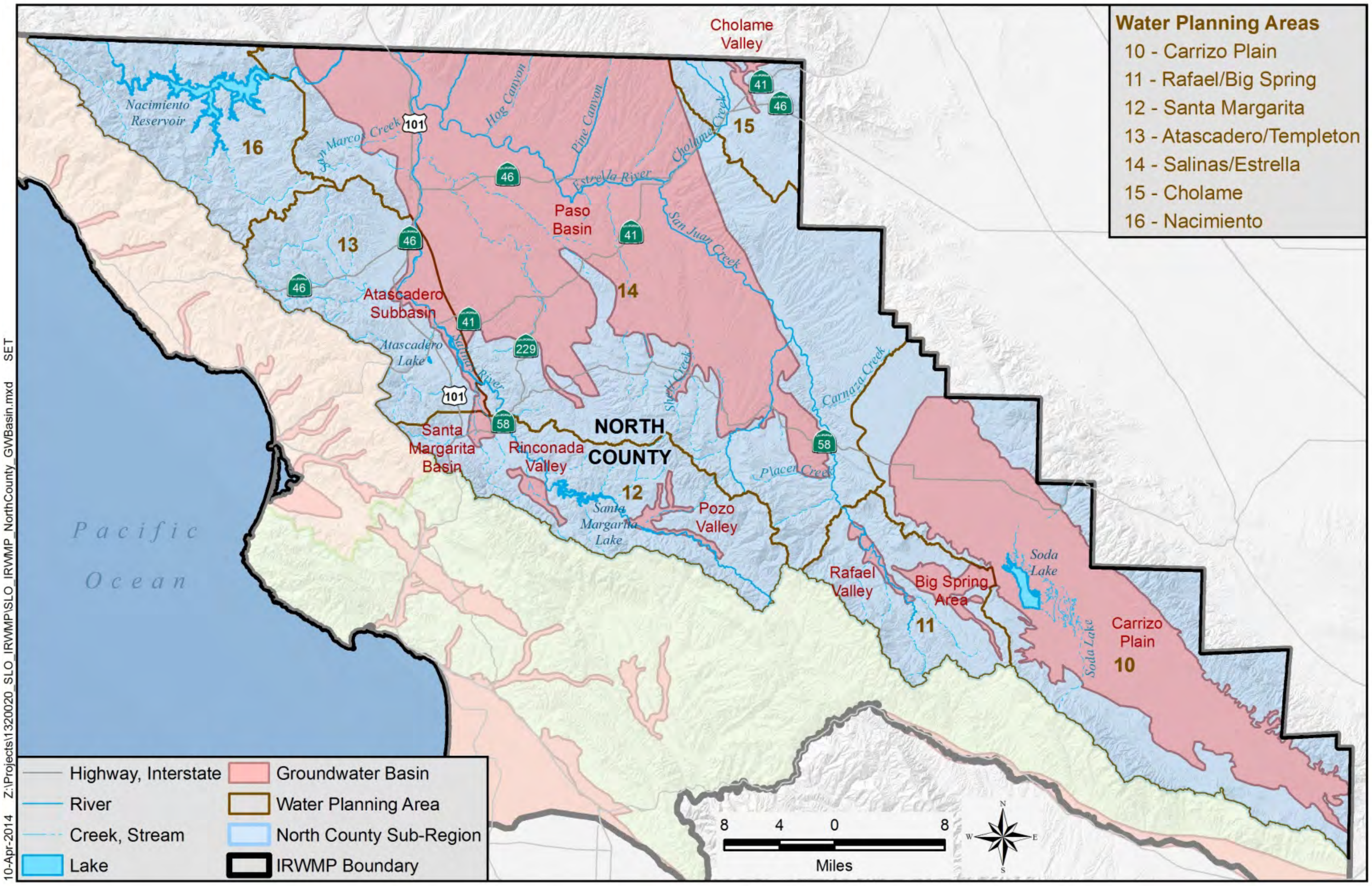

Figure C-9. North County Groundwater Basins

Table C-2. Groundwater Basins within the San Luis Obispo IRWM Region

Sub-Region	WPA	Figure Page Number	Groundwater Basins	DWR Basin ID	Size (Ac)	Long Term Average Sustainable Yield (AFY)	Storage Rating or Value (AFY) and Aquifer Thickness (##ft)	Water Quality (mg/l)	Management Challenges						On-Going Management Efforts					
									Low Storage	Low Recharge	Pesticides/MTBE/PCE	Salinity/Nitrates	Meeting Demands/ Water Rights	Basin Levels	Water Conservation	Growth Restrictions	Treatment Discharges/Environ	GMP BMO Implement/Adjudication	Recycled Water	Reservoir Releases/ Weirs
North Coast	1 – San Simeon		1. San Carpoforo Valley	3-33	200	Not Available	1,800	Not Available	X	X		X				X				
			2. Arroyo De La Cruz Valley	3-34	750	1,244	6,600	Not Available			X	X				X				
			3. Pico Creek Valley*	NA	62.5	120	40 (19)	Not Available	X	X		X		X	X	X	X			
	2 – Cambria		4. San Simeon Valley***	3-35	620	1,040[4]	4,000 (120ft)	TDS[2] – 46 to 2210	X	X		X		X	X	X	X			
			5. Santa Rosa Valley***	3-36	4,480	2,260[1]	24,700	Cl[3]–80 to 933					X	X	X	X	X			
			6. Villa Valley	3-37	980	1,000[4]	Low (50ft)	TDS– 500	X	X		X	X	X	X	X				
	3 – Cayucos		7. Cayucos Valley	3-38	580	600	Low (68ft)	TDS– 500		X		X	X	X	X	X				
			8. Old Valley	3-39	750	505	Low (72ft)	TDS– 440	X			X	X		X	X				X
			9. Toro Valley	3-40	510	532	Low (50-80ft)	Cl–129 TDS–400 to 700	X	X	X[5]	X	X	X	X	X				
	4 – Morro Bay		10. Morro Valley	3-41	1,200	1,500[6]	Low (80ft)	TDS–400 to 800 N[6]–220	X	X		X	X	X	X	X	X		X	
			11. Chorro Valley	3-42	1,900 to 3,200	2,210[7]	Low (50-70ft)	TDS–500 to 700	X	X		X	X	X	X	X	X		X	X
	5 – Los Osos		12. Los Osos Valley*	3-8	6,400	3,200	High with Multiple Aquifer Layers	TDS–200 to 400 N[6]–45	X	X		X	X	X				X		X

Table C-2.Groundwater Basins within the San Luis Obispo IRWM Region, Continued

Sub-Region	WPA	Figure Page Number	Groundwater Basins	DWR Basin ID	Size (Ac)	Long Term Average Sustainable Yield (AFY)	Storage Rating or Value (AFY) and Aquifer Thickness (##ft)	Water Quality (mg/l)	Management Challenges						On-Going Management Efforts					
									Low Storage	Low Recharge	Pesticides/MTBE/PCE	Salinity/Nitrates	Meeting Demands/ Water Rights	Basin Levels	Water Conservation	Growth Restrictions	Treatment Discharges/Environ	GMP BMO Implement/Adjudication	Recycled Water	Reservoir Releases/ Weirs
South County	6 – San Luis Obispo/Avila		13. San Luis Obispo Valley[8]	3-9	13,800	6,000[9]	Low	Not Available	X		X	X		X			X			
			14. ***San Luis Valley Sub-Basin***		8,000	2,000-2,500	Low (60ft)	TDS–320 to 630	X		X	X					X			
			15. ***Avila Valley Sub-Basin***		1,100[10]	Not Available	Low (60ft)	Not Available	X		X	X					X			X
	7 – South Coast		16. ***Edna Valley Sub-Basin***		4,700	4,000-4,500	Low	TDS–630 to 780	X			X		X			X			
			17. Santa Maria River Valley[11]	3-12	184,000	See Note 11	High	Not Available				X	X	X	X	X	X	X		X
			18. ***Arroyo Grande Valley Sub-Basin***		3,860	Not Available	Medium (100ft)	TDS–>1,500[12]	X			X	X				X	X		X
			19. ***Nipomo Valley Sub-Basin***		6,230	Not Available	Not Available	TDS–750 to 1,300 Cl–64 to 130 N–3.4	X			X		X				X		X
			20. ***Pismo Creek Valley Sub-Basin[13]***		1,220	>200 (no max is available)	Low (60 to 70ft)	TDS–620	X					X			X	X		
	8 – Huasna Valley		21. Huasna Valley	3-45	4,700	Not Available	Not Available	Not Available	X					X						
	9 – Cuyama Valley		22. Cuyama Valley Basin*	3-13	147,200	9,000-13,000 (8,000 net consumptive use)	High (150 to 250)	TDS–755 to 1,000 N–400 (shallow wells)				X	X	X	X	X				

Table C-2. Groundwater Basins within the San Luis Obispo IRWM Region, Continued

Sub-Region	WPA	Figure Page Number	Groundwater Basins	DWR Basin ID	Size (Ac)	Long Term Average Sustainable Yield (AFY)	Storage Rating or Value (AFY) and Aquifer Thickness (##ft)	Water Quality (mg/l)	Management Challenges						On-Going Management Efforts					
									Low Storage	Low Recharge	Pesticides/MTBE/PCE	Salinity/Nitrates	Meeting Demands/ Water Rights	Basin Levels	Water Conservation	Growth Restrictions	Treatment Discharges/Environ	GMP BMO Implement/Adjudication	Recycled Water	Reservoir Releases/ Weirs
North County	10 – Carrizo Plain		23. Carrizo Plain	3-19	173,000	8,000-11,000	High (3,000ft)	TDS–161 to 94,750				X		X						
	11 – Rafael/ Big Spring		24. Rafael Valley	3-46	2,990	Not Available	Not Available	Not Available	X	X										
			25. Big Spring Area	3-47	7,320	Not Available	Not Available	Not Available	X	X										
	12 – Santa Margarita		26. Pozo Valley	3-44	6,840	1,000	Low (30ft)	TDS–287 to 676	X	X		X		X						
			27. Rinconada Valley	3-43	2,580	Not Available	Not Available	Not Available	X	X										
			28. Santa Margarita	NA	NA	400-600	High (multiple aquifer layers)	TDS–400 to 490		X				X						
	13 – Atascadero/ Templeton		29. Paso Robles*	3-4.06	505,000	97,700	Low to Medium (30 to 130 ft Upper Unconfined)	2008 WQ Report Showed Below Primary Drinking Water Standards. Low to Medium concentrations of Arsenic and Barium are present.	X	X		X	X	X	X	X	X		X	X
			30. ***Atascadero Sub-Basin*** **				Medium (100ft)		X	X		X	X	X	X	X				

Table C-2.Groundwater Basins within the San Luis Obispo IRWM Region, Continued

Sub-Region	WPA	Figure Page Number	Groundwater Basins	DWR Basin ID	Size (Ac)	Long Term Average Sustainable Yield (AFY)	Storage Rating or Value (AFY) and Aquifer Thickness (##ft)	Water Quality (mg/l)	Management Challenges						On-Going Management Efforts					
									Low Storage	Low Recharge	Pesticides/MTBE/PCE	Salinity/Nitrates	Meeting Demands/ Water Rights	Basin Levels	Water Conservation	Growth Restrictions	Treatment Discharges/Environ	GMP BMO Implement/Adjudication	Recycled Water	Reservoir Releases/ Weirs
	14 – Salinas/ Estrella		See Paso Robles Above.																	
	15 – Cholame		31. Cholame Valley	3-5	39,800	Not Available	Medium to High (100 to 665ft)	Not Available												
	16 - Nacimiento		No Regional Groundwater Basins																	

* The County of San Luis Obispo Planning Department has recommended that the basin is currently at a Level III severity rating (resource capacity has been met or exceeded) due to either, water quality, historical groundwater level declines and resulting groundwater storage losses.

** The County of San Luis Obispo Planning Department has recommended that the basin is currently at a Level I severity rating (resource capacity has been met or exceeded) due to either, water quality, historical groundwater level declines, and/or resulting groundwater storage losses.

*** The County of San Luis Obispo Planning Department recommended a level of severity, but the level of severity was never certified.

Notes:

1. The State Board allows a maximum extraction of 518 AFY in the Santa Rosa Valley Groundwater Basin and a maximum dry season extraction of 260 AF (Cambria CSD WMP, 2008). The California Coastal Commission Coastal Development Permit defines the Santa Rosa Creek dry period as July 1 to November 20.
2. TDS is typically in the range of 100 to 500 mg/l with an MCL of 500 mg/l

Table C-2. Groundwater Basins within the San Luis Obispo IRWM Region, Continued

3. Chloride (Cl) is typically in the range of 30 to 270 mg/l with an MCL of 250 mg/l
4. The State Water Resources Control Board (State Board) allows a maximum extraction of 1,230 AFY in the San Simeon Valley Groundwater Basin and a maximum dry season extraction of 370 AF (Cambria CSD Water Master Plan (WMP), 2008).
5. Sea water intrusion and petroleum hydrocarbon contamination are the primary constraints.
6. Nitrate MCL is 10 mg/l.
7. Safe yield under drought conditions is estimated at 566 AFY through the State Board.
8. The San Luis Obispo Valley Groundwater Basin is part of WPA 6 and WPA 7 and encompasses approximately 13,800 acres (approx. 21.6 square miles), including the San Luis Valley, Edna Valley, and the newly defined Avila Valley Sub-Basins.
9. The safe yield of the San Luis Obispo Valley Groundwater Basin is estimated at 6,000 AFY, of which 2,000 AFY is assigned to the San Luis Valley Sub-basin, and 4,000 AFY to the Edna Valley Sub-basin (Boyle, 1991; DWR 1997)
10. Estimated based on San Luis Obispo Valley Groundwater Basin area.
11. The Santa Maria Valley Groundwater Basin was adjudicated in 2005 by the Superior Court of California based on a Judgment for a basin-wide groundwater litigation case that defined three basin management areas. These management areas are the Northern Cities Management Area (NCMA), the Nipomo Mesa Management Area (NMMA), and the Santa Maria Valley Management Area (SMVMA). The portion of the groundwater basin located in San Luis Obispo County in 1975 was estimated by the Department of Water Resources to contain about 226,000 AF.
12. Downstream sections only. Upstream sections meeting drinking water standards.
13. Pismo Creek Sub-Basin does not lie within the adjudicated areas of the Santa Maria River Valley Basin.

C.5 Description of Water Planning Areas (WPAs) and Local Governments and Communities

The WPAs represent the geographical organization of the County. Water demand, agricultural water needs, sources of supply, and other information are organized by WPA. The WPAs discussed below were intended to recognize important hydrogeologic units or water management areas throughout the County.

In general, the following types of information were used to define the WPAs, but no single approach was followed to delineate every WPA:

- Groundwater basin boundaries
- Watershed boundaries
- Water supplies and management practices
- Urban growth boundaries
- Similar demands and climate
- Similar water supply issues

C.5.1 Reference Information and Level of Detail

This section provides a very brief description of the WPAs and a short statement of continuing issues and concerns (i.e., **Appendix M – Water Planning Area Descriptions** contains the more detailed information for each WPA). The purpose here is to define the WPAs using visual mapping that includes the WPA boundaries, agency locations, groundwater basins, larger infrastructure, sources of water supplies, source of water demands, and general water-related issues.

Understanding that much can be said regarding each of the WPAs, information included in the IRWM Plan for each WPA is summarized from the published 2012 Master Water Report. As stated in **Section C.1 Purpose and Organization**, the descriptive sections following the WPA summaries capture the details at the watershed level (a slightly higher resolution) to better align the reporting data with the defined hydrogeologic features within the three Sub-Regions. As a result, there are 16 WPAs and 25 watersheds to describe San Luis Obispo County's water demand and supply data, and natural watershed characteristics, respectively.

C.5.2 North Coast WPAs

C.5.2.1 WPA 1 – San Simeon

The San Simeon WPA encompasses the community of San Simeon, Hearst Ranch, agricultural, and other rural overlying users in the northern-most area of the North Coast Sub-Region (see **Figure C-10**). The primary groundwater supplies include the San Carpoforo, Arroyo De La Cruz, and Pico Creek Valley Groundwater Basins. The issues in this WPA include seawater intrusion and tidal influences affecting water quality, and limited groundwater basin yield because of a small recharge area.

Community of San Simeon

The unincorporated community of San Simeon is located along Highway 1, north of Cambria. The San Simeon Community Services District (SSCSD) serves an area of about 100 acres, which includes approximately 320 residential dwelling units and over twice that number of hotel/motel units. Though the permanent residential population is estimated at 247, the tourist population can outnumber locals and varies with the season.

The median household income (MHI) is $43,092 (see **Figure C-58**), or 71% of the State MHI and it thereby qualifies as a State-designated Disadvantaged Community (DAC). Motel rooms, restaurants, and other tourist facilities are a major component in the SSCSD water and sewer usage. According to the Draft Community Plan, there were 706 existing hotel/motel units (rooms) in the District service area. The tourist population varies with the season. The majority of jobs for local residents are in the hotel/motel and service industries.

The build-out population is projected to reach 740 residents. The build-out population is the upper range from the San Simeon Community Plan, which assumes 530 dwelling units (DU) and 1.4 persons per DU. The commercial/retail sector constitutes over 70% of the annual demand. Build-out water demand is based on 3,426 gpd/acre for the non-residential sector and 72 gallons per capita per day (gpcd) consumption for residents.

Hearst Ranch

In 2005, the Hearst Corporation created a conservation easement over their lands just north of the community of San Simeon, ensuring that San Simeon's 82,000 acres Hearst Ranch remains a family cattle ranch in perpetuity and largely undeveloped. They also donated thirteen miles of pristine coastline to the people of California, protecting the shoreline from commercial development. Hearst Ranch also includes the well-known Hearst Castle State Park. Their water use is primarily related to the State's maintenance and operations of Hearst Castle and on-site ranching activities. Historically, Hearst Ranch has also accessed natural spring water sources northeast of the castle's location.

C.5.2.2 WPA 2 – Cambria

The Cambria WPA (see **Figure C-11**) includes the community of Cambria, agricultural, and other rural overlying users between WPA1 to the north and WPA 3 to the south. The primary groundwater supplies include the San Simeon, Santa Rosa, and Villa Valley Groundwater Basins. The issues in this WPA include the potential for seawater intrusion, drought impacts to groundwater supplies, and limited groundwater basin yield.

Community of Cambria

Cambria is an unincorporated town bisected by Highway 1. The Cambria Community Services District (CCSD) provides water and wastewater services to an area of about 4 square miles, including approximately 3900 residential dwelling units and many hotels and other visitor serving businesses. Cambria CSD also provides water and wastewater services to the San Simeon State Park Campground. Tourism is a major contributor to the economy and tends have a greater impact during the summer.

The areas surrounding the Cambria CSD services area are devoted to agricultural uses, primarily grazing. Cambria's existing population is 6,284 residents and the build-out population ranges between 8,257 and 13,547 depending on assumptions.

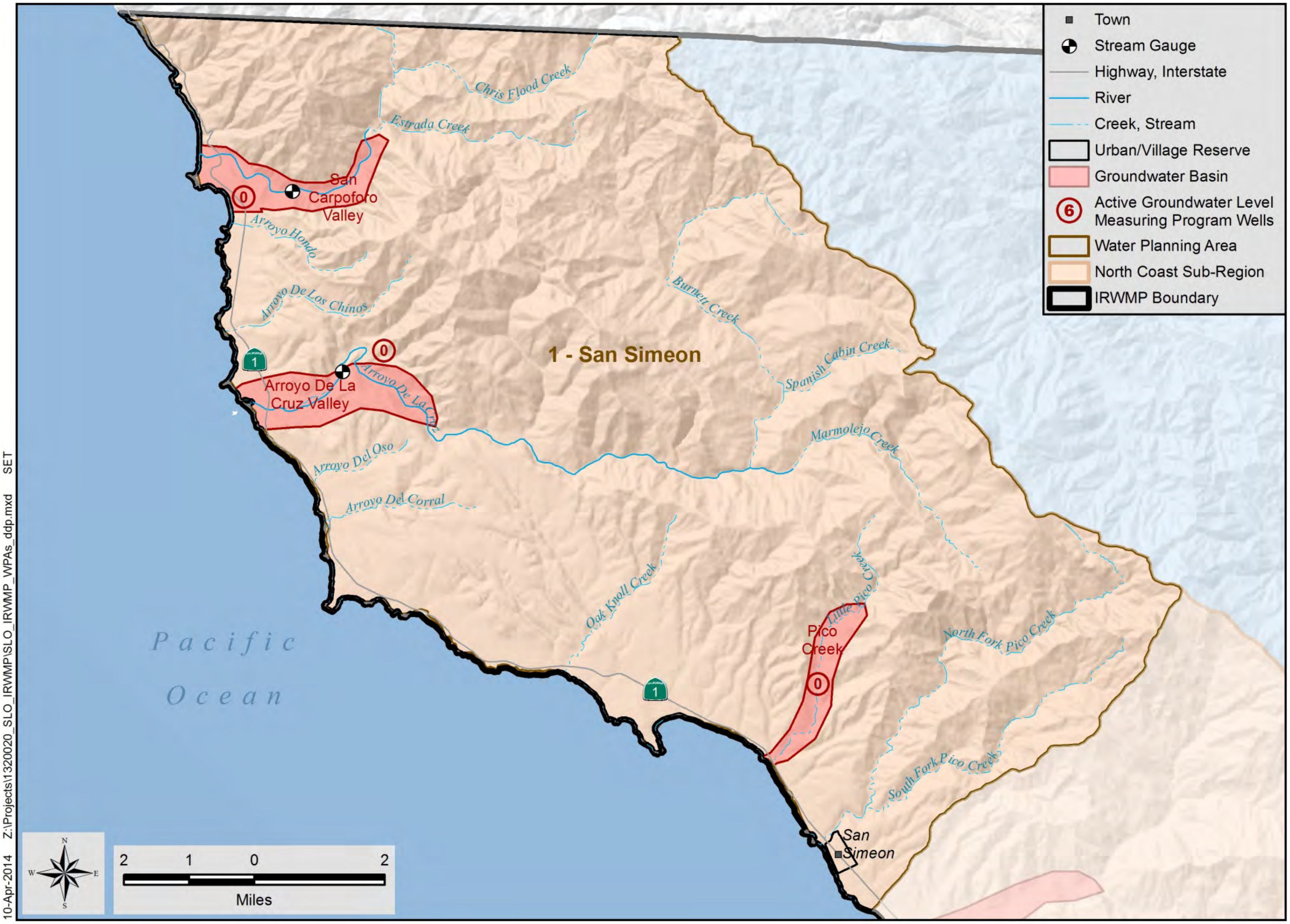

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Figure C-10. Water Planning Area No. 1 - San Simeon

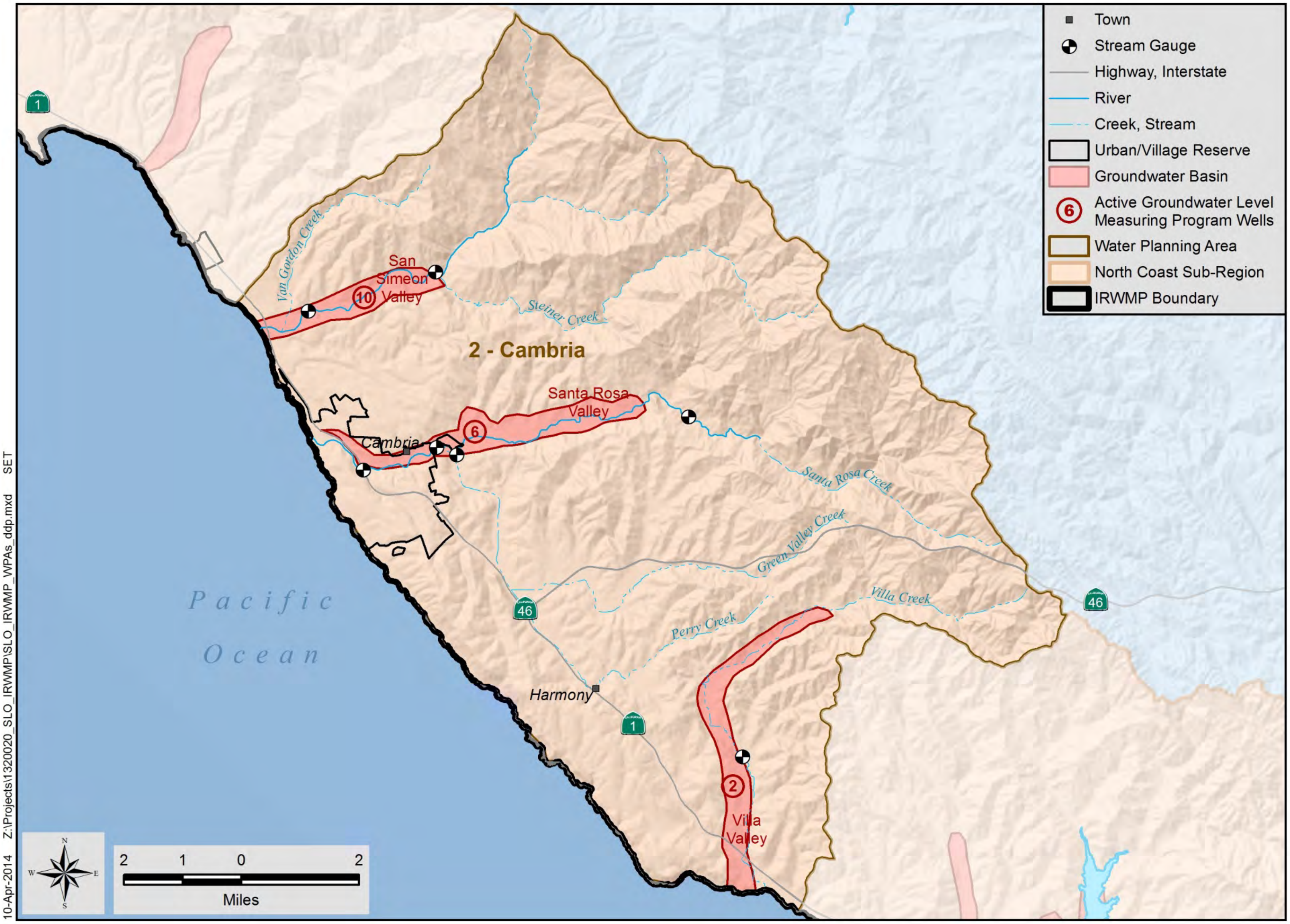

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Figure C-11. Water Planning Area No. 2 - Cambria

C.5.2.3 WPA 3 – Cayucos

The Cayucos WPA (see **Figure C-12)** includes the Cayucos Area Water Organization (CAWO) members (Morro Rock Mutual Water Company, Paso Robles Beach Mutual Water Company, County Service Area 10A, and the Cayucos Cemetery District), agricultural, and other rural overlying users. The primary groundwater supplies include the Cayucos, Old and Toro Valley Groundwater Basins. CAWO members receive potable water predominantly from Whale Rock Reservoir. The issues in this WPA include drought impacts to groundwater supplies and limited groundwater basin yield.

Community of Cayucos

Cayucos is a small oceanfront community with a mixture of vacation homes and full-time residences. A commercial sector serves both the residential and tourist population.

C.5.2.4 WPA 4 – Morro Bay

The Morro Bay WPA (see **Figure C-13**) includes the City of Morro Bay, the Chorro Valley Water System (California Men's Colony, Cuesta College, Camp San Luis Obispo (National Guard), County Operations Center/Office of Education), agricultural and other rural overlying users. The only groundwater supplies include the Morro and Chorro Valley Groundwater Basins. Other major supply sources include the State Water Project, ocean water desalination (City of Morro Bay), Whale Rock Reservoir, Chorro Reservoir, and future recycled water from the jointly operated Morro Bay - Cayucos Sanitary District wastewater treatment plant. The issues in this WPA include drought impacts to groundwater supplies and groundwater quality due to high nitrates stemming from private septic systems and salinity intrusion, and availability/reliability of State Water from year to year.

California Men's Colony

The Men's Colony is a medium-security prison north of Highway 1. Including both the East and West Facilities, the total current inmate capacity of the prison is 6,452 persons. Total staff is about 1,700. Significant expansion of the prison is not anticipated.[2]

Cuesta College

The Cuesta College campus on Highway 1 provides community college services and associate of arts degrees. Enrollment in 1994 was 7,880 students. Additional campuses of the college are planned, one in the northern and one in the southern areas of the county. The north county

[2] County of San Luis Obispo, *San Luis Obispo Area Plan*, November 2006.

campus is planned to be established by the year 2002, and the south county campus is planned for the year 2020.[3]

Camp San Luis Obispo (National Guard)

Camp San Luis Obispo provides operational, training and logistical support to a wide variety of civilian and military agencies at federal, state and local levels. These agencies include: 1) the United States Property and Fiscal Office, 2) the California Army and National Guard, 3) the United States Army reserve, 4) the United States Coast Guard Reserve, 5) the California Conservation Corps, 6) the California Specialized Training Institute, 7) Cuesta Community College, and 8) Caltrans. Units of the National Guard, Army Reserve and Active Army occupy facilities at Camp San Luis Obispo for two- to three-week periods of training duty, primarily during the summer months. In the past, the camp has also provided temporary housing and an operational base for firefighting crews during a major wildfire - the Las Pilitas fire. Facilities at the site include training fields, offices, barracks, and a heliport.[4]

County Office of Education

The San Luis Obispo County Office of Education has its administrative office across Highway 1 from the westerly entrance to Cuesta College. The narrow watershed of Pennington Creek contains intensive development near Highway 1 and more extensive outdoor-related educational activities upstream.

County Operational Center

The San Luis Obispo County Operational Center is adjacent to Camp San Luis Obispo. Existing and proposed facilities include: sheriff and county jail complex (including the honor farm), sheriff's pistol range, emergency operations center, storage and maintenance areas for county departments, environmental garage, vehicle maintenance, fuel facility, road yard, animal control center, and a juvenile services center.[5]

City of Morro Bay

The City of Morro Bay provides water service to over 5,500 connections, including over 10,000 residents, businesses, industrial facilities, and public facilities. The population estimate in 2005 was 10,270 according to the 2005 Urban Water Management Plan (2005 UWMP). Its coastal location attracts a large number of tourists during the summer and on weekends. The motels, hotels, restaurants, State Parks, and other facilities serving the tourist population add a

[3] County of San Luis Obispo, *San Luis Obispo Area Plan*, November 2006.
[4] County of San Luis Obispo, *San Luis Obispo Area Plan*, November 2006.
[5] County of San Luis Obispo, *San Luis Obispo Area Plan*, November 2006.

significant water demand to the local population living primarily in single-family residences. The 2005 UWMP assumed a build-out population of 12,900, estimated to be achieved in 2028.

C.5.2.5 WPA 5 – Los Osos

The Los Osos WPA includes the community of Los Osos, agricultural and other rural overlying users (see **Figure C-14**). The primary groundwater supply is the Los Osos Valley Groundwater Basin. The issues in this WPA include drought impacts to groundwater supplies, groundwater quality and documented seawater intrusion.

Community of Los Osos

The unincorporated community of Los Osos is just south of the City of Morro Bay. Los Osos is bordered on the northwest by the Morro Bay Estuary and Morro Bay State Park; to the east by Los Osos Creek and its riparian corridor; and to the south and southwest by the Irish Hills and Montana de Oro State Park. The Los Osos Valley lies to the east of the community.

The community of Los Osos has been subject to a building moratorium since 1988, which has resulted in only limited entitled development since that time. Upon completion of the wastewater project by the County, the moratorium may be lifted (subject to availability of other resource issues such as water supply and habitat conservation).

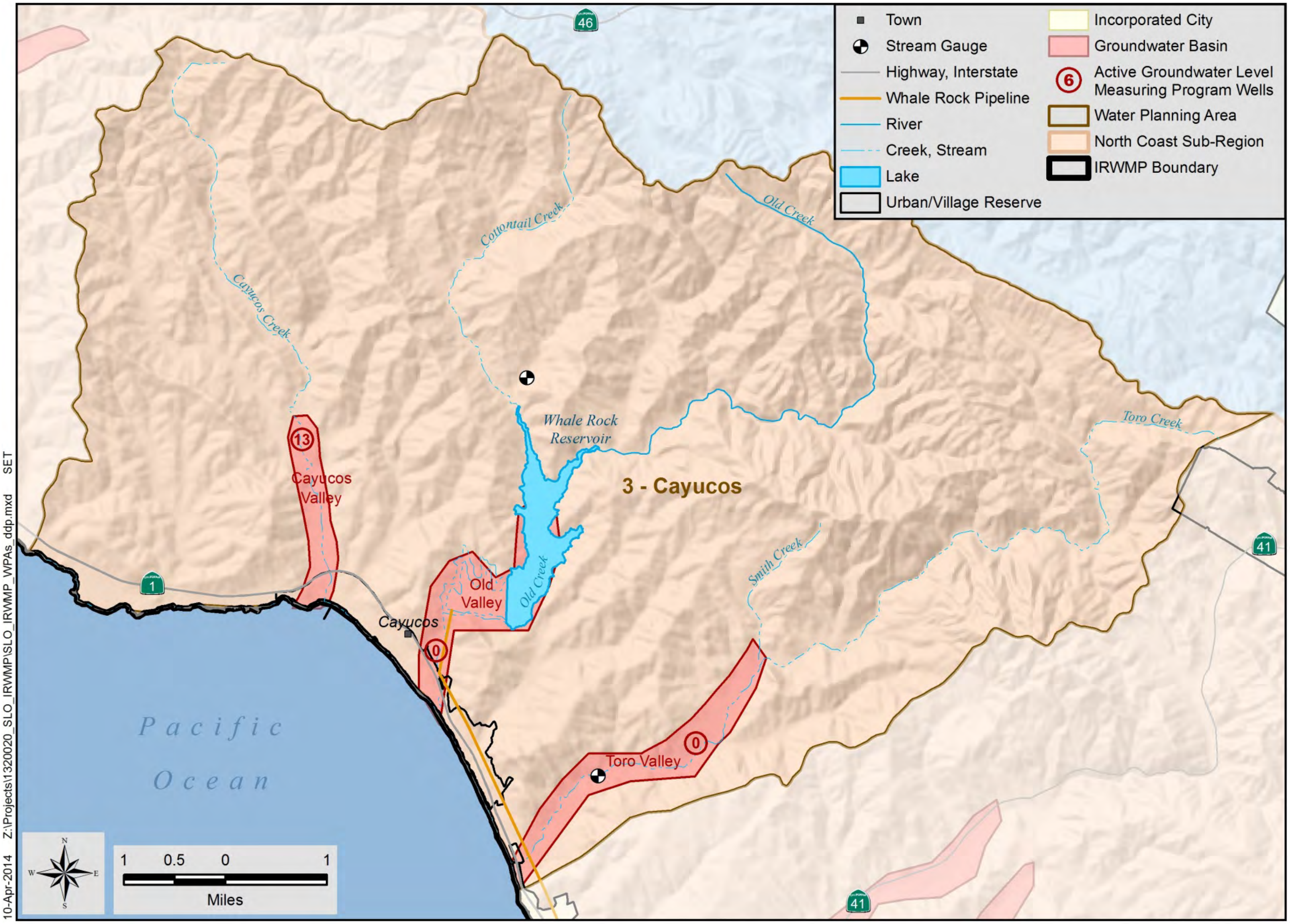

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Figure C-12. Water Planning Area No. 3 - Cayucos

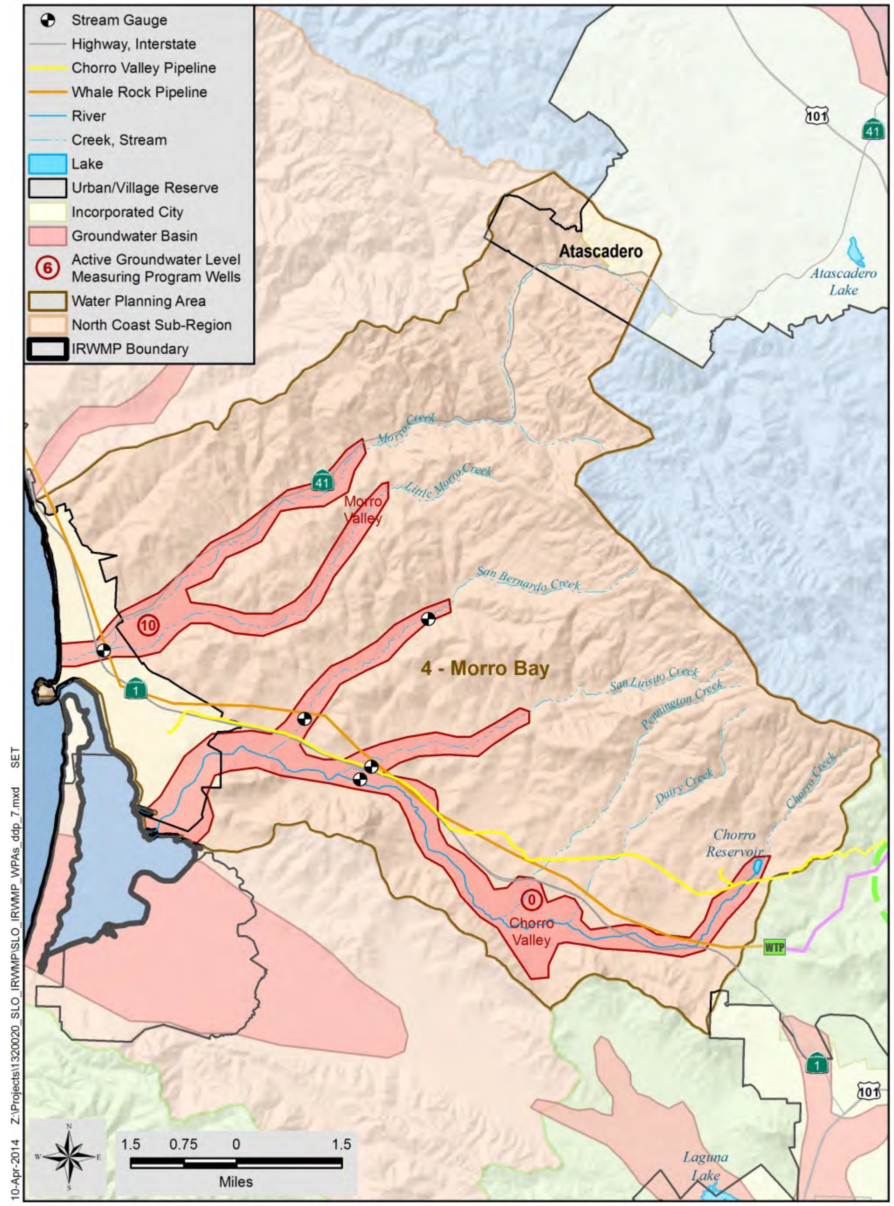

Figure C-13. Water Planning Area No.4 - Morro Bay

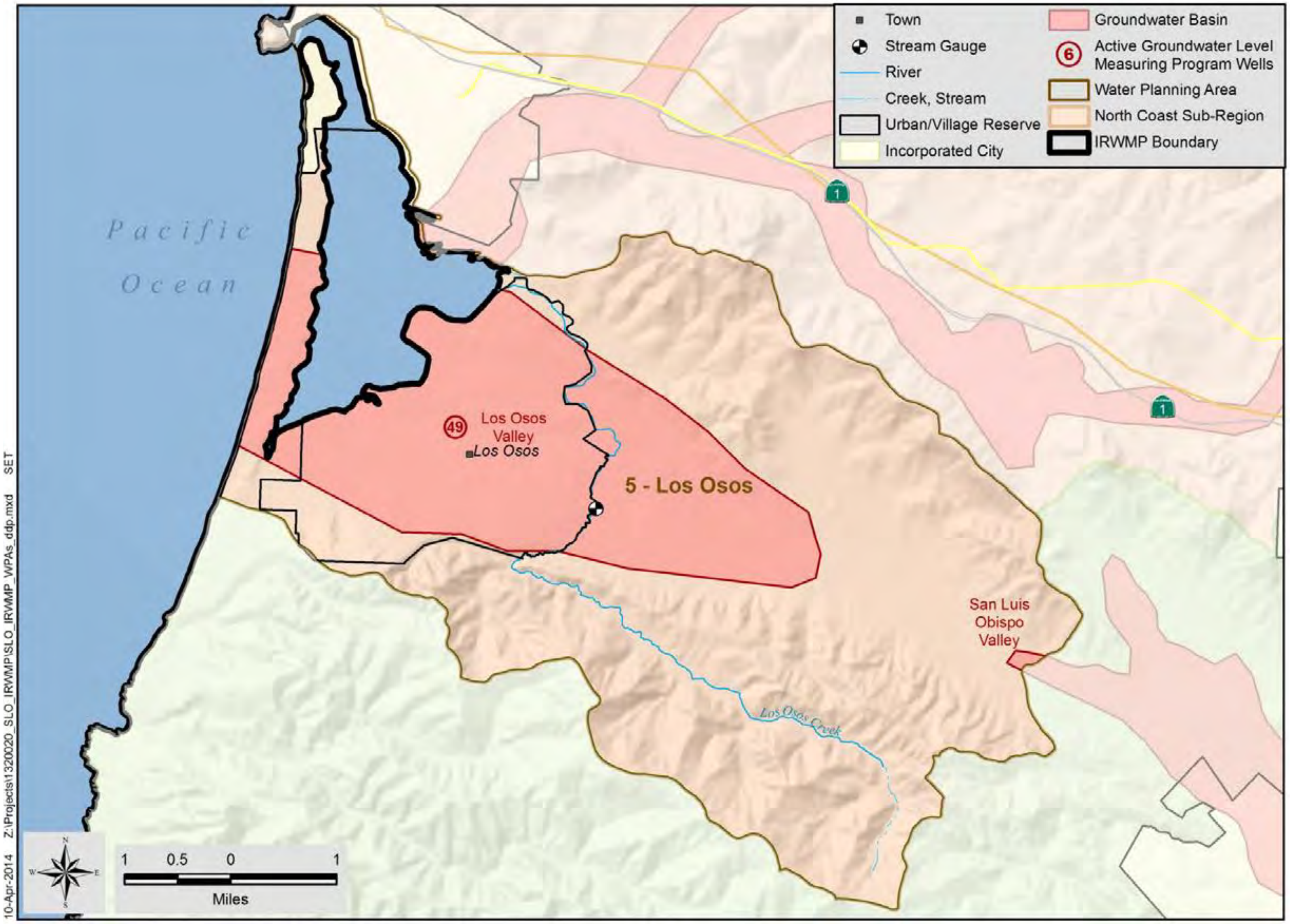

Figure C-14. Water Planning Area No. 5 - Los Osos

C.5.3 South County WPAs

C.5.3.1 WPA 6 – San Luis Obispo/Avila

The San Luis Obispo/Avila WPA (see **Figure C-15**) includes the City of San Luis Obispo, County Airport, Cal Poly, Avila Beach Community Services District (Avila Beach CSD), Avila Valley Mutual Water Company (Avila Valley MWC), San Miguelito Mutual Water Company (San Miguelito MWC), County Service Area 12 (CSA 12), Port San Luis, agricultural, and other rural overlying users. The primary groundwater supplies include the San Luis and Avila Valley Groundwater Sub-basins. Other major supply sources include the State Water Project, Whale Rock Reservoir (located in WPA 3), Salinas Reservoir and the Nacimiento Water Project (see North County Sub-Region WPAs), Lopez Lake Reservoir (located in WPA 3), and recycled water through the City of San Luis Obispo's Water Recycling Program. The issues in this WPA include limited groundwater supplies.

Cal Poly San Luis Obispo

Cal Poly is located to the north of the City of San Luis Obispo. Cal Poly occupies 1,321 acres with a campus core of 155 acres. The university also owns ranches and other outlying properties comprising an additional 8,357 acres. In 2008, Cal Poly's population was:

- Students: 19,471
- Faculty: 1,293
- Staff: 1,752
- Total: 22,516

At build-out, the total population could reach 23,100.

Community of Avila Beach

The unincorporated community of Avila Beach includes an area bounded on the east by Highway 101, the city of Pismo Beach on the south, the coastal zone on the west and the Irish Hills to the north. It includes the Avila Valley area and most of the San Luis Bay Estates residential development. Development in outlying portions of the urban area could lead to substantial population increases that could alter the community character.[6]

[6] County of San Luis Obispo, *Avila Beach Community Plan [Public Review Draft]*, January 2013.

Port San Luis

The Port San Luis Harbor District (Harbor District or District) is the governing agency that provides public services and improvements for the Port and regulates the various commercial and recreational uses at the harbor. The Harbor District shares authority over land uses and development under its ownership with two regulatory agencies: the County of San Luis Obispo and the California Coastal Commission.

City of San Luis Obispo

The City of San Luis Obispo is located in a coastal valley approximately 10 miles inland from the Pacific Ocean. Historically, the City of San Luis Obispo has been the sole water purveyor within its limits. This allowed the city to maintain uniformity of water service and distribution standards, and to be consistent in developing and implementing water policy. The City also serves the County Regional Airport and Cal Poly. Since Cal Poly has its own allocation of water from the Whale Rock Reservoir and has water resources that do not pass through the City's treatment plant, the University is discussed separately.

The City of San Luis Obispo has an existing (2010) population of 44,948 and a 1 percent residential growth cap which assists in projecting future annual water needs. The current General Plan estimates that the build-out population for the City will be approximately 57,200 people.

C.5.3.2 WPA 7 – South Coast

The South Coast WPA (see **Figure C-16**) includes Edna Valley (Golden State Water Company); the Northern Cities Management Area (NCMA), which includes the Cities of Pismo Beach, Arroyo Grande, and Grover Beach, Oceano Community Services District, agricultural and rural overlying users; the Nipomo Mesa Management Area (NMMA), which includes the Golden State Water Company, Nipomo Community Services District (NCSD), Rural Water Company, Woodlands Mutual Water Company (Woodlands MWC), ConocoPhillips, agricultural and rural overlying users; the Santa Maria Valley Management Area (SMVMA), which includes the City of Santa Maria, agricultural, and rural users; and agricultural and rural users outside of the three management areas.

The primary groundwater supplies include the Edna, Pismo Creek, and Arroyo Grande Valley Sub-basins, the Santa Maria Valley Groundwater Basin, and the Pismo Formation. Other major supply sources include the State Water Project, Lopez Lake Reservoir, and recycled water from the City of Pismo Beach Wastewater Treatment Plant. A potential water supply project is the Nipomo Supplemental Water Project. The issues in this WPA include adjudicated groundwater basins, limited groundwater supply, and to some extent groundwater quality.

Community of Nipomo

The town of Nipomo is an unincorporated area located in southern San Luis Obispo County.

Community of Oceano

The community of Oceano is located immediately south of Grover Beach and Arroyo Grande and is about 1,150 acres. Oceano includes residential, commercial, industrial, agricultural, and public facility land uses. Existing population (as of July 2009) is estimated at 8,137 and the forecast population is estimated at 12,855.

The unincorporated community of Oceano qualifies under the State's definition as a disadvantaged community (DAC Block Group MHI = $37,774) (see **Figure C-58**) and consists of predominately Hispanic residents. However, these neighborhoods are contained within a larger community that is clearly not economically disadvantaged. As result, the area has the advantage of equal treatment because of their location within the larger community, but is distinct enough to qualify for various forms of financial assistance to ensure that both basic community infrastructure improvements and community amenities are provided.

Palo Mesa Village

The Palo Mesa village reserve line encompasses approximately 918 acres on the northwest corner of the Nipomo Mesa around the intersection of Halcyon Road and Highway 1.[7]

City of Pismo Beach

The City of Pismo Beach supplies its customers with domestic water service. The dominant economic activity in Pismo Beach is tourism, and as a result, the population of Pismo Beach can more than double during summer holidays. The 2010 population was 7,676 and the forecast build-out population is 11,854.

City of Arroyo Grande

The City of Arroyo Grande supplies its customers with domestic water service. Arroyo Grande is located in the southern portion of San Luis Obispo County along the banks of the Arroyo Grande Creek. Land use is primarily residential and agriculture with a small commercial sector. There are no agricultural or industrial water service connections. In 2010, the service population was 16,901 and the forecast build-out population is 20,000.

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[7] County of San Luis Obispo, *South County Villages (Black Lake, Callender-Garrett, Locs Berros, Palo Mesa and Woodlands) [Public Review Draft]*, January 2013.

City of Grover Beach

The City of Grover Beach supplies its customers with domestic water service. Grover Beach is primarily a residential community, with a small commercial/industrial sector. Approximately 80 percent of the water consumers are residents. No agricultural consumers are served by the City water system, though landscape irrigation consumes approximately 90 AFY. In 2010, the population was 13,156. The build-out population is expected to reach 15,000.

C.5.3.3 WPA 8 – Huasna

The Huasna Valley WPA (see **Figure C-17**) includes agricultural and rural users only. There are no large population centers with urban demands in this WPA. The primary groundwater supply is the Huasna Valley Groundwater Basin. The issue in this WPA includes limited available data on the groundwater supply's safe yield.

C.5.3.4 WPA 9 – Cuyama Valley

The Cuyama Valley WPA (see **Figure C-18**) includes agricultural and rural users, and some oil fields. There are no large population centers with urban demands in this WPA. The primary groundwater supply is the Cuyama Valley Groundwater Basin. Twenty-two percent of the groundwater basin is in San Luis Obispo County, and the remainder of the basin resides in the counties of Santa Barbara, Kern, and Ventura. There is no separate yield estimate for the San Luis Obispo County portion. The primary issues in this WPA include critical overdraft of the groundwater basin and degrading water quality.

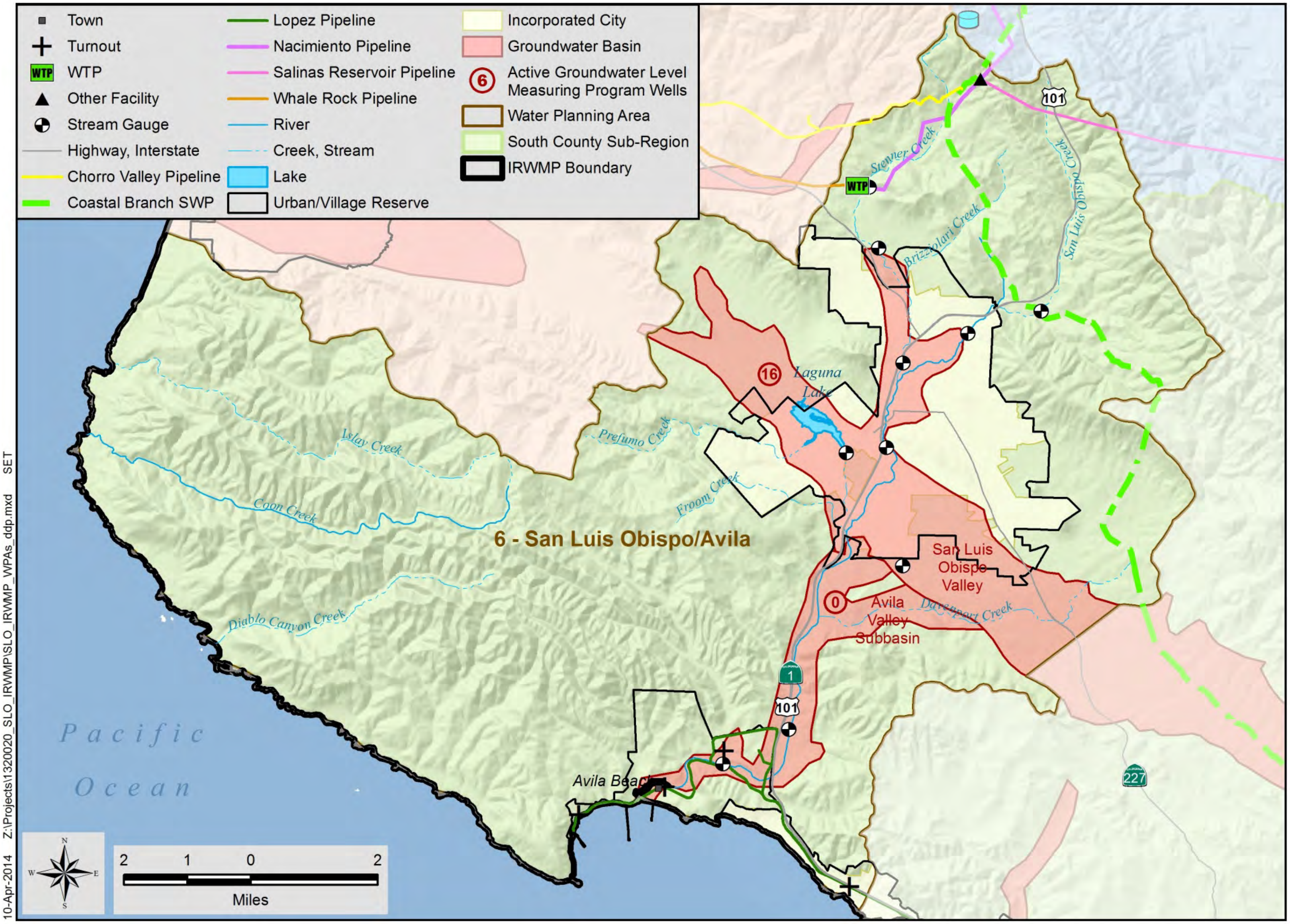

Figure C-15. Water Planning Area No. 6 - San Luis Obispo/Avila

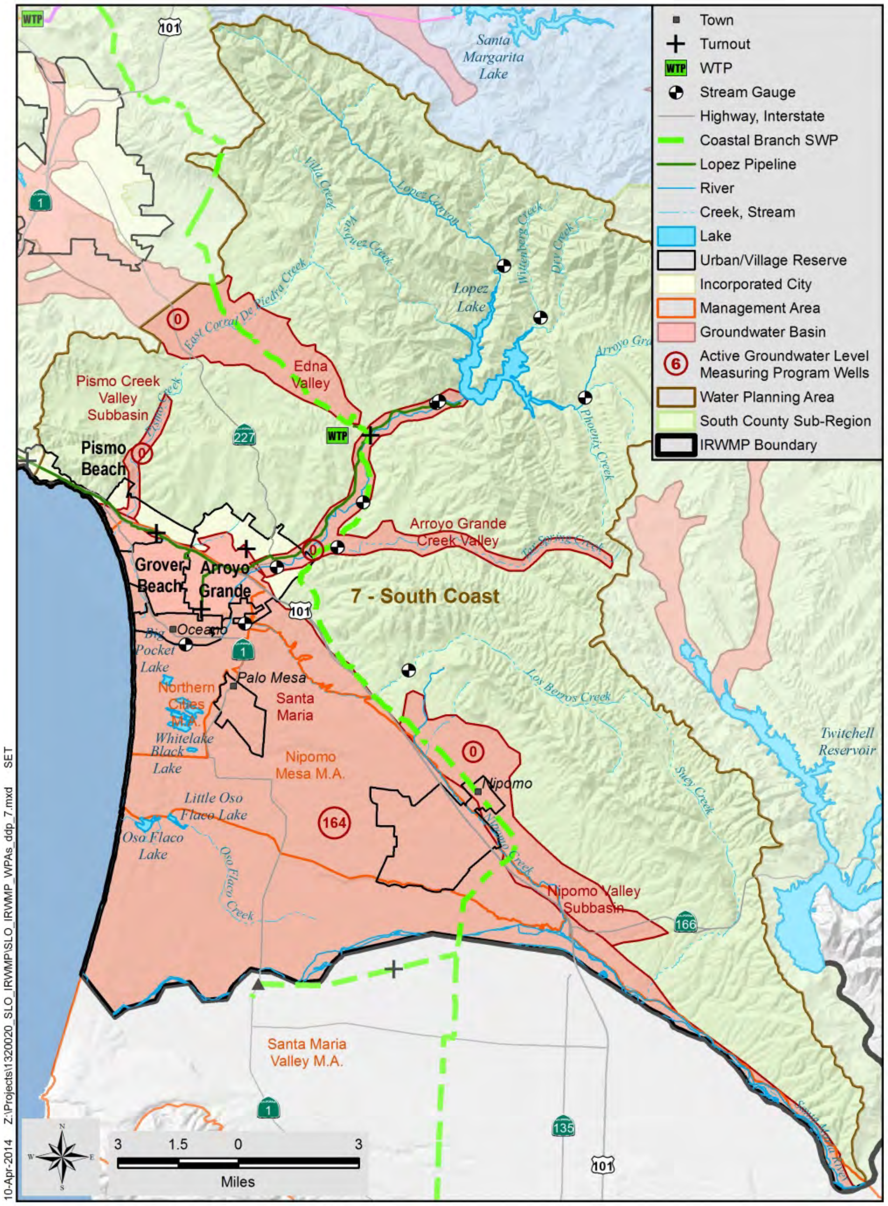

Figure C-16. Water Planning Area No. 7 - South Coast

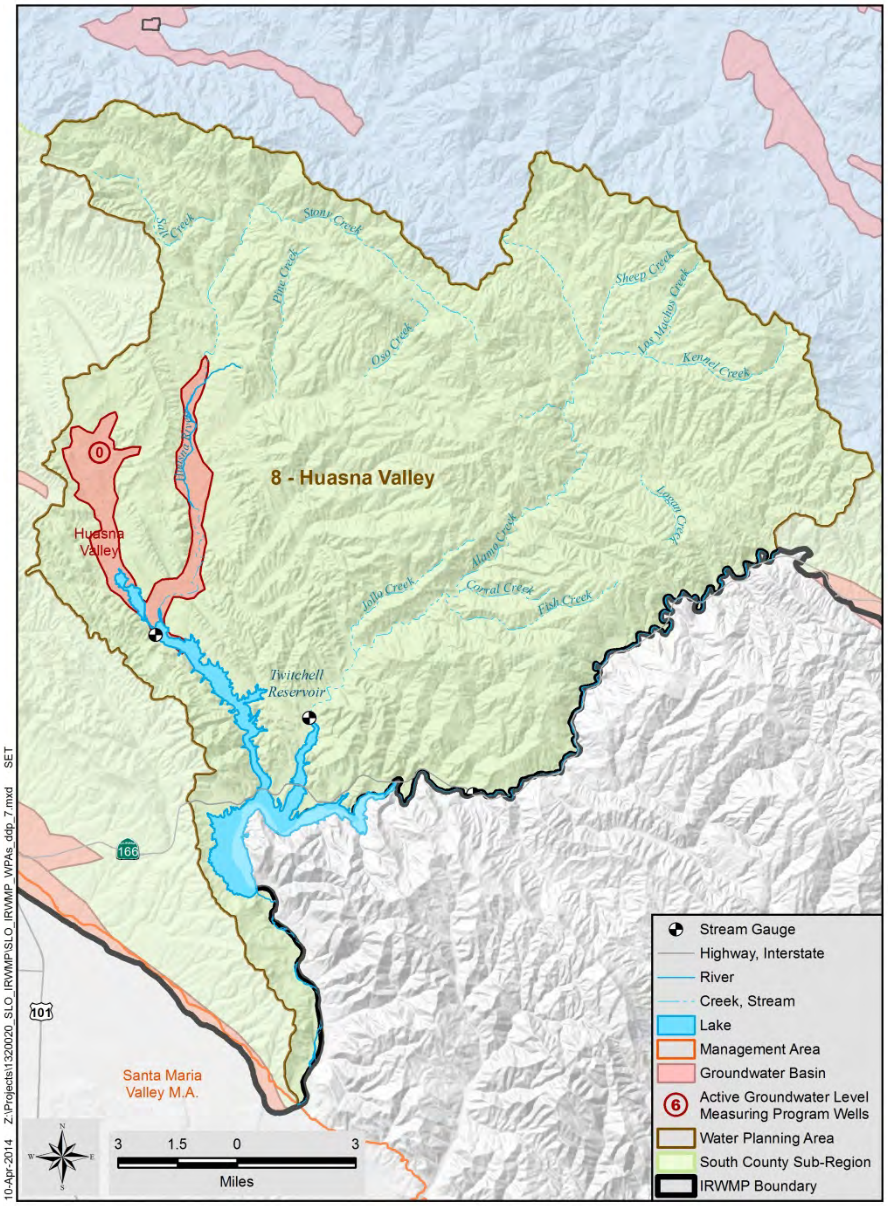

Figure C-17. Water Planning Area No. 8 - Huasna Valley

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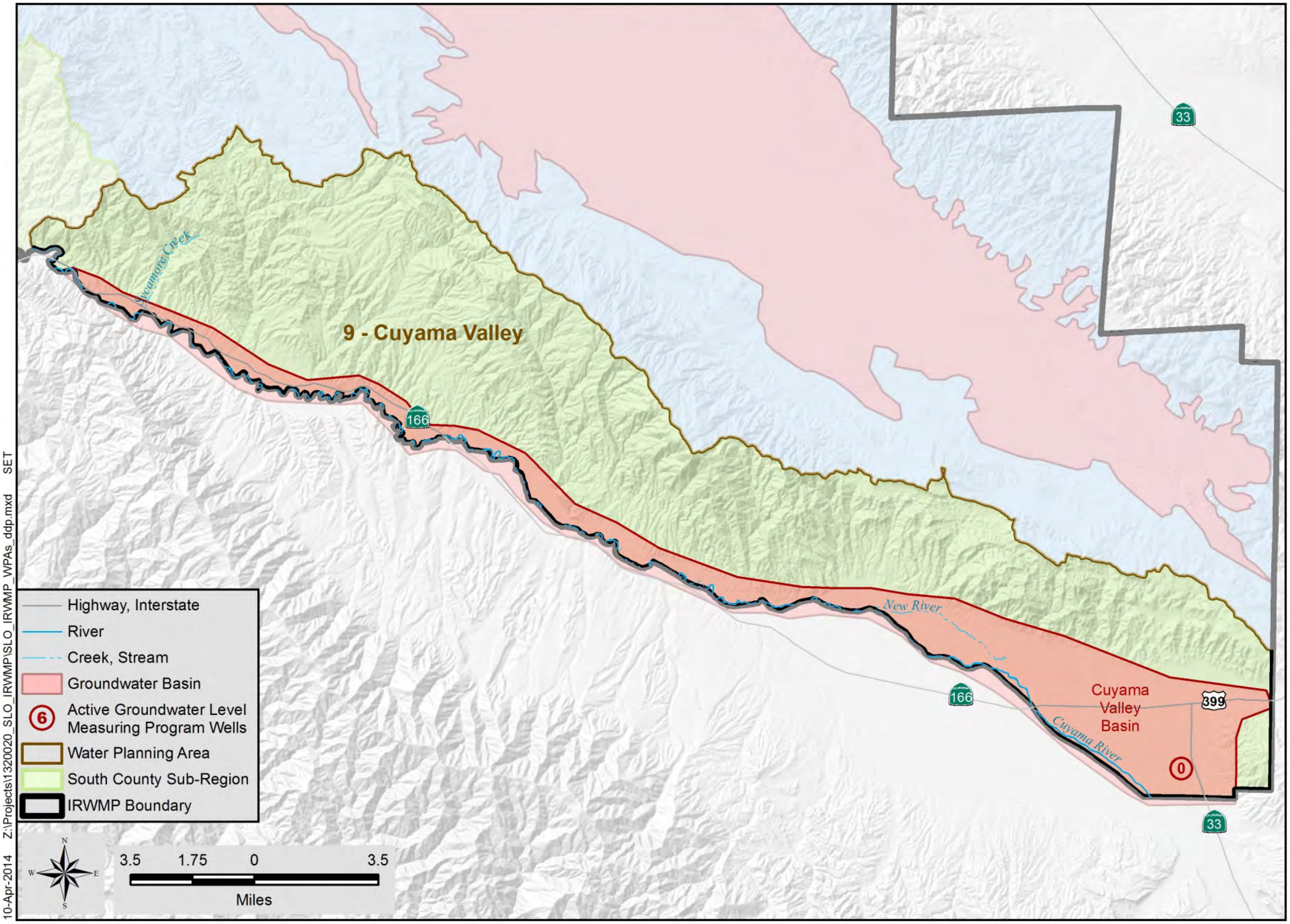

Figure C-18. Water Planning Area No. 9 - Cuyama Valley

C.5.4 North County WPAs

C.5.4.1 WPA 10 – Carrizo Plain

The Carrizo Plain WPA (see **Figure C-19**) includes agricultural and rural users, and potentially future solar farms. There are no large population centers with urban demands in this WPA. The primary groundwater supply is the Carrizo Plain Groundwater Basin. The primary issues in this WPA include water quality and limited groundwater supply.

Community of California Valley

The California Valley village area is home to approximately 2,735 residents (2010) and is located in the Carrizo planning area. It is an undeveloped village settlement encompassing 24,083 acres located on the Carrizo Plain, about 60 miles east of San Luis Obispo. It came into being in 1960, when part of the El Chicote Ranch was subdivided into more than 7,200 2.5 acre "ranchos" and sold through nationwide advertising as "the geographic center of this spectacular California growth area with unbounded future." This proposed new town has never developed and each year many of the subdivided parcels are sold at tax auctions.[8]

C.5.4.2 WPA 11 – Rafael/Big Spring

The Rafael/Big Spring WPA (see **Figure C-20**) includes agricultural and rural users only. There are no large population centers with urban demands in this WPA. The primary groundwater supplies are the Rafael and Big Spring Valley Groundwater Basins. The issue in this WPA includes limited available data on the groundwater basin's safe yield.

C.5.4.3 WPA 12 – Santa Margarita

The Santa Margarita WPA (see **Figure C-21**) includes Santa Margarita Ranch, County Service Area 23, agricultural, and rural users. The primary sources of water supply for this WPA are the Santa Margarita, Rinconada, and Pozo Valley Groundwater Basins, and the Santa Margarita Creek Alluvial Aquifer. The primary issues in this WPA include limited available data on basin safe yield and limited groundwater supply.

Village of Pozo

The village of Pozo consists of approximately 42 acres along Pozo Road in an agricultural area originally known as San Jose Valley.[9]

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[8] County of San Luis Obispo, *California Valley Village Plan [Public Review Draft]*, January 2013.
[9] County of San Luis Obispo, *North County Villages Plan (Garden Farms, Pozo and Whitley Gardens) [Public Review Draft]*, January 2013.

Community of Santa Margarita

Santa Margarita has a population of approximately 1,400 and covers an area of approximately 265 acres.

Santa Margarita Ranch

The Santa Margarita Ranch (Ranch) encompasses approximately 14,000 acres and is located immediately east of U.S. Highway 101, and surrounds the community of Santa Margarita. The land currently functions as ranch and vineyard with minimal residential water use. Approximately 96 percent of the water is used by vineyards and other farm operations. An Agricultural Residential Cluster Subdivision (ARCS) is proposed, including 3,778 acres near the middle of the Ranch, southeast of the community of Santa Margarita. A Future Development Program (FDP) is planned in various locations throughout the balance of the property. The proposed ARCS includes 111 large-lot residential units and agricultural reserves. The FDP covers a variety of development types, including 402 residences, a golf course, guest ranch, wineries, and other commercial and recreational facilities.

C.5.4.4 WPA 13 – Atascadero/Templeton

The Atascadero/Templeton WPA (see **Figure C-22)** includes the Templeton Community Services District (Templeton CSD), Atascadero Mutual Water Company, Garden Farms Community Water District, agricultural, and rural users. The primary sources of water supply for this WPA are the Atascadero Groundwater Sub-basin (Paso Robles Formation and Salinas River Underflow), recycled water, and the Nacimiento Water Project. The issues in this WPA include limited basin yield and State managed water rights to the Salinas River underflow (alluvial deposits underlying the Salinas River).

Community of Templeton

Templeton is an unincorporated community located along Highway 101 between the City of Paso Robles and City of Atascadero. Templeton consists of a mix of residential, commercial, agriculture, and recreational areas. The Templeton area has a number of homes on larger lots, and thus exhibits a relatively large per capita water demand as a result.

Community of Garden Farms

Garden Farms is a small residential community of 240 residents with 113 water service connections. Besides two small commercial establishments, all connections are residential.

City of Atascadero

The City of Atascadero is located along Highway 101, between the City of Paso Robles and City of San Luis Obispo. The City of Atascadero consists of a mix of residential, commercial, agriculture, and recreational areas.

C.5.4.5 WPA 14 – Salinas/Estrella

The Salinas/Estrella WPA (see **Figure C-23**) includes the San Miguel Community Services District (San Miguel CSD), Camp Roberts, City of Paso Robles, County Service Area 16 (Shandon), agricultural and rural users. The primary sources of water supply for this WPA are the Paso Robles Groundwater Basin (Paso Robles Formation and Salinas River Underflow) and the Nacimiento Water Project. The issues in this WPA include high increases in water demands, degrading water quality, State-managed water rights to Salinas River underflow, and declining groundwater levels.

Community of San Miguel

San Miguel grew from the founded Mission San Miguel Arcangel in 1797 to a small community in 2010 of 698 households over a 1,705 square mile area. With a 2000 census population of 1,427, San Miguel experienced an annual average 6.4% growth rate to achieve a 2010 population of 2,336. Governance for the small community comes from the San Miguel Community Services District (SMCSD) started by Gregory B. Campbell, a local resident.

The SMCSD is responsible for water, wastewater, fire protection, and street lighting to the community of San Miguel. The majority of the District's residents are low-income households, as shown in Figure C-58, meeting the criteria for federal funding (CDBG, USDA, and others) as a Disadvantaged Community (DAC) by having incomes of $42,176, well below the State's DAC threshold of $48,706. Community of Shandon

Within the existing community of Shandon, build-out service is expected to reach up to 547 service connections. However, the Shandon Community Plan is being updated that could result in a total of 2,200 residential connections and over 50 commercial and public authority service connections. The projected population is approximately 8,125.

Village of Whitley Gardens

The village of Whitley Gardens is a suburban residential settlement located on a relatively flat plain alongside Highway 46 adjacent to the Estrella River. Situated midway between Shandon and Paso Robles, it occupies about 606 acres.[10]

[10] County of San Luis Obispo, *North County Villages Plan (Garden Farms, Pozo and Whitley Gardens) [Public Review*

Village of Creston

Creston is a small community of a 2010 population of less than 100, and is located approximately 12 miles east of Atascadero. Creston (named after Calvin J. Cressy) was founded in 1884 on the Rancho Huerhuero Mexican land grant.

Camp Roberts

Camp Roberts is operated by the California Army National Guard, and covers 42,784 acres. Camp Roberts, located north of the community of San Miguel, is situated in both San Luis Obispo and Monterey Counties. When fully mobilized, the base supports 8,500 people. In the event of a nuclear disaster at Diablo Canyon Nuclear Power Plant, Camp Roberts is an evacuation and staging area for about 23,000 residents within San Luis Obispo County. Base population can be a combination of on-base personnel and civilian personnel that do not live on Base.

City of Paso Robles

The City of Paso Robles is located along Highway 101 in northern San Luis Obispo County. Paso Robles is situated on the upper Salinas River. Paso Robles encompasses a total area of 11,985 acres on both sides of the Salinas River. The City also is situated on the western margin of the Paso Robles Groundwater Basin.

Paso Robles has a strong agricultural base, and remains the major service center for ranching and agriculture in the North County, particularly areas to the east along Highway 46. The City proper is a mix of residential, commercial and industrial land uses, with significant areas devoted to parks and open space. Paso Robles, with a 2005 population of 27,361, is a growing community that could attain a population of 44,000 at build-out.

C.5.4.6 WPA 15 – Cholame

The Cholame WPA (see **Figure C-24**) includes agricultural and rural users only. There are no large population centers with urban demands in this WPA. The primary groundwater supply is the Cholame Valley Groundwater Basin. The issue in this WPA includes limited available data on the groundwater quality and basin safe yield.

C.5.4.7 WPA 16 – Nacimiento

The Nacimiento WPA (see **Figure C-25**) includes Oak Shores, Heritage Ranch Community Services District, agricultural, and rural users. The primary source of water supply for this WPA is Lake Nacimiento. The issue in this WPA is water supply reliability.

Heritage Ranch

Heritage Ranch is an unincorporated community located on the east side of Lake Nacimiento, approximately 15 miles northwest of the City of Paso Robles. Land use at Heritage Ranch consists mostly of residential, recreational, and open space areas with some commercial and public facility areas. A community that was originally started as a remote vacation destination with the vast majority of part-time residents has now become a bedroom community to neighboring cities with full-time residents.

Community of Oak Shores

The Community of Oak Shores is on the banks of Nacimiento Lake with a 2010 population of 337.

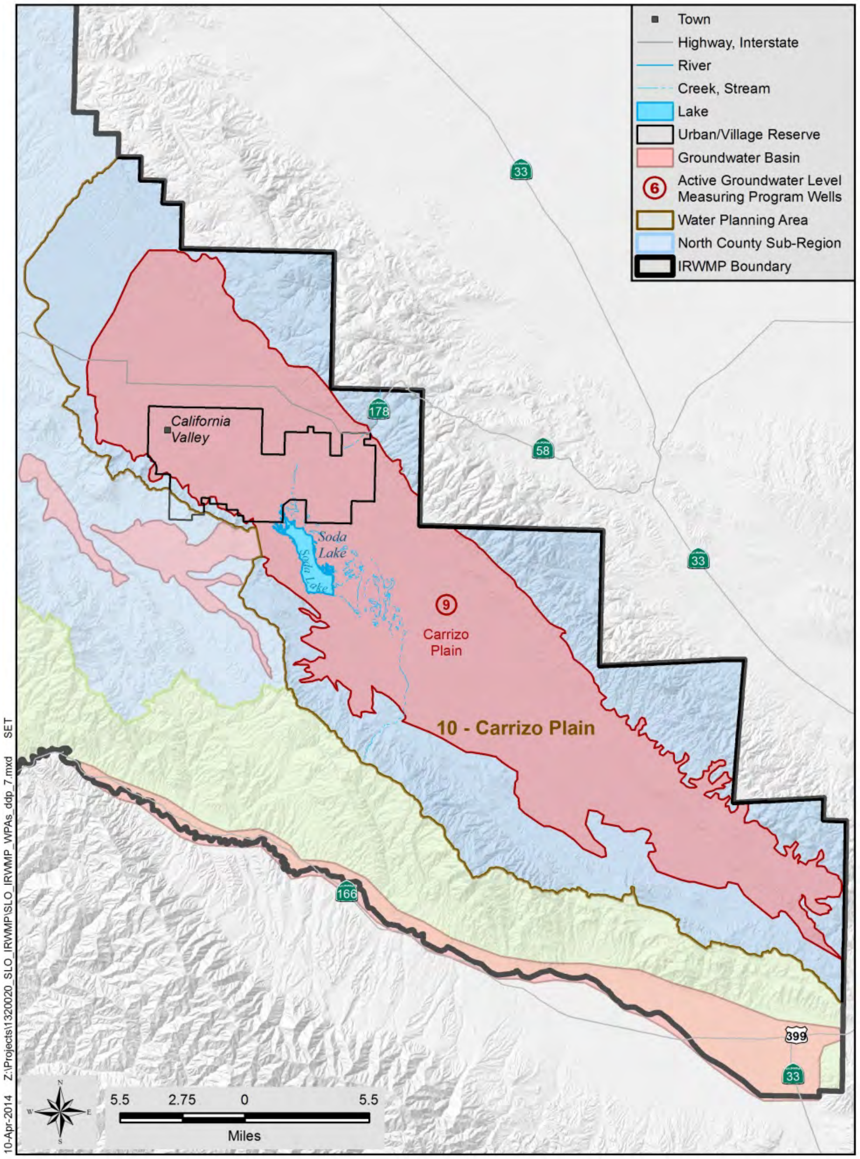

Figure C-19. Water Planning Area No. 10 - Carrizo Plain

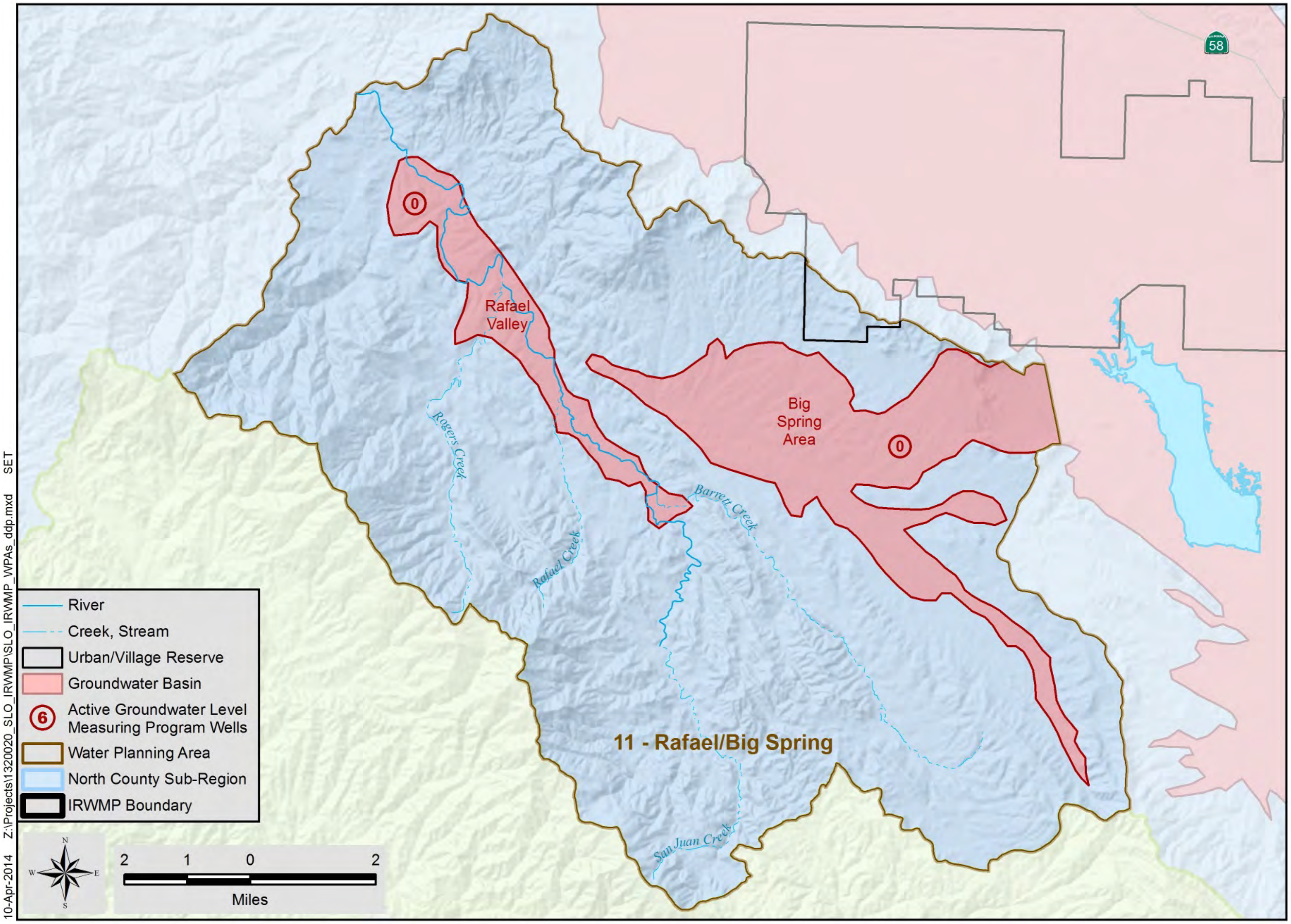

Figure C-20. Water Planning Area No. 11 - Rafael/Big Spring

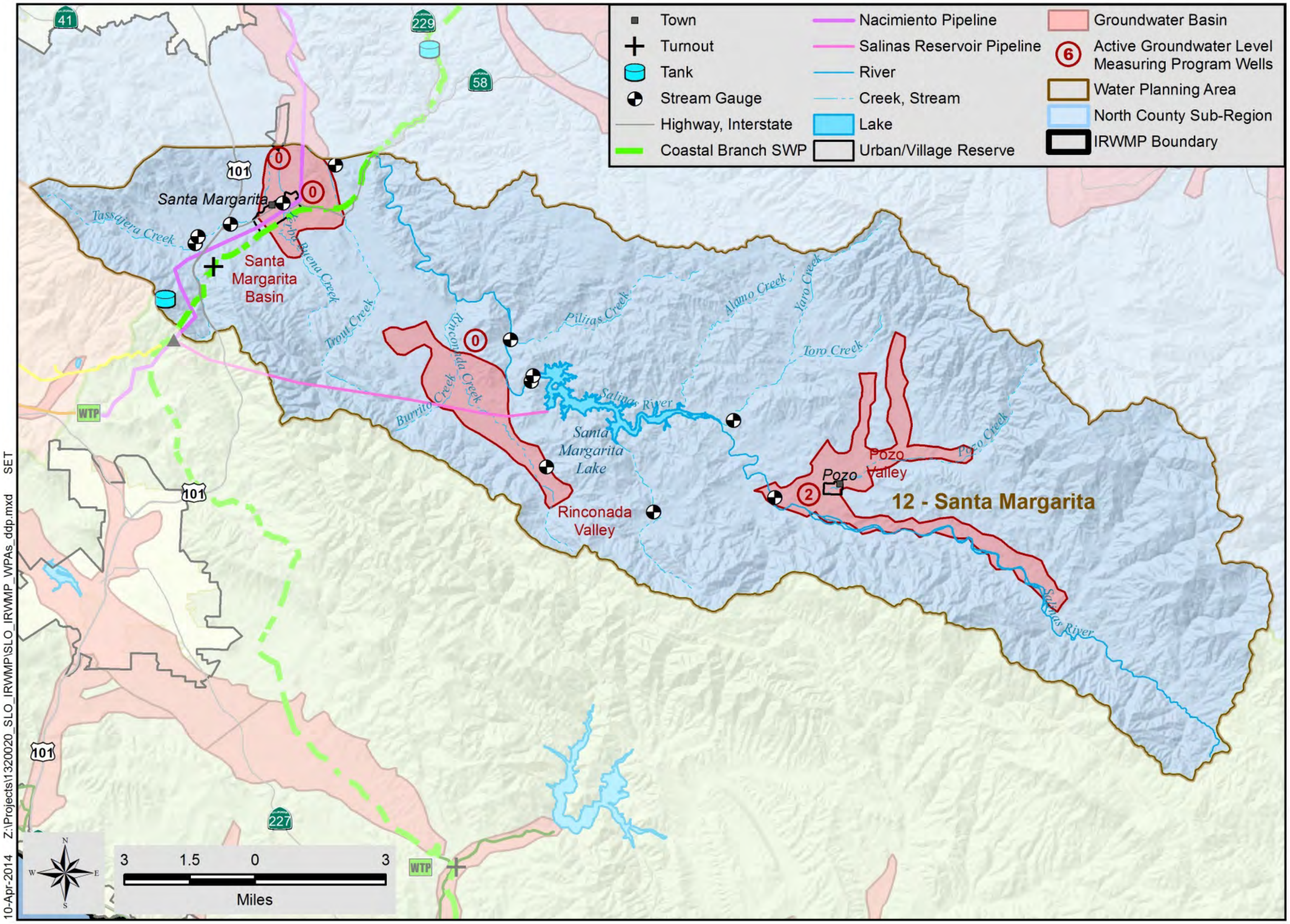

Figure C-21. Water Planning Area No 12 - Santa Margarita

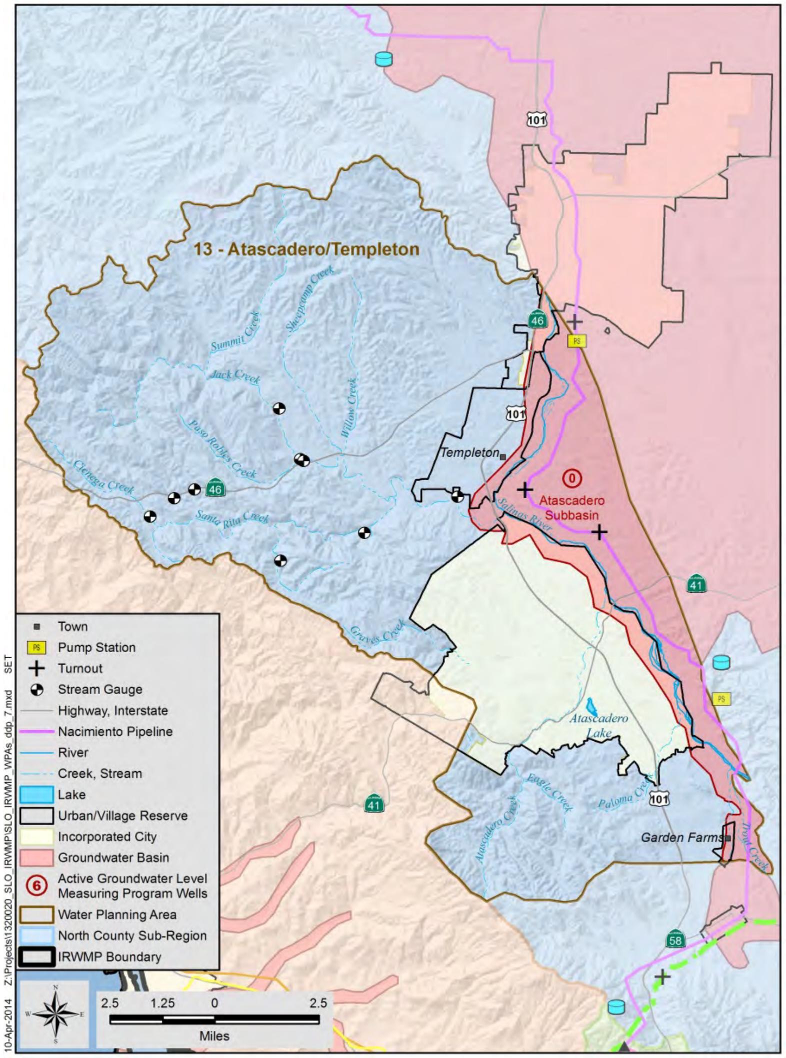

Figure C-22. Water Planning Area No. 13 - Atascadero/Templeton

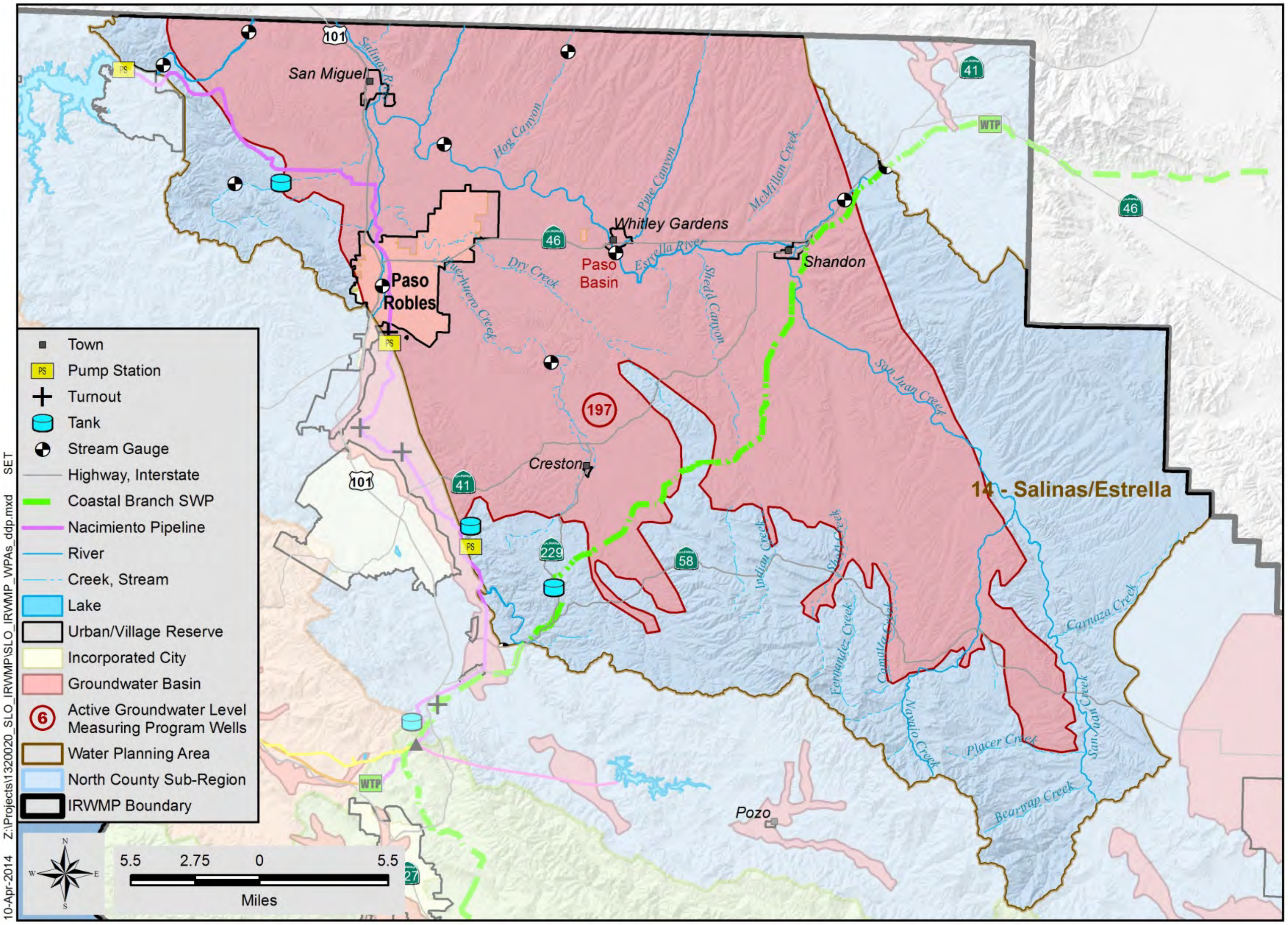

Figure C-23. Water Planning Area No. 14 - Salinas/Estrella

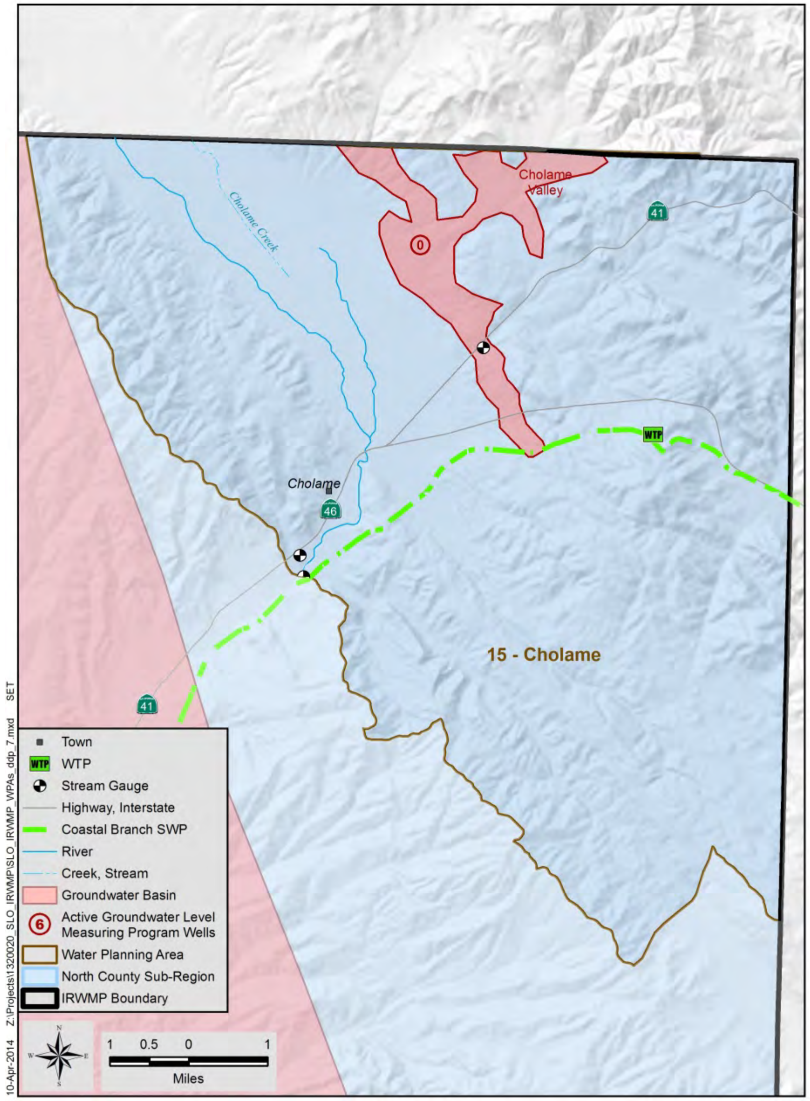

Figure C-24. Water Planning Area No 15 - Cholame

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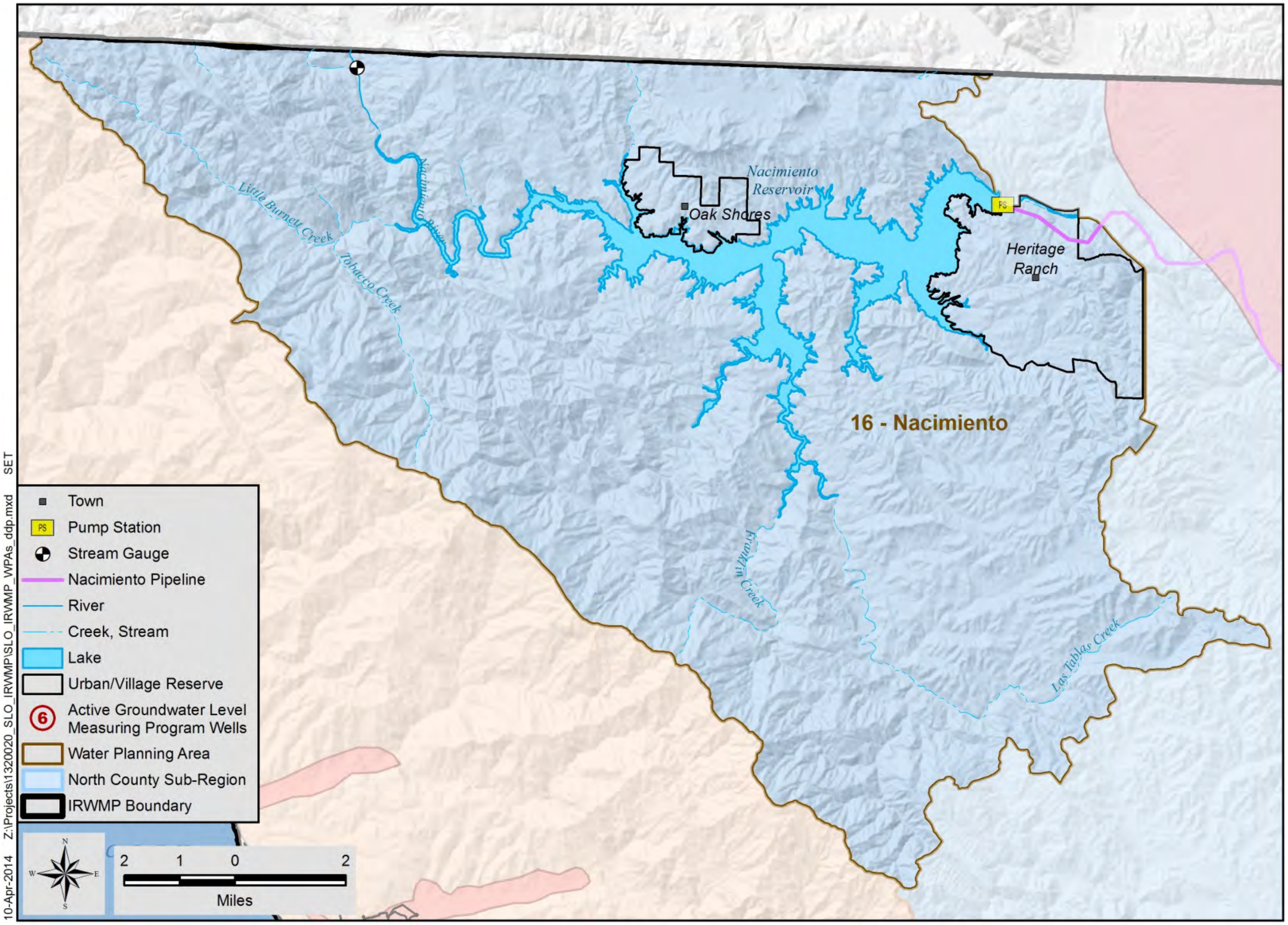


Figure C-25. Water Planning Area No. 16 - Nacimiento

C.4 WASTEWATER SERVICE AREAS

There are seven City Wastewater Service Areas, nine Community Service Districts (CSDs), six Community Service Areas (CSAs) and two Sanitation Districts (SDs) that provide wastewater service in the San Luis Obispo IRWM Plan. **Table C-3** below is a limited summary of the location of these agencies relative to the WPAs:

Table C-3. Wastewater Service Areas

Sub-Region	WPA	Wastewater Districts
North Coast	1 – San Simeon	San Simeon CSD
	2 – Cambria	Cambria CSD
	3 – Cayucos	CSA 10 Cayucos
		Cayucos Sanitary District
	4 – Morro Bay	City of Morro Bay
	5 – Los Osos	Los Osos CSD
South County	6 – San Luis Obispo/Avila	City of San Luis Obispo
		Avila Beach CSD
		CSA 18 Los Ranchos
	7 – South Coast	City of Arroyo Grande
		City of Pismo Beach
		City of Grover Beach
		Nipomo CSD
		Oceano CSD
		CSA 1 Nipomo
		South County Sanitation District
	8 - Huasna Valley	
	9 - Cuyama Valley	
North County	10 - Carrizo Plain	
	11 - Rafael/Big Spring	
	12 – Santa Margarita	CSA 23 Santa Margarita
	13 – Atascadero/ Templeton	City of Atascadero
		Templeton CSD
	14 – Salinas/ Estrella	City of Paso Robles
		San Miguel CSD
		CSA 16 Shandon
	16 - Nacimiento	Heritage Ranch CSD
		CSA 7 Oak Shores

C.5 FLOOD CONTROL DISTRICTS

C.5.1 San Luis Obispo County Flood Control and Water Conservation District

The District was established by the State Legislature in 1945 with the passage of the "San Luis Obispo County Flood Control and Water Conservation District Act". The District is governed by a Board of Supervisors; its boundaries are co-terminus with the County of San Luis Obispo and its board members and staff are the same as those who act separately on behalf of the County of San Luis Obispo. Pursuant to the 1945 legislation, the primary services of the District include or cover:

1. Flood and storm waters
2. Conserving waters for beneficial purposes
3. Protecting life and property
4. Preventing waste or diminution of the water supply
5. Obtaining, retaining, and reclaiming waters for beneficial use, including the purchase and sale of water within the district
6. Providing for incidental recreation activities

As the primary agency with responsibility for regional water planning and the implementation of regional water supply projects, the District essentially acts in two capacities.

First, District and its Board of Supervisors functions as a regional water resource planning agency to gather data, identify issues, coordinate stakeholder review, and make recommendations on water resource solutions to the San Luis Obispo County Board of Supervisors. Second, it implements specific projects and programs, typically on a sub-regional basis, relating to the services identified above. The general regional data gathering, planning and coordination efforts are funded by the District's budget from its general property tax allocations. The sub-regional projects, programs and services are typically funded by participating agencies, organizations, and other parties benefiting from the services.

In addition to the preparation of this IRWM Plan and leading the RWMG, the District's other regional priorities include the following:

- Groundwater banking feasibility efforts
- Regional environmental permitting
- Hydrological data gap analysis – with special emphasis on environmental needs and natural groundwater recharge areas
- Flood management planning
- Development of a groundwater monitoring agreement with the Paso Robles Groundwater Basin stakeholders
- Optimization of the Nacimiento Water Project
- Ongoing coordination with the County of San Luis Obispo's Resource Management System (RMS) – a component of the County's General Plan
- Digital and electronic conversion of historical hydrological data
- Preliminary efforts on web-based data retrieval
- Stakeholder efforts on Six-Community drainage study
- Monthly Meetings with the Water Resources Advisory Committee to review and develop recommendations on the items listed above, among others

C.6 LAND USE AGENCIES

There are nine land use agencies responsible for the 15 land use planning areas in the San Luis IRWM Plan region as shown in **Table C-4** below. The location of these land use agencies and the corresponding land use planning areas are shown in **Figure C-26** below.

All of the land use agencies, with the exception of the US Forest Service, participate directly in the Water Resources Advisory Committee as noted in the table. Through participation and representation in the WRAC, the land use agencies interests are well represented in the IRWM planning process.

Table C-4. Land Use Agencies

Land Use Planning Area	Unincorporated Communities and Cities	Land Use Agency	WRAC Participation
1 North Coast	San Simeon Cambria	SLO County	✓
2 Nacimiento	Nacimiento Heritage Ranch Oak Shores	SLO County	✓
3 Adelaida	Adelaida	SLO County	✓
4 Estero	Cayucos Morro Bay Los Osos Baywood Park	SLO County Morro Bay	✓ ✓
5 Salinas River	Paso Robles Atascadero Garden Farms Santa Margarita Templeton San Miguel	SLO County Paso Robles Atascadero	✓ ✓ ✓
6 El Pomar/Estrella	Creston Linne	SLO County	✓
7 & 8 San Luis Bay Coastal and Inland	Avila Beach Pismo Beach Arroyo Grande Grover Beach Oceano Halcyon	SLO County Pismo Beach Arroyo Grande Grover Beach	✓ ✓ ✓ ✓
9 San Luis Obispo	San Luis Obispo Los Ranchos/Edna Valley	SLO County San Luis Obispo	✓ ✓
10 Las Pilitas	Pozo	SLO County	✓
11 Los Padres	Los Padres National Forest	US Forest Service	
12 Shandon/Carrizo	Shandon Whitley Gardens Cholame California Valley	SLO County	✓
13 Huasna – Lopez	Lopez Lake Recreation Area	SLO County	✓
14 & 15 South County Coastal and Inland	Nipomo	SLO County	✓

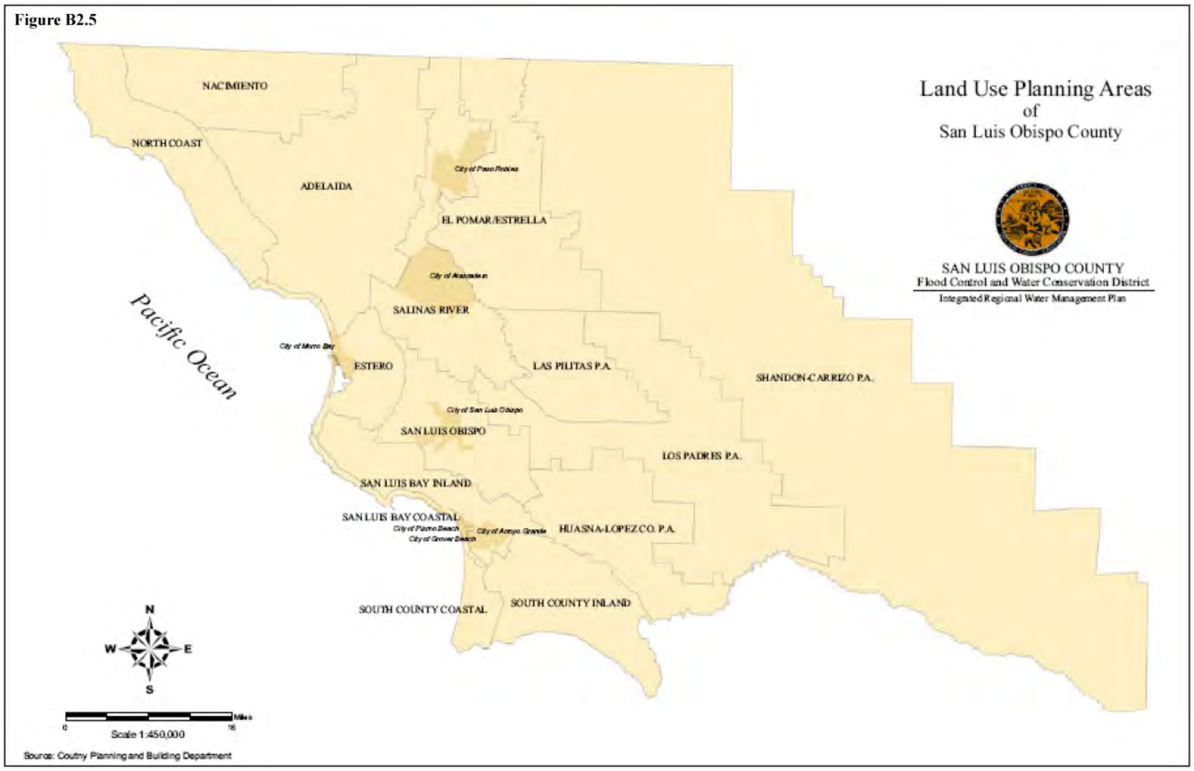


Figure C-26. Land Use Agencies

C.7 WATERSHEDS

The following section provides information on the 25 defined watersheds within the San Luis Obispo IRWM Planning Region. This information was gathered from an extensive effort by the Upper Salinas – Las Tablas and Coastal San Luis Resource Conservation Districts completed in 2013 resulting in the January 2014 final report titled, *San Luis Obispo County Watershed Management Planning Project*. This report is included as **Appendix N** of the IRWM Plan.

The detailed descriptions, called “Watershed Snapshots”, provide information relating to area geology, surface and groundwater quality, land use, areas and species of biological significance, areas of cultural significance, water resources management issues, and available hydrologic (i.e., rainfall, streamflow, groundwater, temperature, etc.) information. The Watershed Snapshot information provided below provides the area and description of the watersheds. Important detailed information is listed in **Appendix N**. Future updates to the IRWM Plan will begin incorporating some of the technical information that supports the needs and requirements of the IRWM Plan.

The watersheds are aligned with the Subregions and WPAs as shown in **Table C-5** and **Figure C-28** through **Figure C-30**. In some cases, as Table C-5 indicates, the watershed boundaries do not necessarily follow the WPA boundaries. This is an expected issue due to the many factors, including political and geographic locations, used in defining the WPAs versus the strict hydrogeologic boundaries of the watersheds. Any overlap into multiple WPAs is identified in the table as one watershed being in a portion of two or more WPAs. For purposes of the Region Description, the watershed delineation, is preferred over the WPAs. Likewise, for purposes of water demand and water supply needs, the WPAs are preferred over the watershed. Both co-exist in the IRWM Plan and are used where most appropriate and relevant.

Each of the Watershed Snapshots contains a vast amount of descriptive information regarding the physical, environmental, cultural, and hydrogeologic setting including water supplies and uses taking place for urban, rural, agricultural, and environmental needs. Water budget information is also included in the Water Snapshots but not used for the IRWM Plan. The IRWM defers to the most current and best available information on a WPA basis included in **Section D – Water Supply, Demand, and Water Budgets**.

Beneficial uses see information found on website. Info shown here on each watershed is limited, however, much more information is provided in report.

The information provided below each of the watershed summaries are tabularized data (i.e., data relevant to meeting the State Guidelines) collected for each watershed as part of the Watershed Snapshots. This information comes from the SLO Watershed Database (See **Section K – Data Management**), populated by the Watershed Snapshots and to be maintained over time, and includes the following informational topics:

- Hydrology
- Water Supply
- Water Uses
- Flora and Fauna
- Land Use
- Demographics
- Unique Characteristics
- Climate Change Considerations
- Critical Issues

Other information contained within the Watershed Report includes:

- Geology
- Beneficial Uses
- Flood Management

Watershed-related concerns including surface and groundwater quality, watershed health, and on-going Basin Management Plans are listed in **Section C.9 – Current Water Quality Conditions** by Sub-Region.

Table C-5. Area Watershed Alignment with Sub-Regions and Water Planning Areas

Sub-Region	WPA	Watershed No.	Area Watersheds
North Coast	1 – San Simeon	2	San Simeon-Arroyo de la Cruz
	2 – Cambria	3	Santa Rosa Creek
		1	Big Creek – San Carpoforo
	3 – Cayucos	4	Cayucos Creek- Whale Rock Area
	4- Morro Bay	5	Morro Bay
		4	Cayucos Creek- Whale Rock Area
	5 – Los Osos	5	Morro Bay
South County	6 – San Luis Obispo/Avila	6	Irish Hills Coastal
		7	San Luis Obispo Creek
	7 – South Coast	9	Arroyo Grande Creek
		11	Nipomo Suey Creeks
		8	Pismo Creek
		10	Santa Maria River
	8 – Huasna Valley	13	Alamo Creek
		14	Cuyama River
		12	Huasna River
	9 – Cuyama Valley	14	Cuyama River
North County	10 – Carrizo Plain	15	Black Sulphur Spring
		16	Soda Lake
	11 – Rafael/ Big Spring	17	Upper San Juan Creek
		18	Lower San Juan Creek
	12 – Santa Margarita	19	Upper Salinas -Santa Margarita Area (a.k.a. Santa Margarita Lake-South Salinas River)
	13 – Atascadero/ Templeton	20	Mid Salinas-Atascadero Area
	14 – Salinas/Estrella	23	Estrella River
		22	Huer Huero Creek
		18	Lower San Juan Creek
		17	Upper San Juan Creek
	15 - Cholame	24	Cholame Creek
	16 - Nacimiento	25	Nacimiento River

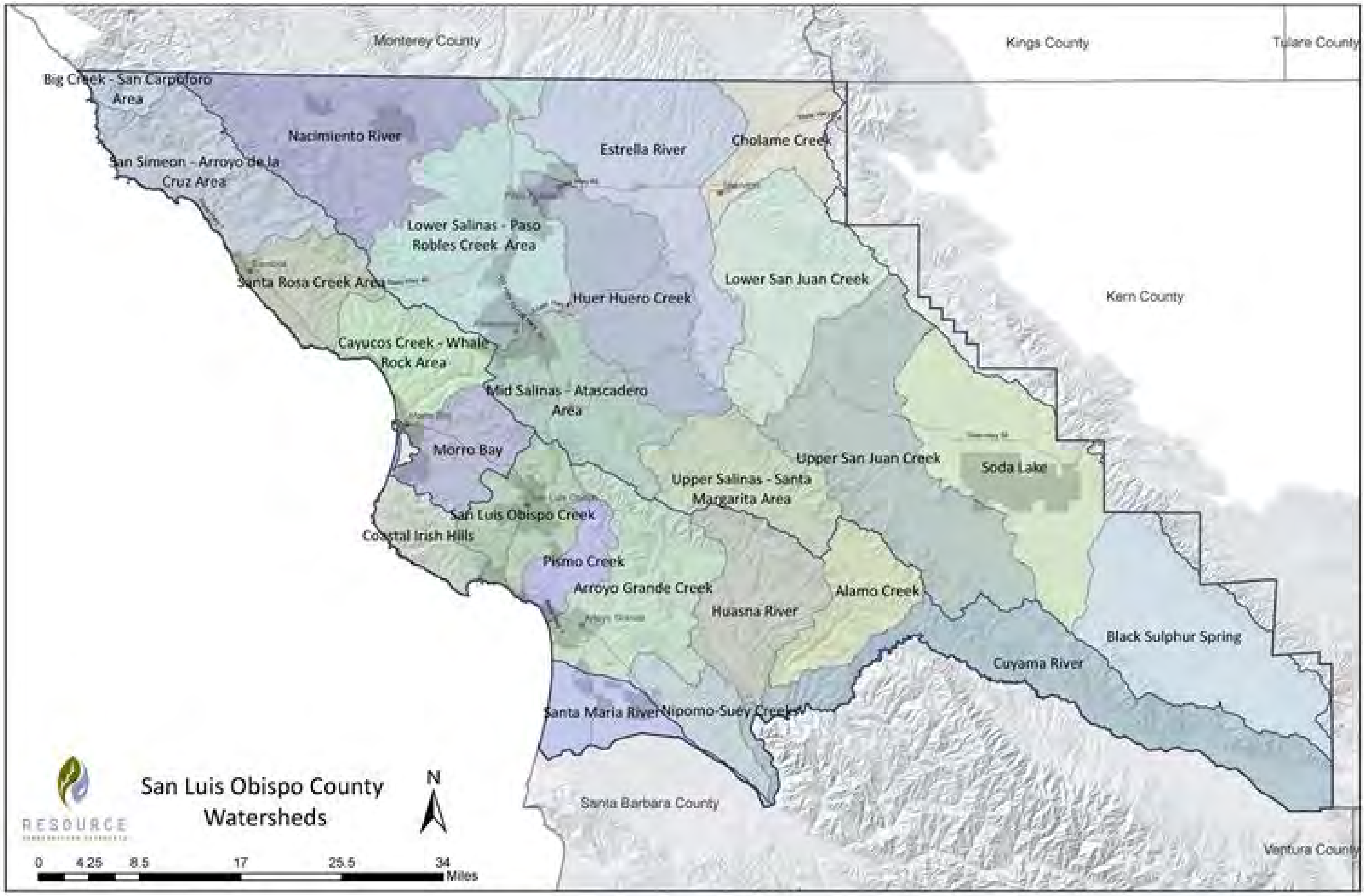


Figure C-27. Watersheds

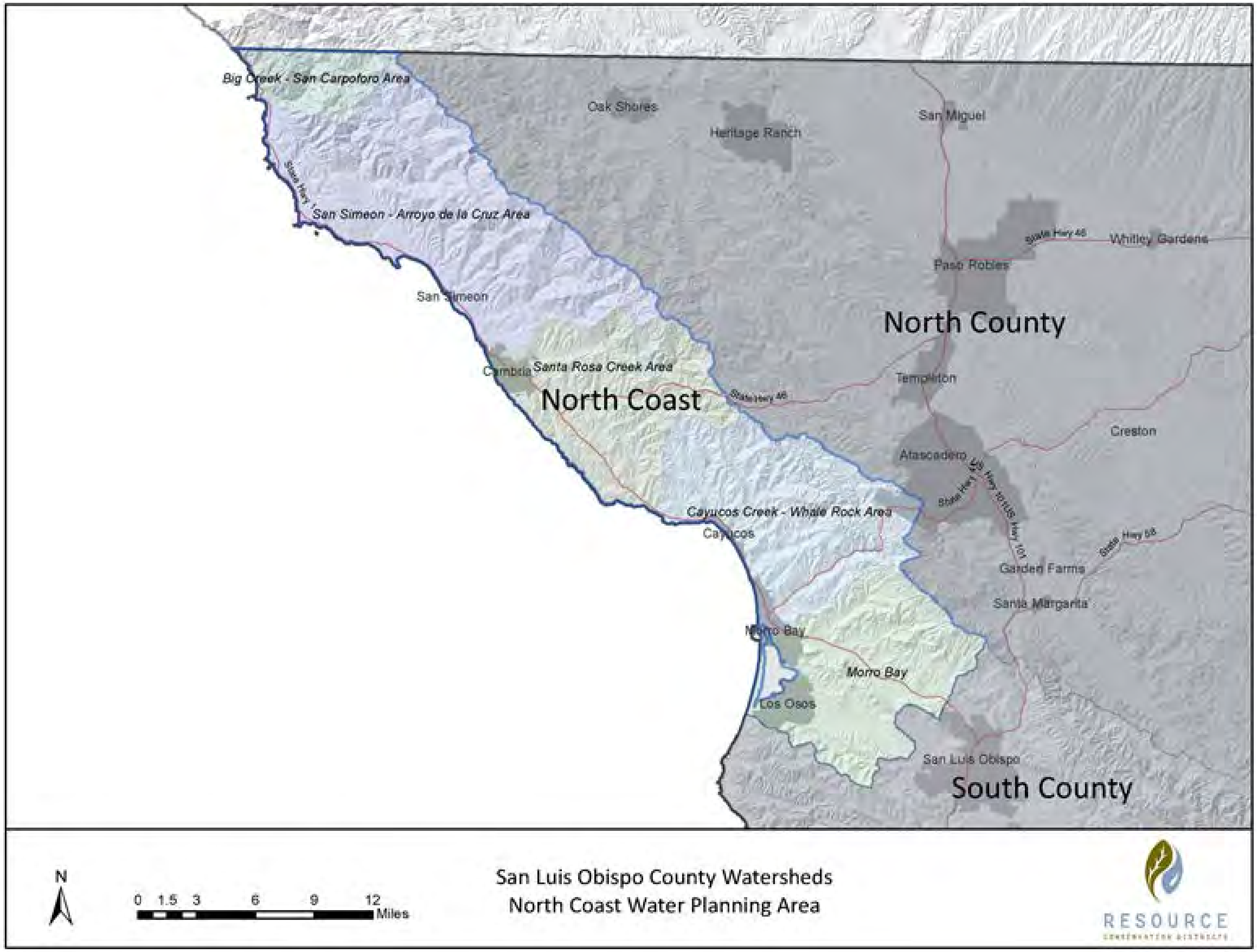


Figure C-28. North Coast Watersheds

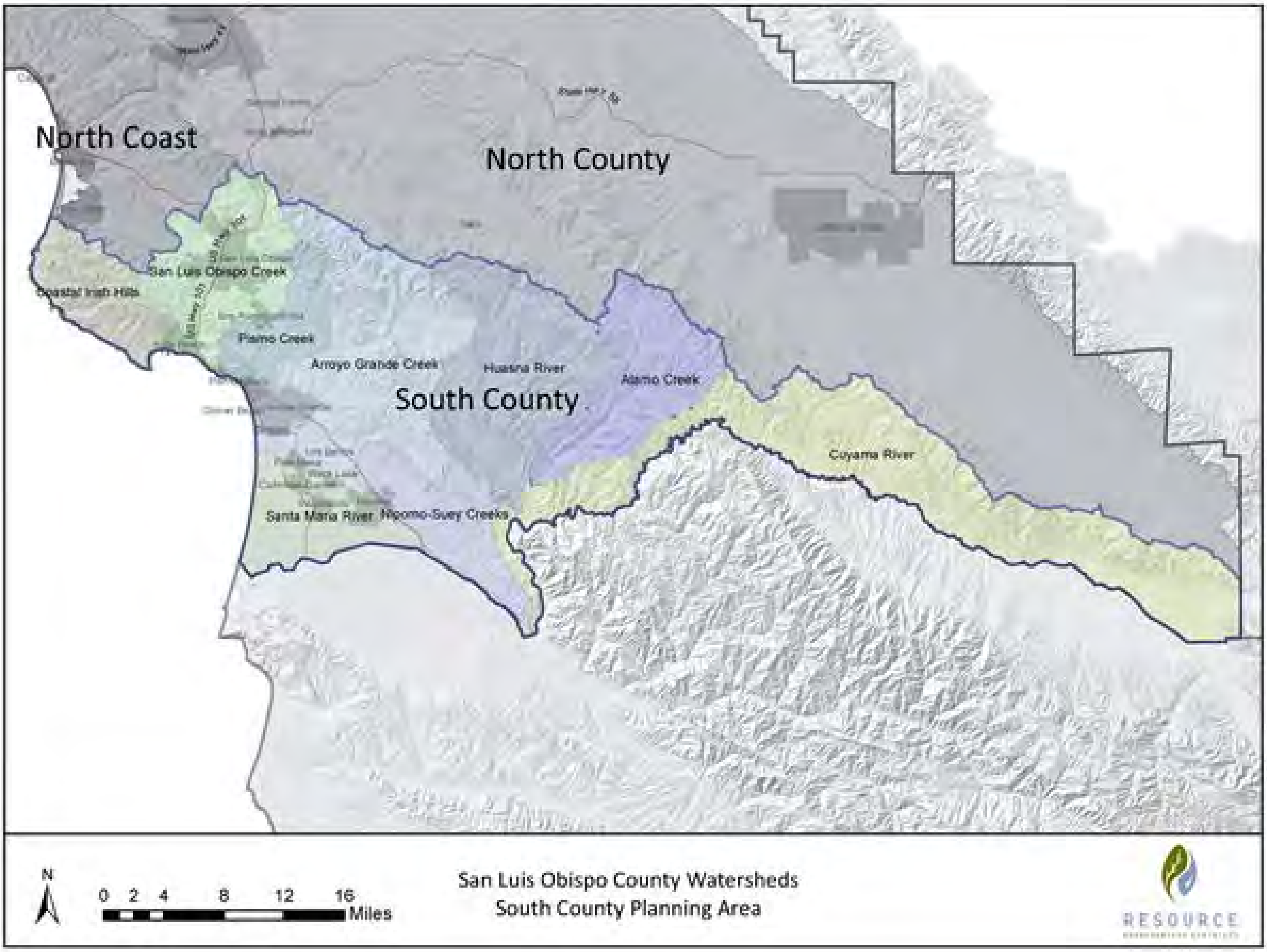


Figure C-29. South County Watersheds

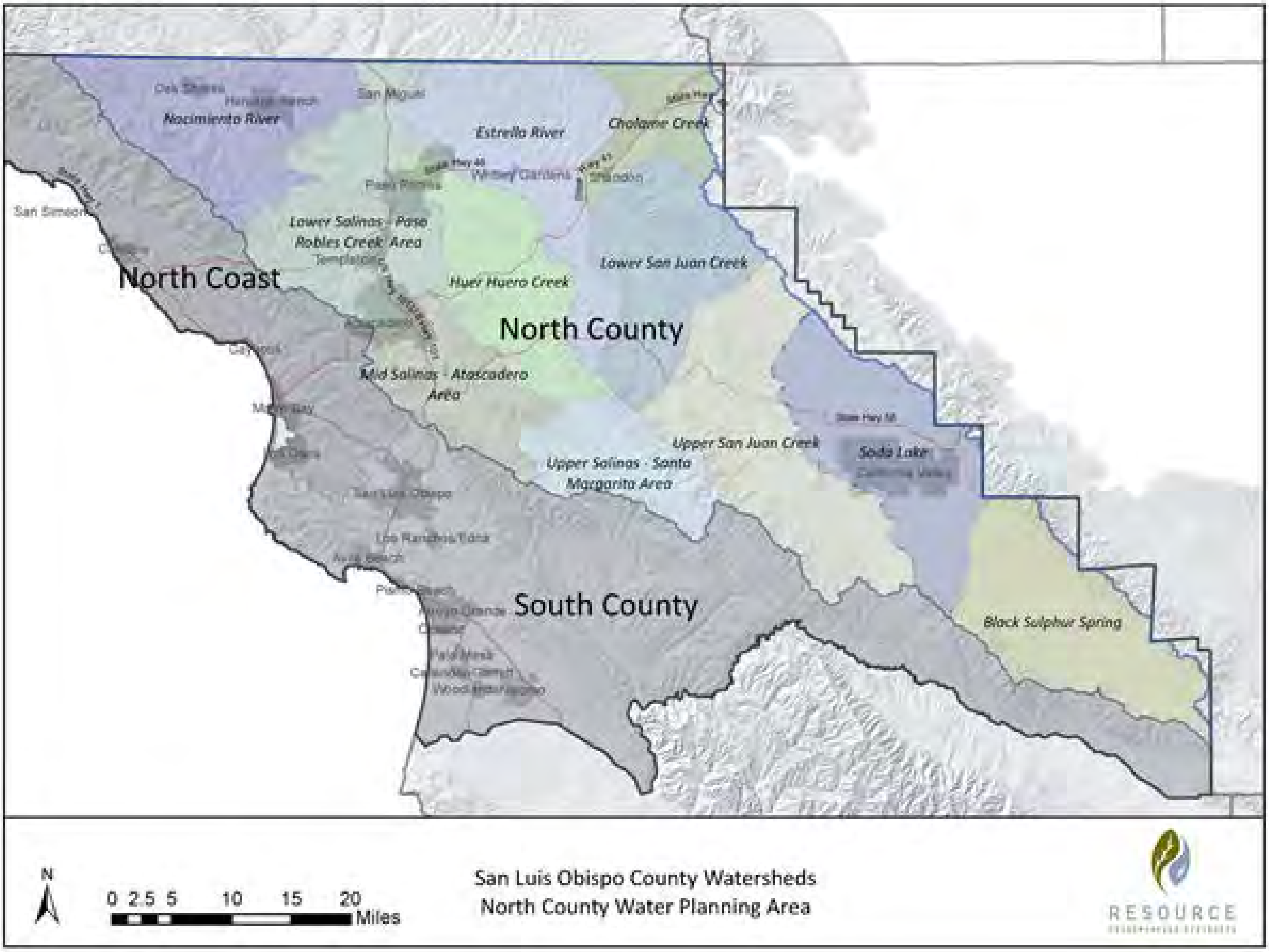


Figure C-30. North County Watersheds

C.7.1 North Coast Watersheds

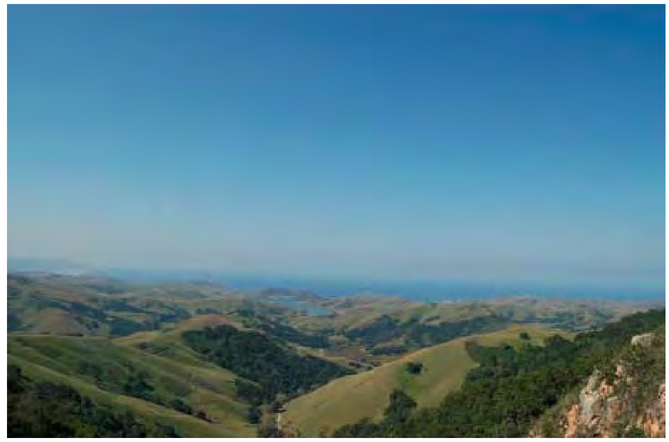
The North Coast Sub-Region is comprised of five watersheds which are summarized below and shown in figures following each Sub-Region.

C.7.1.1 Big Creek - San Carpoforo Creek Area Watershed

The Big Creek – San Carpoforo Creek Area Watershed straddles San Luis Obispo County and Monterey County with 13,046 acres out of 264,552 total acres within SLO County. This snapshot represents data related to those sub-watersheds located within the CalWater HUC[11] 10 watershed grouping in San Luis Obispo County. The watershed lies along the Pacific Ocean with the southernmost outfall at Ragged Point, north of San Simeon. The most notable waterway within the San Luis Obispo portion of the watershed is San Carpoforo Creek, which has its headwaters in the Los Padres National Forest at the Santa Lucia Range in southern Monterey and Northern San Luis Obispo County. Pacific Ocean outfall of San Carpoforo Creek is designated as State Marine Conservation Area and State Marine Reserve within the Monterey Bay National Marine Sanctuary. Mt. Mars Creek also independently drains into the Pacific Ocean just north of the San Carpoforo Creek drainage. Peak elevation for the watershed is approximately 2610 feet high with the low being roughly 16 feet above sea level in Monterey County. A portion of the San Carpoforo Creek drainage is located within the boundaries of the Hearst Ranch property and is currently under the provisions of a conservation easement. The dominant land use is Los Padres National Forest and rangeland agriculture, with a majority of rangeland concentrated in the area of Hearst Ranch. A rugged shoreline and mountainous eastern ridge characterize the northern portion of the watershed. The creek was the route of the historic Portola Expedition and was identified as an area of high ecological significance by the Forest Service.

[11] HUC is an acronym for Hydrologic Unit Codes. HUCs are used to identify all of the drainage basins in the United States from largest (Regions) to smallest (Cataloging Units). A drainage basin is an area that catches precipitation that falls within that area, and funnels it to a creek, stream, river and so on, until the water drains into an ocean.

C.7.1.2 San Simeon - Arroyo de la Cruz Watershed



The San Simeon-Arroyo de la Cruz area watershed grouping (CalWater HUC 10 Scale) is located within the North Coast region of the county. The watershed drains approximately 51,500 acres and originates on the western slopes of the Santa Lucia Mountains, flowing to the Pacific Ocean at San Simeon State Beach. The watershed contains two major drainages – Arroyo de la Cruz and San Simeon Creek. Recharge of the aquifer comes from percolation of stream flow, deep percolation of precipitation and irrigation return flows. San Simeon Creek headwaters occur in the Coast Ranges to the northeast of Cambria. Elevations in the watershed range from 3,559 feet above sea level in the Santa Lucia Range at the eastern most watershed boundary to sea level along the coast. The dominant land use throughout the watershed is agriculture, specifically rangeland. The watershed includes the disadvantaged community of San Simeon, the northern portion of Cambria and the Hearst San Simeon State Historical Monument. San Simeon Estuary is located within San Simeon State Beach and is the home to several biotic communities including salt and freshwater marshes, grasslands, Monterey pine forest, as well as estuarine habitats. The watershed also contains multiple creeks that support critical Steelhead Trout habitat.

C.7.1.3 Santa Rosa Creek Area Watershed

Santa Rosa Creek Watershed lies within the southern portion of the California Coast Ranges. The watershed is bounded to the east by the Santa Lucia Mountain Range and to the west by the Pacific Ocean. The watershed contains two major sub-watersheds: Villa Creek and Santa Rosa Creek, which contains Santa Rosa Creek and Green Valley (Perry Creek). Santa Rosa Creek and its tributaries flow mostly unobstructed down steep hill-slopes, mantled with shallow soils and sparse shrub vegetation, through agricultural areas and the small town of Cambria before reaching the Pacific Ocean. Villa Creek begins in the Santa Lucia range flowing to the Pacific Ocean, encompassing a majority of the coastal area within the total watershed. The town of Cambria is near the mouth of Santa Rosa Creek, downstream of the confluence with Perry Creek – the largest tributary in the Santa Rosa Creek sub-watershed. Topography includes steep upland areas and low gradient valley bottoms bordering the reaches of Santa Rosa, Green Valley, Perry, and Villa Creeks. Cypress Mountain, the highest peak, lies in the Upper Santa Rosa creek watershed and reaches an elevation of approximately 3,411 feet. At its lowest elevation (sea level), Santa Rosa Creek flows through a lagoon contained by an annually formed sandbar at Moonstone Beach. The dominant land use is agriculture.

C.7.1.4 Cayucos Creek - Whale Rock Area Watershed

The Cayucos Creek – Whale Rock Area Watershed lies within the southern portion of the California Coast Range. The watershed is bounded to the west by Pacific Ocean and the east by the Santa Lucia Mountain Range. Consistent with the CalWater HUC 10 grouping scale, the watershed area contains four major drainages that independently reach the Pacific Ocean: Cayucos Creek, Old Creek, Toro Creek and Morro Creek, the latter of which borders and shares some attributes with the Morro Bay watershed. The headwaters of the watershed are in Santa Lucia Range, reaching a maximum elevation of approximately 2,345 feet with the lowest elevation at around at sea level, draining in to the Pacific Ocean. Whale Rock reservoir is located in the watershed approximately ½ mile east of the community of Cayucos. The dominant land use in the watershed is Agriculture with the sea side town of Cayucos providing an urban core area with tourist oriented opportunities.

C.7.1.5 Morro Bay Watershed

The Morro Bay Watershed is located in the central area of coastal San Luis Obispo County. It is composed of two major sub-watersheds that drain into Chorro and Los Osos Creeks. The Chorro Creek sub-watershed accounts for about 60 percent of the total land area draining into the estuary.

Much of the watershed remains in open space that is used primarily for agriculture and a range of public uses, including parks, golf courses, nature preserves, a military base, and university-owned rangeland. The developed portions of the watershed include the community of Los Osos/ Baywood Park, parts of the City of Morro Bay, Cuesta College, Camp San Luis Obispo, the California Men's Colony, and various facilities of the County of San Luis Obispo.

Due to the uniqueness of Morro Bay, the watershed has been studied since the late 1980's with watershed plans from that era being completed.

C.7.2 South County Watersheds

The South County Sub-Region is comprised of nine watersheds which are summarized below.

C.7.2.1 Irish Hills Coastal Watersheds

The Irish Hills Coastal Watersheds are remote coastal basins located in southern San Luis Obispo County. The drainage rises to a maximum elevation of 1,819 feet above sea level at Saddle Peak. Creeks flow to the Pacific Oceano and has 4 major tributary basins with their headwaters in the Coastal Range Mountains: Hazard Canyon, Islay Creek, Coon Creek, Diablo Creek, Irish Creek, Rattlesnake Creek, Hanford Creek and Wild Cherry Canyon.

The watersheds are dominated by grazing lands some in conservation or agricultural easements and public lands. Other land uses include a regional nuclear power plant, passive recreation, natural resource preservation and limited oil drilling.

C.7.2.2 San Luis Obispo Creek Watershed

The San Luis Obispo Creek Watershed is a coastal basin located in southern San Luis Obispo County. The drainage rises to a maximum elevation of approximately 2,500 feet above sea level in the Santa Lucia Range. San Luis Obispo Creek flows to the Pacific Ocean and has six major tributary basins: Stenner Creek, Prefumo Creek, Laguna Lake, East Branch San Luis Obispo Creek, Davenport Creek, and See Canyon.

The watershed is dominated by agricultural land uses including ranches and open space. The urban core of the City of San Luis Obispo is at the confluences of several tributaries with the mainstem starting in the upper watershed and bisecting the City. The unincorporated community of Avila Beach is adjacent to the mouth of San Luis Obispo Creek at the Pacific Ocean. Other land uses include the California Polytechnical State University, rural residential, a regional airport and two wastewater treatment plants.

C.7.2.3 Pismo Creek Watershed

The Pismo Creek Watershed is a coastal basin located in southern San Luis Obispo County. The drainage rises to a maximum elevation of almost 2,865 feet above mean sea level. Pismo Creek flows to the Pacific Ocean and has three major tributary basins with their headwaters in the Santa Lucia Mountains: West Corral de Piedra, East Corral de Piedra, and Cañada Verde. A fourth significant tributary, Cuevitas Creek, enters Pismo Creek from the west in lower Price Canyon. The mouth of Pismo Creek is in the dune region known locally as Pismo Beach.

The watershed is dominated by agricultural land uses in its upper reaches including vineyards, ranches and row crops. The urban core of the City of Pismo Beach is adjacent to the Pismo Creek Estuary. Other land uses include a regional landfill, oil exploration and a wastewater treatment plant.

C.7.2.4 Arroyo Grande Creek Watershed

The Arroyo Grande Creek Watershed is a coastal basin located in southern San Luis Obispo County. The drainage rises to a maximum elevation of approximately 3,100 feet above sea level. The watershed includes the tributaries of Tally Ho (Corbett), Tar Springs and Los Berros Creeks. Meadow Creek is a remnant marsh drainage system that enters Arroyo Grande Creek, just upstream of the confluence with the ocean. Arroyo Grande Creek empties into an estuary adjacent to the Oceano lagoon.

The watershed is dominated by agricultural land uses including vineyards, ranches and row crops. The urban core of the City of Arroyo Grande is at the confluence of Tally Ho Creek with Arroyo Grande Creek. Other land uses include Lake Lopez Reservoir and a regional airport in Oceano.

C.7.2.5 Santa Maria River Watershed

The Santa Maria River Watershed is located in southern San Luis Obispo County and northern Santa Barbara County. The watershed includes the major tributaries of the Cuyama and Sisquoc Rivers as well as a number of smaller tributaries. The Santa Maria River (downstream of the confluence with Cuyama and Sisquoc Rivers) rises to a maximum elevation of approximately 390 feet and flows to the Pacific Ocean.

Drainage in the watershed is linked to the soils and geology with a dune lake complex, Black Lake Canyon slough, Oso Flaco Creek and portions of the Santa Maria River within the County of San Luis Obispo.

The watershed is dominated by residential and agricultural land uses including ranches, row crops, greenhouses and orchards. Other land uses include recreation and oil refinery.

C.7.2.6 Nipomo – Suey Creeks Watershed

The Nipomo - Suey Creeks Watershed are basins located in southern San Luis Obispo County and northern Santa Barbara County. The watershed rises to a maximum elevation of approximately 1,800 feet above mean sea level. The area includes two tributary basins to the Santa Maria River with their headwaters in the foothills of the Coast Range: Nipomo Creek and Suey Creek.

The watershed is dominated by agricultural land uses including ranches, row crops, greenhouses and orchards. Other land uses include residential.

C.7.2.7 Huasna River Watershed

The Huasna River Watershed is an inland basin located in southern San Luis Obispo County. The drainage rises to a maximum elevation of approximately 3,000 feet above sea level. Huasna River flows to the Cuyama River at the downstream end of the Huasna River watershed above Twitchell Dam, which is in the Cuyama River Watershed downstream. Huasna River watershed has a number of tributary basins with their headwaters in the Santa Lucia and La Panza Mountain Ranges: Huasna Creek, Carrie Creek, Haystack Creek and Arroyo Seco Creek.

Agriculture is the principal land use in the area, ranging from small irrigated farms to large cattle ranches. A substantial portion of the area consists of hilly and mountainous land with chaparral and oak woodlands, suitable only for limited grazing. Other land uses includes oil exploration and recreation on. the Los Padres National Forest.

C.7.2.8 Alamo Creek Watershed

The Alamo Creek Watershed is an inland basin located in southern San Luis Obispo County. The drainage rises to a maximum elevation of approximately 3,800 feet above sea level. Alamo Creek flows to the Cuyama River at Twitchell Reservoir. Twitchell dam is downstream in the Cuyama Watershed, but its presence affects habitats, hydrology, and land use in Alamo Creek Watershed. Major tributary basins with their headwaters in the La Panza Mountain Range: Little Jollo, Sheep, Kennel, Los Machos, and Branch Creeks.

The watershed is dominated by the Los Padres National Forest which permits recreation including camping, hunting, and off-highway vehicle uses. The watershed also has agricultural land uses.

C.7.2.9 Cuyama River Watershed

The Cuyama River Watershed starts in Ventura County. The river generally flows northward, and then in a westerly direction to a point of confluence with the Sisquoc River near the town of Garey where it joins the Santa Maria River. The San Luis Obispo County line approximately follows the Cuyama River. A portion of the northern tributaries and part of the Cuyama River are within the southwestern part of San Luis Obispo County. These northern tributaries rise to a maximum elevation of almost 4,950 feet above sea level at Caliente Mountain with their headwaters in the La Panza and Caliente Mountain Ranges.

Twitchell Reservoir is near the downstream end of the Cuyama River Watershed, formed behind Twitchell Dam.

The watershed is dominated by rural and agricultural land uses including ranches, orchards, vineyards and row crops. Other land uses include oil and gas production, Los Padres National Forest and Bureau of Land Management lands.

C.7.3 North County Watersheds

The North County Sub-Region is comprised of 11 watersheds which are summarized below.

C.7.3.1 Black Sulphur Spring Watershed

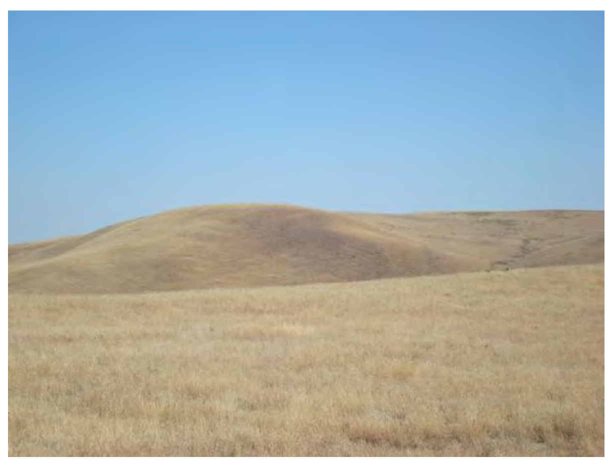
The Black Sulphur Spring Watershed lies in the eastern portion of San Luis Obispo's North County region and includes the southern portion of the Carrizo National Monument. The total watershed area is approximately 143,160 acres with a majority of the acreage located within San Luis Obispo County (137,489 acres). The remaining acreage is located within Kern County to the East. The watershed is bounded by Temblor Range to the east, Caliente Range and San Juan Hills to the west and drains entirely into Soda Lake. The Black Sulphur Watershed contains two major drainages: the Caliente Range and Elkhorn Plain. The highest elevation in the watershed is about 3,411 feet and the lowest elevation is approximately 1,919 feet. The watershed, like the adjacent Soda Lake watershed is an alkali endoheic (closed) basin with no outflow beyond Soda Lake. While the lake once contained higher levels of water and supported recreation and fishing uses, recently the lake has not had enough water flow to support such uses. The watershed is transected by San Andreas Fault. The groundwater basin underlying the watershed is the Carrizo Plain basin which is recharged from percolation of stream flow and infiltration of precipitation. Users of the basin include a small public water system serving local school, agricultural and residential purposes, and solar farms. The dominant land use is rangeland.

C.7.3.2 Soda Lake Watershed

The Soda Lake Watershed lies in the eastern portion of San Luis Obispo's North County region and includes the northern portion of the Carrizo National Monument. The total watershed area is 141,876 acres with a majority of the acreage located within San Luis Obispo County (136,015 acres). The remaining acreage is located within Kern County to the east. The watershed is bounded by Temblor Range to the east, Caliente Range and San Juan Hills to the west and

drains entirely into Soda Lake. The majority of Soda Lake is contained within the watershed, with the other portion contained within the Black Sulphur Springs watershed. The Watershed contains two major drainages: Panorama Hills and West of Soda Lake. The highest elevation in the watershed is approximately 4,100 feet and the lowest elevation is about 1,920 feet. The watershed, combined with the adjacent Black Sulphur Spring watershed, is an alkali endoheic (closed) basin with no outflow beyond Soda Lake. While the lake once contained higher levels of water and supported recreation and fishing uses, recently the lake has not had enough water flow to support such uses. The watershed is transected by San Andreas Fault. The major groundwater basin underlying the watershed is the Carrizo Plain basin which is recharged from percolation of stream flow and infiltration of precipitation. The dominant land use is agriculture.

C.7.3.3 Upper San Juan Creek Watershed



The Upper San Juan Creek Watershed is located in the eastern portion of the County directly adjacent to the Carrizo Plain. The headwaters are located in the La Panza range with the highest point at approximately 3900-feet. The confluence of San Juan Creek with the Estrella River occurs north of Creston. San Juan Creek, a permanent stream, affords recreational possibilities. The mountain slopes are excellent for hiking and riding. Wildlife is abundant, and geology and natural vegetation are of special interest. A spectacular view of the Carrizo Plain is provided from these mountains. The San Juan Creek Valley is g enerally used most intensively because of better soils and water availability. Irrigated production has increased during the last 10 years, particularly in vineyards and alfalfa. Dry farming and grazing operations encompass the rest of the agricultural uses.

C.7.3.4 Lower San Juan Creek Watershed

The Lower San Juan Creek watershed is located in the eastern portion of the county to the north-west of the Carrizo Plains. The headwaters are located in the La Panza range with the highest point at approximately 3600-feet. The confluence of San Juan Creek with the Estrella River occurs north of Creston. The dominant land use is agriculture. The San Juan Creek Valley is generally used most intensively for agriculture because of better soils and water availability. Irrigated production has increased during the last 10 years, particularly in vineyards and alfalfa. Dry farming and grazing operations encompass the rest of the agricultural uses. The riparian forest and a portion of the adjacent upland areas associated with the Estrella River and San Juan Creek in the vicinity of Shandon are important wildlife habitat for the San Joaquin kit fox, Western burrowing owl and other wildlife species, and serve as important corridors for wildlife movement. Another important wildlife movement corridor is located near the base of the hillside near the eastern edge of Shandon.

C.7.3.5 Upper Salinas River - Santa Margarita Area Watershed

The Upper Salinas River – Santa Margarita Area Watershed is located in northern San Luis Obispo County and includes a portion of the Salinas River and adjacent tributaries. The drainage rises to a maximum elevation of approximately 2,800 feet above mean sea level with steep topography categorizing much of the western portion of the watershed. The watershed contains two major drainages; Atascadero Creek and Parole Canyon. The watershed contains a mix of urban and rural residential land uses as well as agricultural land uses. A portion of the Los Padres National Forest is also contained within the watershed along the western boundary. The City of Atascadero is located at the northern end of the watershed boundary and the community of Santa Margarita is located within the central and southern portions of the watershed. Other land uses include two quarries, Atascadero Lake, and a wastewater treatment plant. Water supply for the watershed area is dominated by wells, including those used by the Atascadero Mutual Water Company to supply urban residents and commercial uses.

C.7.3.6 Mid Salinas - Atascadero Creek Area Watersheds

The Atascadero Creek - Mid Salinas Watershed is located in northern San Luis Obispo County and includes a portion of the Salinas River and adjacent tributaries. The drainage rises to a maximum elevation of approximately 2,800 feet above mean sea level with steep topography categorizing much of the western portion of the watershed. The watershed contains two major drainages; Atascadero Lake and Parole Canyon. The watershed contains a mix of urban and rural residential land uses as well as agricultural land uses. A portion of the Los Padres National Forest is also contained within the watershed along the western boundary. The City of Atascadero is located at the northern end of the watershed boundary and the community of Santa Margarita is located within the central and southern portions of the watershed. Other land uses include two quarries, Atascadero Lake, and a wastewater treatment plant. Water supply for the watershed area is dominated by wells, including those used by the Atascadero Mutual Water Company to supply urban residents and commercial uses.

C.7.3.7 Lower Salinas-Paso Robles Creek Area Watershed

The portion of the Salinas River Watershed classified here is located centrally within San Luis Obispo's North County region and encompasses Paso Robles Creek. Because of the extensive reach of the Salinas River watershed, we have utilized a watershed grouping scale that is consistent with the CalWater hydrologic unit code 10, which separates the River into 3 segments within San Luis Obispo County. We have merged 3 of the Indian Valley subwatersheds into this grouping since the bulk of the Indian Valley watershed is located in Monterey County. A majority of the City of Paso Robles, approximately one-half of the City of Atascadero (northern portion), the town of San Miguel, and the community of Templeton are all located within this watershed. It is within this watershed that most development has occurred along the Salinas River, both urban and rural agricultural. The western portion of the watershed is characterized by higher elevations with more dense oak woodlands whereas east of the Salinas River is characterized by more rolling hills and terraces. The peak elevation within the watershed occurs at the westernmost boundary reaching approximately 2,460 feet. The sub-watersheds drain toward the Salinas River. The northern portion of the watershed contains the point at which the Salinas River leaves San Luis Obispo County and flows into Monterey County. The headwaters are in the Coast Ranges, east of city of Paso Robles. The dominant land use is agriculture with a strong urban component located adjacent to the Salinas River. As urban uses are located next to the Salinas, multiple river crossings occur in this watershed and the 101 freeway parallels the Salinas River in many locations.

C.7.3.8 Huer Huero Creek Watershed

The Huer Huero watershed is located in the eastern portion of San Luis Obispo's North County region. The Huer Huero creek is an ephemeral underground stream which flows to directly to the Salinas River. The headwaters occur in the Coast Ranges, south of Creston and reach elevations of approximately 3312 feet. The confluence of the Huer Huero with the Salinas River occurs in Paso Robles. The dominant land use in the watershed is agriculture, with vineyards comprising a large percentage. The watershed is divided into two main drainages, the Upper Huer Huero and the Lower Huer Huero. Highway 41 East bisects the watershed. A portion of the Los Padres National Forest is located in the southeast portion of the watershed and contains the highest elevations in the watershed.

C.7.3.9 Estrella River Watershed

The Estrella River watershed is located in the Northern part of the County east of the Salinas River. A portion of the watershed is located in Monterey County with a majority of the acreage located within SLO County. The Estrella River is a perennial underground flowing river that is a tributary of the Salinas River. The Estrella River forms from the confluence of San Juan Creek and Cholame Creek near Shandon, in the foothills of the Coast Ranges. The confluence of the Salinas and Estrella Rivers occurs in Northern San Luis Obispo County, within the town of San Miguel. The highest elevation in the watershed is approximately 2,854 feet, and the lowest elevation is around 607 feet. Vineyards slightly predominate over oak woodlands and grassland communities. Tree species such as blue oak, and valley oak dominate the oak woodland, while western sycamore, Fremont's cottonwood, and willows are found in the riparian woodlands along the Estrella River. Agriculture is the dominant use. The Estrella River Valley is generally used most intensively for agriculture because of better soils and water availability. Irrigated production has increased during the last 10 years, particularly in vineyards and alfalfa. Dry farming and grazing operations encompass the rest of the agricultural uses.

C.7.3.10 Cholame Creek Watershed

The Cholame Watershed is located in the North easterly portion of San Luis Obispo County and crosses the county line entering Monterey County to the North. 47,300 acres of the total 151,701 acres are located in SLO County. The watershed is drained by Cholame Creek and its tributaries southeastward and westward into the Estrella River (a tributary to the Salinas River) with the confluence of the Estrella River and Cholame Creek occurring at the town of Shandon. The Cholame Creek watershed is a lightly-populated rural setting and drains into an alluvial valley and surrounding mountains within an ecosystem characterized of grassland, chaparral, oak woodland, and sagebrush and minor amounts of cropland, primarily consisting of grain or hay crops. The dominant land use is agriculture. The area around Shandon Valley is generally used most intensively for agriculture because of better soils and water availability. Irrigated production has increased during the last 10 years, particularly in vineyards and alfalfa. Dry farming and grazing operations encompass the rest of the agricultural uses. The highest watershed elevation within the County limits is at approximately 2,476-feet with the lowest elevation occurring at approximately 1,017-feet. The watersheds headwaters are in Diablo Range in Monterey County.

C.7.3.11 Nacimiento River Watershed

The Nacimiento River Watershed is located at the northern boundary of San Luis Obispo County with a few sub-watersheds located in Monterey County. For the purposes of this snapshot, only those sub-watersheds within SLO County are included in this data compilation. This watershed also contains 6,578 acres of land from the San Antonio Watershed, however, the area within the County is relatively small and best categorized with its neighboring Nacimiento

Watershed for the purposes of this project. The Nacimiento Watershed contains Lake Nacimiento, the largest reservoir in San Luis Obispo County totaling 2.26 square miles. The highest elevation in the watershed occurs in the Santa Lucia Range, within the Los Padres National Forest, reaching approximately 3,560 feet above sea level. Lake Nacimiento supplies water to the Salinas Valley and, as of 2010, supplies supplemental water to some communities in San Luis Obispo County. The dominant land use is agriculture with a majority of land used for rural grazing activities.

C.8 MAJOR INFRASTRUCTURE

This section describes the major infrastructure that provides water throughout the San Luis Obispo IRWM Plan Region. Many of the projects covered in this section have been presented in their respective WPA or watershed above. Provided herein is a short description of the larger regional water-related infrastructure, their purpose, and capacity.

This includes raw surface water transmission lines and reservoirs. **Figure C-31** shows the major conveyance and storage facilities.

C.8.1 Nacimiento Water Project

The Monterey County Flood Control and Water Conservation District (now known as the Monterey County Water Resources Agency (MCWRA)) constructed the Nacimiento Dam in 1956. The dam and reservoir continue to be operated by MCWRA. The lake has a capacity of 377,900 acre-feet (AF) and a surface area of 5,727 acres. Water is collected from a 365 square mile watershed that is comprised of grazing lands and rugged wilderness.

In 1959, the District secured the rights to 17,500 AFY from Lake Nacimiento, with 1,750 AFY reserved for lakeside users and the Heritage Ranch Community Services District (Heritage Ranch CSD). After a long series of studies and negotiations, the Nacimiento Water Project (NWP) was initiated in 2004 with the District's Board of Supervisors adopting the Final Environmental Impact Report. The NWP is the single largest project that the District has ever undertaken. The total project cost, including administration, design, construction, construction management, environmental permitting, and right-of-way, was approximately $174 million (project budget was $176 million). Water deliveries began in 2011. The project delivers raw lake water from

Lake Nacimiento to communities within San Luis Obispo County. The current participating entities and their contracted water amounts are listed below in **Table C-32**.

Table C-6. Nacimiento Project Allocations

Nacimiento Water Project Participants	Allocations (AFY)
City of Paso Robles	4,000
Templeton CSD	250
City of San Luis Obispo	3,380
Atascadero Mutual Water Company	2,000
CSA 10 A (via exchange)[1]	25
Total	**9,655**

Notes: 1. See Whale Rock Reservoir Operating Agreements.

Though the participants have contracted for 9,655 AFY, the northern portions of the pipeline and appurtenances have been designed for the maximum allowable withdrawal amount of 15,750 AFY. Decreasing percentages of excess capacity are also designed into the southern reaches of the project. It is expected that additional allocations will be purchased in the future by existing participants or other entities. The mechanism by which the participation requests of other entities are considered varies depending on whether or not the entity was a part of the Final Environmental Impact Report (FEIR). If the entity was a part of the FEIR, it can proceed directly to the District Board of Supervisors for consideration. If it was not a part of the original FEIR, it must consult with the Nacimiento Project Commission and obtain written support from existing participants that represent at least 55 percent of existing subscription amounts before proceeding to the District Board of Supervisors for consideration.

C.8.2 Whale Rock Reservoir

Whale Rock Reservoir is located on Old Creek Road approximately one-half mile east of the community of Cayucos. The State Department of Water Resources supervised the project's planning, design, and construction. Construction took place between October 1958 and April 1961. The reservoir is jointly owned by the City of San Luis Obispo, the California Men's Colony, and Cal Poly. These three agencies, with the addition of a representative from the Department of Water Resources, form the Whale Rock Commission, which is responsible for operational policy and administration of the reservoir and related facilities. Day-to-day operation is provided by the City of San Luis Obispo.

Whale Rock reservoir is formed by an earthen dam and was able to store an estimated 40,662 acre-feet of water at the time of construction. The calculation of the yield available is coordinated with Salinas Reservoir using a safe annual yield computer model. The model also evaluates the effect of siltation. The Whale Rock Commission has budgeted for a siltation study to be undertaken in the near future.

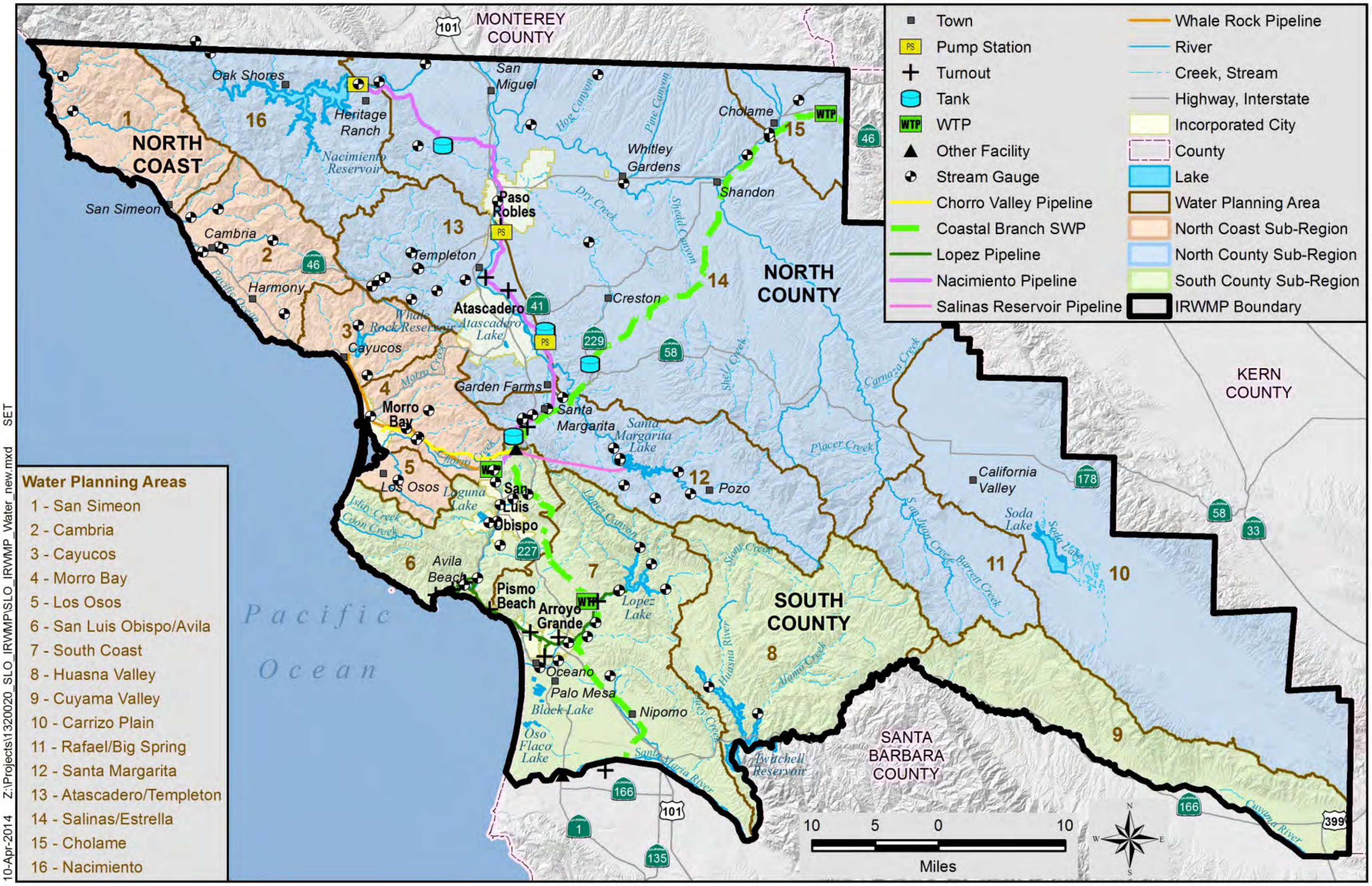


Figure C-31. Major Water Conveyance and Storage

The table below summarizes the current capacity rights for the joint right-holders (downstream water rights are accounted for separately). Each rights-holder manages reservoir withdrawals individually from their available water storage allocation. The Whale Rock Commission tracks withdrawals and reports available volume on a monthly basis.

Table C-7. Whale Rock Reservoir Allocations

Water Users	Percent	Allocations (Acre-Feet)
City of San Luis Obispo	55.05	22,383
Cal Poly San Luis Obispo	33.71	13,707
California Men's Colony	11.24	4,570
Total	**100**	**40,660**

C.8.2.1 Operating Agreements

Several agreements establish policy for the operation of the Whale Rock system and actions of the member agencies. A brief description of the existing agreements that affect water delivery agreements and water rights are summarized below.

A) Agreement for the construction and operation of the Whale Rock Project, 1957, set forth the project's capital cost distribution to the member agencies.

B) A supplemental operating agreement, 1960, established the Whale Rock Commission and apportioned the operating costs.

C) Downstream water rights agreement (the original 1958 agreement was amended in April 1996) defining water entitlements for adjacent and downstream water users. The Cayucos Area Water Organization (CAWO) affected by this agreement consists of three public water purveyors and the cemetery, all in the Cayucos area. In addition to the agencies, water entitlements were identified for two separate downstream land owners. Entitlements are as follows:

Table C-8. Whale Rock Downstream Entitlements

Water Users	Downstream Water Entitlements (AFY)
Cayucos Area Water Organization(CAWO)[1]	0
Paso Robles Beach Water Association	222
Morro Rock Mutual Water Company	170
County Service Area 10A	190
Cayucos-Morro Bay Cemetery District	18
Mainini Ranch (Landowner) [2]	50
Ogle (Landowner)[2]	14
Total Downstream Entitlement	**664**

Notes:
1. The referenced agreement in Item C) above establishes the amount of 600 AFY to CAWO. The allocations to the CAWO members are part of an internal agreement amongst the members.
2. The agencies generally receive their entitlements via pipeline from the reservoir, while the land owners' entitlement is released from the reservoir.

D) An agreement for water allocation and operational policy between the agencies forming the Whale Rock Commission. The agreement established the accounting procedures to allow each agency to carry over excess or deficit water each year.

E) An agreement between the Whale Rock Commission and the California Men's Colony, 1990, to establish maintenance and operation criteria for the Chorro Booster pumps. The Commission installed the Chorro Booster pumps on the California Men's Colony turnout from the Whale Rock line to reduce system pressures required to provide full flow to the California Men's Colony water treatment plant. Pump and pump station maintenance, per the agreement, are the responsibility of the California Men's Colony.

F) An agreement between the Whale Rock Commission and the County of San Luis Obispo for connection to the Whale Rock pipeline, 1995, allowed a pipeline connection to deliver water to the Dairy Creek Golf Course. Typically, the golf course uses recycled water from the California Men’s Colony. Under the terms of the agreement, water from Whale Rock Reservoir can be delivered when recycled water is not available.

G) Consent to common use agreement, 1996, between the Whale Rock Commission and the County of San Luis Obispo. The agreement allowed the installation of the State Water pipeline at seven locations within the existing Whale Rock pipeline easement.

H) A mutual aid agreement between the Whale Rock Commission and the City of Morro Bay, 2000, relative to water resources in the event of an emergency.

I) An exchange agreement, 2006, between CSA 10A and the City of San Luis Obispo allowing the delivery of up to 90 AFY of the City’s Whale Rock water allocation to CSA 10A in exchange for CSA 10A's purchase of an equivalent amount of Nacimiento Water for delivery to the City. The anticipated need for CSA 10A is 25 AFY at build-out.

C.8.3 Lopez Lake/Reservoir

The District completed the Lopez Dam in 1968 to provide a reliable water supply for agricultural and municipal needs. Although flood protection was not one of the reasons for the construction of the dam, it has proven its value to that consideration. Lopez Reservoir has a capacity of 49,388 AF. The lake covers 950 acres and has 22 miles of oak covered shoreline. Allocations for Lopez Lake water are based on a percentage of the safe yield of the reservoir, which is 8,730 AFY. Of that amount, 4,530 AFY are for pipeline deliveries and 4,200 AFY are reserved for downstream releases. The dam, terminal reservoir, treatment and conveyance facilities are a part of Flood Control Zone 3 (Zone 3).

The agencies that contract for Lopez water in Zone 3 include the communities of Oceano, Grover Beach, Pismo Beach, Arroyo Grande, and County Service Area (CSA) 12 (including the Avila Beach area). Their allocations are shown in the table below.

Table C-9. Lopez Lake Allocations

Water Users	Allocation (AFY)
City of Pismo Beach	896
Oceano CSD	303
City of Grover Beach	800
City of Arroyo Grande	2,290
CSA 12	241
Total	**4,530**

The District, in coordination with the Zone 3 Advisory Committee, continues to develop a Habitat Conservation Plan for the system and evaluate opportunities to operate more effectively and/or modify the system for water supply, water quality, ecosystem and flood management purposes.

C.8.4 Santa Margarita Lake/Salinas Reservoir

The Salinas Dam was built in 1941 by the War Department to supply water to Camp San Luis Obispo and, secondarily, to meet the water needs of the City of San Luis Obispo. The Salinas Reservoir (Santa Margarita Lake) captures water from a 112 square mile watershed and can currently store up to 23,843 acre-feet (AF). In 1947, the Salinas Dam and delivery system was transferred from the regular Army to the U.S. Army Corps of Engineers. Shortly thereafter, the District began operating this water supply for the City under a lease from the U.S. Army Corps of Engineers. Water from the reservoir is pumped through the Cuesta Tunnel (a one-mile long tunnel through the mountains of the Cuesta Ridge) and then flows by gravity to the City's Water Treatment Plant on Stenner Creek Road.

The calculation of the yield available is coordinated with Whale Rock Reservoir using a safe annual yield computer model. The City's combined safe yield of the two reservoirs was 6,950 AFY in 2009. The model also accounts for the reduction in storage due to siltation.

The District, in coordination with the City of San Luis Obispo and downstream interests continues to evaluate opportunities to operate the dam more effectively and/or modify the system for water supply, water quality, ecosystem and flood management purposes.

C.8.5 Chorro Reservoir

The Chorro Reservoir is less than one mile northeast of the California Men's Colony in the upper Chorro watershed. The Chorro Reservoir is part of the Chorro Valley Water System operated by CMC. The system provides storage, treatment and distribution to four major users:

- The California Men's Colony
- Camp San Luis Obispo (California National Guard)
- County Operations Center/Office of Education
- Cuesta Community College (Cuesta College)

The reservoir and treatment plant were constructed by the U.S. Army Corps of Engineers to provide water to Camp San Luis Obispo at the beginning of World War II. The net storage capacity of the Chorro Reservoir has decreased since it was constructed due to siltation, and was estimated to be 105 AF, based on a study prepared by DWR in 1989. More recent studies indicate that the capacity is currently closer to 90 acre-feet. Safe annual yield is considered to be 140 AFY, as the watershed provides more than can be stored in the reservoir, even in drought years. It is worth noting that water demand at Camp San Luis Obispo, both during the war and subsequently, has been met almost exclusively through surface flows to the reservoir from the Chorro watershed and from groundwater wells on the Camp property. Although the Salinas Reservoir waterline was extended from the Cuesta Water Tunnel to the Chorro Reservoir as part of the original improvements in World War II, the pipeline has only been used to convey water from the Salinas Reservoir to the Camp twice since construction.

Camp San Luis Obispo has priority rights to water from Chorro Reservoir, with 140 AFY of entitlement. CMC has right to any excess. The Mainini Ranch has an agreement with the Camp for a delivery of up to 25 AFY, but has only used an average of 5 to 7 AFY over the past decade.

For further discussion on agreements related to the Chorro Reservoir, see the description of the Chorro Valley Water System in the Water Planning Area Number 4 discussion below.

C.8.6 State Water Project Facilities

The California Department of Water Resources (DWR) owns and operates the State Water Project (SWP). In 1963 the District contracted with DWR for 25,000 AFY of State Water. The SWP began delivering water to the Central Coast in 1997 upon completion of the Coastal Branch conveyance and treatment facilities, serving Santa Barbara and San Luis Obispo Counties.

The treatment facility for State Water delivered through the Coastal Branch, known as the Polonio Pass Water Treatment Plant (PPWTP), is owned, operated and maintained by the Central Coast Water Authority (CCWA) for users in San Luis Obispo and Santa Barbara Counties. DWR owns the Coastal Branch transmission system, and they operate and maintain the raw water portion of the system. CCWA operates and maintains the treated water portion of the Coastal Branch. Agreements between CCWA, Santa Barbara County Flood Control and Water Conservation District and DWR are in place to establish these roles and relationships.

C.8.6.1 Reducing Reliance on the Delta

The RWMG MOU (Exhibit 4) includes the need to update the Plan to comply with new State guidelines. Since the new State guidelines include eligibility standards for including addressing reduction in dependence on Delta water in the Plan, future updates to the Region's Plan retain applicable goals and objectives.

Additionally, San Luis Obispo County's Conservation and Open Space Element (COSE) of the General Plan includes Water Resources Policy 1.3, which says use of reclaimed water, interagency cooperative projects, desalination of contaminated groundwater supplies, and groundwater recharge projects should be considered prior to using imported sources of water or seawater desalination, or dams and on-stream reservoirs. Per Provision 4 of the MOU, the District is the lead agency for the RWMG, and the WRAC is both the main advisor to the RWMG and made up of RWMG members. The WRAC reviewed and commented on the update to the COSE on September 2, 2009, with no changes recommended. Therefore, updates of the Region's Plan will retain the goals for reducing dependence on imported water independent of State guidelines and eligibility requirements. See **Section D – Water Supply, Demad, and Water Budget** for more information on the Region's use of the State Water Project, and past deficiencies in their water contract in drought years with an allocation of 0% beginning in 2014.

C.8.7 Morro Bay Desalination Plant

In the County, there is only one operating desalination facility for potable water use,[12] that being the City of Morro Bay's desalination plant. In the past, Morro Bay has used the salt water reverse osmosis (SWRO) treatment plant to treat water from saltwater wells and to remove nitrates from fresh water wells. Recently the Morro Bay completed the installation of two 450 gallons per minute (gpm) brackish water reverse osmosis (BWRO) treatment trains. The addition of these treatment processes will enable the Morro Bay to treat both fresh water and salt water wells simultaneously, and will also reduce the energy usage of the facility as well. The SWRO trains are designed to produce approximately 645 AFY of potable water from sea water. The BWRO system is capable of treating the entire 581 AF of Morro Basin groundwater that the Morro Bay can extract by permit.

The original capital cost for the BWRO system in 2003 was about $3.1 million. The operating costs for the facility vary widely depending on the amount the Morro Bay operates the plant. Based on a nearly continuous operation, the costs are about $1,700 per acre foot, including replacement of membranes and some appurtenances on a 5-year cycle. With energy recovery equipment installed at a capital outlay of about $1 million, the operational cost for water would drop into the $1,100 -$1,300 per acre foot range.

C.8.8 Other Desalination Projects

The Cambria CSD has been striving to develop a seawater desalination plant to meet existing and future water demands. This plant, if implemented, is expected to produce up to 602 AFY. This plant will operate during the summer season to augment supply during the summer and high demand period (from summer tourism). A recycled water system is also planned, with an estimated 180 AFY made available for unrestricted irrigation use.

The City of Arroyo Grande, the City of Grover Beach, and the Oceano Community Services District participated in the evaluation of a desalination project to supplement their existing potable water sources. Currently, all three agencies receive water from various sources, including the California State Water Project, Lopez Lake Reservoir, and groundwater from the Arroyo Grande Plain Hydrologic Subarea that is part of the Santa Maria Valley Groundwater Basin. Recent projections of water supply shortfalls in the region motivated the agencies to conduct a more detailed study of desalination as a supplemental water supply. The study focused on utilizing the existing South San Luis Obispo County Sanitation District's (SSLOCSD)

[12] Another RO facility in the Arroyo Grande Oil Field in Price Canyon, is operated for the treatment of produced water (oilfield brine) that is a part of their oil well drilling activities. At the present time, it is discharged into Pismo Creek. However, there is potential that the reclaimed water can be used for agriculture or other purposes.

wastewater treatment plant to take advantage of utilizing the existing ocean outfall, while having the plant located near the ocean seawater source. The feasibility study, completed in 2008, was based on a 2,300 AFY seawater desalination facility. Some of the major points of interest and concern of this study include:

- Some 20 or more beach wells may be needed to provide enough seawater to produce the 2,300 AFY potable water.
- Permitting and environmental issues could be complex, and implementation could take 8 years or longer.

Initial capital cost could be in the range of $35 million, and customer rates could be impacted by 18 percent to over 100 percent to fund the project, and would cost in the neighborhood of $2,300 per AF or more, on a 20-year life cycle basis.

C.9 Current Water Quality Conditions

This section summarizes current water quality conditions for surface water and groundwater bodies in the San Luis Obispo IRWM Plan Region. Surface water quality is summarized by the watershed name, timing of conditions, the pollutants that exceed the Total Maximum Daily Load (TMDL) according to Section 303(d) of the California Clean Water Act, potential pollution sources. Groundwater quality is summarized by groundwater basin name, estimated safe basin yield, Federal drinking water standard exceedance, and Central Coast Regional Water Quality Control Board water quality objective exceedance. Finally, summaries of the available basin management plans are provided.

The information presented in this section was gathered and aggregated from the Watershed Snap Shots.

C.9.1 North Coast

C.9.1.1 Watershed Health

Table C-10. North Coast Watershed Health

Watershed	Ephemeral / Perennial	303d Listed/ TMDLs	Pollution Sources
Big Creek	Unknown	None	n/a
San Simeon – Arroyo de la Cruz	Unknown	Escherichia coli (E. coli), Low Dissolved Oxygen, Chloride, Nitrate, Sodium	Agriculture, Natural Sources, Grazing-Related Sources, Unknown Sources, Wastewater - Land Disposal
Santa Rosa Creek	Unknown	Temperature, Water	Water Diversions, Urban Runoff, Agriculture, Disturbed Sites (Land Dev.), Grazing Related sources
Cayucos Creek	Unknown	Enterococcus, Fecal Coliform, Low Dissolved Oxygen	Industrial Activities (Oil), Natural Sources, Agriculture
Morro Bay	Perennial, Ephemeral (Sanford, personal communication, 2013)	E. coli, Fecal Coliform, Nutrients, Sediment, Pathogens, Sediment, Low Dissolved Oxygen, Nitrate	Agriculture, Agricultural Storm Runoff, Channel Erosion, Channelization, Dredging, Erosion/Sedimentation, Habitat Modification, Irrigated Crop Production, Grazing Riparian and/or Upland, Natural, Stream bank Modification/ Destabilization, Major Municipal Point Source, Urban Runoff, Unknown (SWRCB, 2010), Confined Animal Feeding Operation, Removal of Riparian Vegetation

C.9.1.2 Groundwater Quality

Table C-11. North Coast Groundwater Quality

Groundwater Basin	Estimated Safe Yield	Drinking Water Standard Exceedance	Water Quality Objective Exceedance
San Carpoforo Valley	No data available	No.	None. (CCRWQCB, 2011)
Arroyo de la Cruz Valley	1,244 AFY (Envicom, 1982 / SLO County WMP, 2012)	None. (Carollo, 2012)	None. (CCRWQCB, 2011)
Pico Creek Valley	120 AFY (Cleath, 1986 / SLO County WMP, 2012).	None. (Carollo, 2012)	None. (CCRWQCB, 2011)
San Simeon Valley	1040 AFY (IRWM Plan, 2011)	None (Carollo, 2012)	None. (CCRWQCB, 2011)
Santa Rosa Valley	2,260 AFY (Cambria County Water District, 1976; Carollo, 2012)	Chloride content increased more than ten times from 80 ppm in 1955 to 933 ppm in 1975. Background chloride concentrations typically ranged from 30 to 270 ppm. One well had a concentration of 1,925 ppm in November 1961. The Santa Rosa Creek management plan also reports corrosivity effects by water supplies and natural or industrial influenced balance of hydrogen, carbon and oxygen in the water which is affected by temperature and other factors. Groundwater is found in alluvial deposits with an average specific yield of 17%. Groundwater is unconfined and generally flows westward. (Ca. Dept of Water Resources, 2003) Holocene-aged alluvial deposits consist of unconsolidated sand, clay, silt, and gravel of primarily fluvial origin. Commonly, the deposits are about 100 feet thick beneath the center of the valley and more than 120 feet thick at the coast (Ca. Dept. of Water Resources, 2003)	None. (CCRWQB, 2011)
Villa Valley	1,000 AFY (DWR 1958; Carollo, 2012))	None. (Carollo, 2012)	None. (CCRWQB, 2011)
Cayucos Valley	600 AF (Carollo, 2012).	Analysis of groundwater from 32 wells in this basin taken during 1957 through 1993 show TDS content ranging from 346 to 2,462 ppm. Portions of the basin have chloride levels exceeding 100 ppm, indicating seawater intrusion has occurred (Carollo, 2012).	No for basin. No information for subbasin (CCRWQB, 2011)
Old Valley	505 AF (Carollo, 2012)	Analyses of groundwater from 33 wells in this basin taken during 1957 through 1993 show TDS content ranging from 346 to 2,462 ppm. Portions have chloride levels exceeding 100 mg/L. (Carollo, 2012).	No for basin. No information for subbasin (CCRWQCB, 2011)
Toro Valley	532 AF (Carollo, 2012)	None.	No. (CCRWQCB, 2011)
Morro Valley	1,500 AFY(San Luis Obispo County, Master Water Report, 2012)	No. (San Luis Obispo County, Master Water Report, 2012)	Undetermined. (RWQCB, Table 3-8, 2011)
Chorro Valley	2,210 AFY(San Luis Obispo County, Master Water Report, 2012)	Yes; see description below. (San Luis Obispo County, Master Water Report, 2012)	No. (RWQCB, Table 3-8, 2011)
Los Osos Valley Basin	3,200 AFY(San Luis Obispo County, Master Water Report, 2012)	Yes; see description below. (San Luis Obispo County, Master Water Report, 2012)	Undetermined. (RWQCB, Table 3-8, 2011)

C.9.1.3 Basin Plans (By Watershed)

Table C-12. North Coast Basin Plans

Watershed Name	Plan Title	Plan Author	Plan Year
Santa Rosa Creek	Santa Rosa Creek Watershed Management Plan	Greenspace Cambria	2010
	Cambria Forest Management Plan	Greenspace Cambria	2002
Coastal Irish Hills	Irish Hills Coastal Watershed Conservation Plan	Coastal Conservancy	2011
Morro Bay	Morro Bay Comprehensive Conservation Management Plan	MBNEP	2013
San Luis Obispo Creek	San Luis Obispo Creek Watershed Enhancement Plan	The Land Conservancy of San Luis Obispo County	2002
	Prefumo Creek Watershed Management Plan	City of San Luis Obispo	2014

C.9.2 North County

C.9.2.1 Watershed Health

Table C-13. North County Watershed Health

Watershed	Ephemeral / Perennial	303d Listed/ TMDLs
Black Sulfur Spring Watershed	Perennial	None
Soda Lake	Ephemeral (wiki)	Ammonia
Upper San Juan Creek	Unknown	None
Middle Salinas-Atascadeo	Perennial	Chloride, E. coli, Fecal Coliform, Low Dissolved Oxygen, and Sodium. TMDL estimated date of completion 2021.
Santa Margarita Lake – South Salinas	Unknown	Sodium, Chloride
Paso Robles Creek – North Salinas River	Intermittent Perennial	Sodium, Chloride
Cholame Creek	Perennial	Boron, Chloride, Electrical Conductivity, Escherichia coli (E. coli), Fecal Coliform, Low Dissolved Oxygen, Sodium
Estrella River	Ephemeral	Boron, Chloride, Fecal Coliform, Sodium, pH
Huer Huero	Unknown	None
Lower San Juan Creek	Unknown	None
Nacimiento River	Perennial	Mercury, Metals

C.9.2.2 Groundwater Quality

Table C-14. North County Groundwater Quality

Groundwater Basin	Estimated Safe Yield	Drinking Water Standard Exceedance	Water Quality Objective Exceedance
Carrizo Plain	8000-11,000 AF (Carollo, 2012)	Yes; see description below.	Exceeds usable mineral quality for total dissolved solids, chloride, sulfate, boron, sodium, and nitrogen (CCRWQB, 2011).
Paso Robles	97,700 AF (SLO County RCS, 2011).	Yes; see description below.	None (CCRWQCB, 2011
Big Spring Area	None (Carollo, 2012)	None (Carollo, 2012)	None (CCRWQCB, 2011
Rafael Valley	None (Carollo, 2012)	None (Carollo, 2012)	None (CCRWQCB, 2011
Atascadero	None (Carollo, 2012)	The 2008 Water Quality Report for both Templeton CSD and Atascadero MWC found that none of the tested regulated and secondary substances in water samples exceeded their MCL values (Carollo, 2012)	None (CCRWQCB, 2011)
Rinconada	None (Carollo, 2012)	None (Carollo, 2012)	None (CCRWQCB, 2011)
Pozo Valley	1,000 AFY (DWR 1958; Carollo, 2012)	None (Carollo, 2012)	None (CCRWQCB, 2011)
Santa Margarita Basin	400-600AFY (SLO County, 2008)		
Cholame Valley	No data available	None	None (CCRWQCB, 2011)

C.9.2.3 Basin Plans (By Watershed)

Table C-15. North County Basin Plans

Watershed Name	Plan Title	Plan Author	Plan Year
Nacimiento River	San Antonio and Nacimiento Rivers Watershed Management Plan	MCWRA	2008
	Camp Roberts Integrated Natural Resource Management Plan	Camp Roberts JLUS	2013
North Salinas River, Middle Salinas River, South Salinas River	Upper Salinas River Watershed Action Plan	US-LT RCD	2004
	Upper Salinas River Watershed Action Plan	US-LTRCD	2004
	Camp Roberts Integrated National Resources Management Plan	Camp Roberts JLUS	2013

C.9.3 South County

C.9.3.1 Watershed Health

Table C-16. South County Watershed Health

Watershed	Ephemeral / Perennial	303d Listed/ TMDLs
Coastal Irish Hills	No source identified.	Not assessed. (SWRCB, 2010)
San Luis Obispo Creek	Perennial, Ephemeral	Chloride, Chlorpyrifos, Nitrate, Nutrients, Pathogens, Sodium, Fecal Coliform, Low Dissolved Oxygen, Nitrate, Turbidity,
Arroyo Grande Creek	Perennial, Ephemeral	E coli., Fecal Coliform, Chloride, Nitrate, Sodium
Nipomo – Suey Creeks	Perennial	Fecal Coliform, Nitrate, Unknown Toxicity
Pismo Creek	Perennial, Ephemeral	Chloride, E. coli, Fecal Coliform, Low Dissolved Oxygen, and Sodium
Santa Maria River	Perennial, Ephemeral	Ammonia, Chloride, Fecal Coliform, Nitrate, Sediment Toxicity, Sodium, Unknown Toxicity, Chloride, Chlorpyrifos, DDT, Dieldrin, Endrin, E. coli, Toxaphene, Turbidity
Alamo Creek	Perennial	Fecal Coliform
Huasna River	No source identified.	Not assessed. (SWRCB, 2010)
Cuyama River	Ephemeral	for Boron, Chloride, Electrical Conductivity, Fecal Coliform, pH, Sodium

C.9.3.2 Groundwater Quality

Table C-17. South County Groundwater Quality

Groundwater Basin	Estimated Safe Yield	Drinking Water Standard Exceedance	Water Quality Objective Exceedance
San Luis Obispo Valley	6,000 AFY (SLO County, Master Water Report, 2012)	See sub-basins. (SLO County, Master Water Report, 2012)	No.(RWQCB, Table 3-8, 2011)
San Luis Obispo Valley – Avila Valley Subbasin	No basin yield numbers have been published (SLO County, Master Water Report, 2012)	No. (SLO County, Master Water Report, 2012)	No objective for sub-basin. (RWQCB, Table 3-8, 2011)
San Luis Obispo Valley – Edna Valley Subbasin	4,000 AFY (DWR, 1997) (SLO County, Master Water Report, 2012)	No. (SLO County, Master Water Report, 2012)	No objective for sub-basin. (RWQCB, Table 3-8, 2011)
San Luis Obispo Valley – Pismo Creek Valley Subbasin	200 AFY, although this is before any consideration for environmental habitat demand (Fugro, 2009). (SLO County, Master Water Report, 2012)	Yes; see description below. (SLO County, Master Water Report, 2012)	No for basin. No objective for subbasin. (RWQCB, 2011)
San Luis Obispo Valley – San Luis Valley Subbasin	2,000 AFY (DWR, 1997) (SLO County, Master Water Report, 2012)	Yes; see description below. (SLO County, Master Water Report, 2012)	No objective for sub-basin. (RWQCB, Table 3-8, 2011)
Arroyo Grande Valley Subbasin	No estimated safe yield value reported. (San Luis Obispo County, Master Water Report, 2012)	Yes; see description below. (San Luis Obispo County, Master Water Report, 2012)	No. No objective for subbasin. (RWQCB, Basin Plan, Table 3-8, 2011)
Santa Maria Valley – Nipomo Valley Subbasin	No existing yield. (San Luis Obispo County, Master Water Report, 2012)	No. (San Luis Obispo County, Master Water Report, 2012)	No objective for subbasin. (RWQCB, Table 3-8, 2011)
Northern Cities Management Area of Santa Maria Valley Basin	4,000 AFY (DWR, 1997)	Yes; see description below. (San Luis Obispo County, Master Water Report, 2012)	No. No objective for subbasin. (RWQCB, Basin Plan, Table 3-8, 2011)
Santa Maria Valley- Nipomo Mesa Management Area	4,800-6,000 AFY(San Luis Obispo County, Master Water Report, 2012)	No. (San Luis Obispo County, Master Water Report, 2012)	Yes. (RWQCB, Table 3-8, 2011)
Santa Maria Valley - Orcutt Sub-basin	Unknown. (San Luis Obispo County, Master Water Report, 2012)	Unknown. (San Luis Obispo County, Master Water Report, 2012)	*Santa Maria Valley - Orcutt Sub-basin
Santa Maria Valley – Santa Maria Management Area (portion)	124,000 AFY Safe Yield in the San Luis Obispo County portion of the Santa Maria Valley, reported as dependable yield, was estimated between 11,100 AFY and 13,000 AFY prior to the formal establishment of the SMVMA (DWR 2002).	124,000 AFY Safe Yield in the San Luis Obispo County portion of the Santa Maria Valley, reported as dependable yield, was estimated between 11,100 AFY and 13,000 AFY prior to the formal establishment of the SMVMA (DWR 2002).	*Santa Maria Valley – Santa Maria Management Area (portion)

Table C-17. South County Groundwater Quality

Groundwater Basin	Estimated Safe Yield	Drinking Water Standard Exceedance	Water Quality Objective Exceedance
Santa Maria Valley Basin	Adjudicated. (San Luis Obispo County, Master Water Report, 2012)		Yes. (RWQCB, Table 3-8, 2011)
Huasna Valley Basin	No existing data. (San Luis Obispo County, Master Water Report, 2012)	No historical water quality data. (San Luis Obispo County, Master Water Report, 2012)	No objective for the basin. (RWQCB, Table 3-8, 2011)
Cuyama Valley - Cuyama Valley Basin (portion)	10,667 AFY (San Luis Obispo County, Master Water Report, 2012)	10,667 AFY (San Luis Obispo County, Master Water Report, 2012)	Cuyama Valley - Cuyama Valley Basin (portion)
Cuyama Valley Basin	9,000 - 13,000 AFY (San Luis Obispo County, Master Water Report, 2012)	Yes; (San Luis Obispo County, Master Water Report, 2012)	No. (RWQCB, Table 3-8, 2011)
Santa Rosa Valley	2,260 AFY (Cambria County Water District, 1976; Carollo, 2012)	Chloride content increased more than ten times from 80 ppm in 1955 to 933 ppm in 1975. Background chloride concentrations typically ranged from 30 to 270 ppm. One well had a concentration of 1,925 ppm in November 1961. The Santa Rosa Creek management plan also reports corrosivity effects by water supplies and natural or industrial influenced balance of hydrogen, carbon and oxygen in the water which is affected by temperature and other factors. Groundwater is found in alluvial deposits with an average specific yield of 17%. Groundwater is unconfined and generally flows westward. (Ca. Dept of Water Resources, 2003) Holocene-aged alluvial deposits consist of unconsolidated sand, clay, silt, and gravel of primarily fluvial origin. Commonly, the deposits are about 100 feet thick beneath the center of the valley and more than 120 feet thick at the coast (Ca. Dept. of Water Resources, 2003)	None, CCRWQB, 2011
Toro Valley	532 AF (Carollo, 2012)	None.	No (CCRWQCB, 2011)
Villa Valley	1,000 AFY (DWR 1958; Carollo, 2012))	None. (Carollo, 2012)	None, CCRWQB, 2011

C.9.3.3 Basin Plans (By Watershed)

Table C-18. South County Basin Plans

Watershed Name	Plan Title	Plan Author	Plan Year
Suey Creeks	Nipomo Creek Watershed Management Plan	Land Conservancy of San Luis Obispo and CCSE	2005
Santa Maria River	Nipomo Creek Watershed Management Plan	Land Conservancy of San Luis Obispo and CCSE	2005
Arroyo Grande Creek	Arroyo Grande Creek Watershed Management Plan	CCSE	2009
Pismo Creek	Pismo Creek/ Edna Area Watershed Management Plan	CCSE	2009
	Santa Maria River Estuary Enhancement and management Plan	Dunes Center	2004

C.9.4 Water Quality Protection and Improvement Needs

Refer to **Appendix N – Watershed Management Planning Project** for various water quality needs by watershed.

C.9.5 Salt and Nutrient Management Planning Efforts

As part of the Proposition 84 Planning Grant used to support the IRWM Plan Update, funds were also directed at Salt and Nutrient Management Planning (SNMP). These efforts included:

1. Identification and Prioritization of Basins in the Region Requiring SNMPs (**Appendix O-1**)
2. The Paso Robles Groundwater Basin SNMP (**Appendix O-2**)
3. Santa Maria Groundwater Basin Characterization – Phase I for the development of an SNMP (**Appendix O-3**)

C.10 ENVIRONMENTAL RESOURCES

This section summarizes the environmental resources within the San Luis Obispo IRWM Plan Region. These resources are reliant on the quality and availability of water within the Region.

C.10.1 Habitats of Special Concern

A comprehensive summary table of habitats of special concern was prepared by the District and is located at the end of **Appendix N – San Luis Obispo County Watershed Management Planning Project Report Watershed Study**.

C.10.2 Species of Special Concern

A comprehensive summary table including species of special concern was prepared by the District and is located at the end of **Appendix N – San Luis Obispo County Watershed Management Planning Project Report Watershed Study**.

C.10.3 Marine Protected Areas

Table C-42 presents the Marine Protected Areas according to the California Marine Protected Area designation.

Table C-19. Marine Protected Areas in the San Luis Obispo IRWM Plan Region

Marine Protected Areas in San Luis Obispo County
Cambria State Marine Conservation Area
Morro Bay State Marine Recreational Management Area
Morro Bay State Marine Reserve
Piedras Blancas State Marine Conservation Area
Piedras Blancas State Marine Reserve
Point Buchon State Marine Conservation Area
Point Buchon State Marine Reserve
White Rock (Cambria) State Marine Conservation Area
Source: California Department of Fish and Wildlife. <http://www.dfg.ca.gov/m/MPA/ListByCounty?countyID=40>. Accessed 26 Nov 2013

C.10.4 Fisheries (By Watershed)

Table C-43 summarizes the fisheries and potential fish habitats within the watersheds of the San Luis Obispo IRWM Plan Region. The habitats of note are those that support Steelhead Salmon populations. This information was gathered from the Watershed Snap Shots.

Table C-20. Fisheries and Fish Habitat in the San Luis Obispo IRWM Plan Region

Watershed Name	Steelhead Streams
Big Creek	San Carpoforo Creek
San Simeon - Arroyo de la Cruz	Arroyo de los Chinos Creek, Arroyo de la Cruz Creek, Pico Creek, San Simeon Creek, Steiner Creek
Santa Rosa Creek	Santa Rosa Creek Upper, Santa Rosa Creek Lower, Lower Perry Creek
Cayucos Creek	Cayucos Creek, Old Creek, Cottontail Creek, Toro Creek
Morro Bay	Chorro Creek, Los Osos Creek, Chorro Creek tributaries (Dairy Creek, Pennington Creek, San Bernardo Creek, San Luisito Creek, and 2 unnamed tributaries, Walter's Creek
Coastal Irish Hills	Islay Creek, Coon Creek, Diablo Canyon
San Luis Obispo Creek	San Luis Obispo Creek, San Miguelito (See Canyon) Creek, Froom Creek, Prefumo Creek, Stenner Creek, Brizzolari Creek, Unnamed tributary, Dry Creek, Acacia Creek, Reservoir Canyon
Arroyo Grande Creek	Arroyo Grande Creek
Nipomo - Suey Creeks	None
Pismo Creek	Pismo Creek; East and West Corral de Piedra Creeks
Santa Maria River	Santa Maria River
Alamo Creek	None
Huasna River	None
Cuyama River	None
Black Sulpher Spring	None
Soda Lake	None
Upper San Juan Creek	None
Atascadero Creek – Mid Salinas	Atascadero (Hale) Creek, Santa Margarita Creek, Tassajara Creek, Salinas River
Santa Margarita Lake - South Salinas	None
Paso Robles Creek-North Salinas	Paso Robles Creek, Jack Creek, Salinas River, Graves Creek, Santa Rita Creek, Summit Creek, Sheepcamp Creek, San Marcos Creek, Willow Creek
Cholame Creek	None
Estrella River	None
Huer Huero Creek	Huer Huero Creek
Indian Valley	Salinas River
Lower San Juan Creek	None
Nacimiento River	Lower Nacimiento River

C.10.5 Other Environmental Resources

Table C-44 presents the environmental resources significant to the San Luis Obispo IRWM Plan Region. First presented in the 2007 San Luis IRWM Plan, the following information is updated to reflect current conditions.

Table C-21. Environmental Resources within the San Luis Obispo IRWM Plan Region

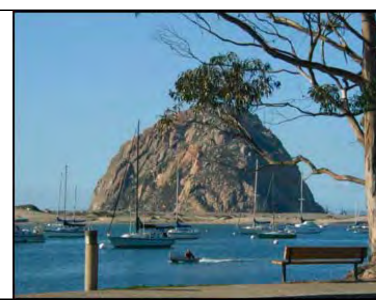
Environmental Resource	Description	Image
San Luis Obispo Coastal Zone spanning 118 miles of coastline with numerous wide sandy beaches, sheltered bays, and vista pints offering scenic views of the Pacific Ocean.	The coastal zone of San Luis Obispo County is known throughout the state for its beauty and diversity. The north coast is characterized by the rugged headlands to Big Sur. The rocky shoreline along the Hearst Ranch is highly valued for offshore views of marine mammals as well as scenic cliffs and rocky points. The beach, sandspit, and extensive wetlands of Morro Bay form a unique setting for wetland habitat study. The sheltered coves and beaches of Avila Beach and Pismo Beach state parks provide a contrast to the marine terrace and offshore rocks of the north coast shoreline.	
80 miles of beaches and more than 50 public coastal access areas	William Randolph Hearst Memorial State Beach San Simeon State Beach Moonstone Beach Cayucos Beach Cayucos State Beach Morro Strand State Beach Atascadero Beach Montano de Oro State Park Port San Luis Pier and Beach Avila State Beach Pismo State Beach Harmony Headlands State Park Oceano Dunes State Vehicles Recreation Area	
Critical Coastal Areas (CCAs)	California's Critical Coastal Area (CCA) Program focuses efforts on coastal zone watershed areas in critical need of protection from polluted runoff. Morro Bay, Chorro Creek, Los Osos Creek, and San Luis Obispo Creek, have been designated as CCAs in the region. The state has selected the Salinas River and San Luis Obispo Creek to be priority CCAs for the Central Coast Region.	 **Mouth of San Luis Obispo Creek**
Morro Rock Ecological Preserve, Bird Sanctuary, and Heron Rookery	Morro Bay is one of the most significant migratory stops on the Pacific Flyway. The City of Morro Bay is a designated bird sanctuary. Morro Rock is one of the few known nesting sites for Peregrine Falcons on the coast north of the Channel Islands. The Heron Rookery is a dense stand of tall eucalyptus trees overlooking Morro Bay and is the biggest great blue heron rookery along the Central Coast.	

Table C-21. Environmental Resources within the San Luis Obispo IRWM Plan Region

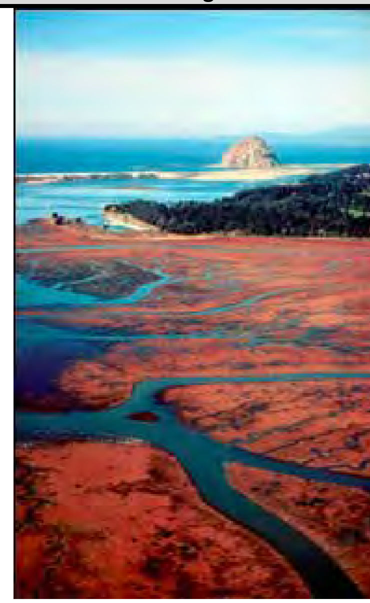
Environmental Resource	Description	Image
Morro Bay National Estuary	The most important wetland on the California central coast. The Morro Bay estuary supports several biotic communities including coastal salt marsh, tidal mudflats, and coastal scrub.	 **From the Morro Bay National Estuary Program**
Monterey Bay National Marine Sanctuary	The Monterey Bay National Marine Sanctuary (MBNMS) is a Federally protected marine area off the shore of California's central coast. Stretching from Marin to Cambria, the MBNMS supports one of the world's most diverse marine ecosystems and is home to numerous mammals, seabirds, fishes, invertebrates and plants in a remarkably productive coastal environment.	
Hearst Ranch Conservation Project	With 82,000 acres reaching from the ocean, over the Santa Lucia Mountain Range and to Lake Nacimiento, the Ranch contains extraordinary natural resources. Its 18 miles of coastline includes the spectacular San Simeon Point, beach habitat for elephant seals, the renowned "Windsurfers" beach, surfing beaches and the Piedras Blancas Light Station. The Ranch is bordered in the north by Los Padres National Forest and Fort Hunter Liggett. The Ranch interior encompasses rolling grasslands, oak and pine forests, and numerous riparian areas including the Arroyo San Carpoforo, Arroyo de La Cruz and its 42 square mile watershed, Pico Creek and Little Pico Creek.	 **From the American Land Conservancy**

Table C-21. Environmental Resources within the San Luis Obispo IRWM Plan Region

Environmental Resource	Description	Image
Montano de Oro State Park	This state park includes a seven-mile long shoreline made up of sandy beaches along the sand spit to the north and rugged cliffs and headlands to the south. The central and southern part of the park features a number of small coves with sandy beaches. The park includes more than 8,000 acres, is largely undeveloped, and features a wide range of wildlife including rabbits, squirrels, skunks, raccoons, badgers, deer, fox, bobcats, coyote, and even an occasional mountain lion. There are also many kinds of birds, and in the spring and early summer a brilliant display of wildflowers.	
Sweet Springs Ecological Preserve	A saltwater marsh which is an unusual combination of a tidal salt marsh and a freshwater spring which is adjacent to and flows into Morro Bay. The Preserve is used as a feeding and resting area by many species of shorebirds and water fowl.	
Estero Bluffs State Park	The Estero Bluffs State Park is a rich, diverse, and particularly scenic area of the Pacific Ocean coast, with sea stacks and intertidal areas, a substantial area of wetlands, low bluffs and coastal terraces punctuated by a number of perennial and intermittent streams, and containing a pocket cove and beach at Villa Creek. The property's rich diversity of habitat types includes marine, intertidal, estuarine, riverine, coastal salt marsh, freshwater marsh, coastal foredune, coastal and riparian scrub and grassland, collectively providing habitat for a number of endangered species, including the snowy plover.	
Upper Salinas River	The Salinas River has the reputation of being the largest submerged stream in the United States.	

Table C-21. Environmental Resources within the San Luis Obispo IRWM Plan Region

Environmental Resource	Description	Image
Santa Maria River	The Santa Maria River lies in both Santa Barbara and San Luis Obispo County. Though only high tides inundate the estuary, 35 acres of salt marsh are present.	 **Mouth of Santa Maria River**
Guadalupe-Nipomo Dunes wetland complex	The largest Coastal dune ecosystem in the Western US, the Guadalupe-Nipomo Dunes preserve comprises 18 miles of the largest, most biodiverse, coastal dune-lagoon ecosystem on earth. With 1,400 known species of birds, plants and animals and with the highest sand dune on the west coast, it is a place of rare beauty and significance.	
Oso Flaco Lake Natural Reserve, Nipomo Dunes and the Dune Lakes	Oso Flaco Lake is a sensitive coastal dune habitat and wetland area that provides important wildlife habitat including habitat for the rare and endangered Least Tern. The Dune Lakes are a series of ten freshwater lakes located in the hollows of the Nipomo Dunes. These lakes are important to birds in the Pacific flyway and provide important nesting areas for water fowl and other marsh associated species. The area is in agricultural preserve to protect farmland and wildlife habitat.	
Groundwater basins	Paso Robles Groundwater Basin* Morro and Chorro Valley Groundwater Basins* Santa Maria Groundwater Basin* Los Oso Valley Groundwater Basin* Santa Rosa Creek Groundwater Basin* San Simeon Creek Groundwater Basin* San Luis Obispo Creek Groundwater Basin* Cuyama Valley Groundwater Basin*	
Four major drinking water reservoirs	Whale Rock Reservoir*, Salinas Reservoir*, Nacimiento Reservoir*, and Lopez Lake*	
Whale Rock Reservoir	Whale Rock Reservoir is a 40,662 acre foot reservoir created by the construction an earthen dam on Old Creek near the town of Cayucos. The dam was designed and constructed by the State Department of Water Resources in 1961 to provide water to the City of San Luis Obispo, Cal Poly State University and California Men's Colony. The Whale Rock Dam captures water from a 20.6 square mile watershed and water is delivered to the three agencies through 17.6 miles of 30-inch pipeline and two pumping stations.	

Table C-21. Environmental Resources within the San Luis Obispo IRWM Plan Region

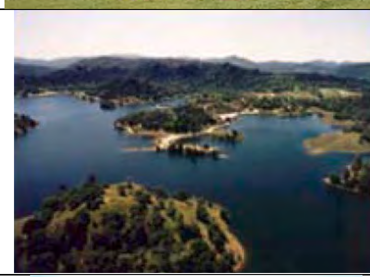
Environmental Resource	Description	Image
Lake Nacimiento	Lake Nacimiento is a water conservation and flood control project and has recreational resource of with inter-regional significance. Bald eagles are often sited here. The Nacimiento Dam was constructed in 1957 by Monterey County Flood Control and Water Conservation District (now known as the Monterey County Water Resources Agency (MCWRA)). The dam and reservoir continue to be operated by MCWRA. The lake has a capacity of 377,900 acre feet and a surface area of 5,727 acres. Water is collected from a watershed that is comprised of grazing lands and rugged wilderness.	
Lopez Lake	The San Luis Obispo County Flood Control and Water Conservation District completed the Lopez Dam in 1968 to provide a reliable water supply for agricultural and municipal needs. Lopez Lake covers 950 surface acres of water and has 22 miles of oak covered shoreline. Bald eagles are sited here.	
Santa Margarita Lake (Salinas Reservoir)	The Salinas Dam was built in 1941 by the War Department to supply water to Camp San Luis Obispo and, secondarily, to meet the water needs of the San Luis Obispo. The Salinas Reservoir (Santa Margarita Lake) captures water from a 112 square mile watershed and can currently store up to 23,843 acre-feet. Bald eagles are often sited here.	
Los Padres National Forest	Los Padres National Forest encompasses nearly two million acres in the coastal mountains of central California. Endangered California condors are found in Los Padres National Forest.	
Carrizo Plains National Monument and Ecological Reserve and Soda Lake	The 180,000 acre Carrizo Plain National Monument is California's largest nature preserve with more endangered vertebrates than any other place in California. In the spring, an amazing display of native wildflower blooms can be seen. Soda Lake is an ephemeral alkaline wetland that is all that remains of a prehistoric sea. One of the largest undisturbed alkali wetlands in the state, the 3,000 acre lake provides important habitat for migratory birds, including shorebirds, waterfowl, and a quarter of the state's wintering sandhill crane population.	

Table C-21. Environmental Resources within the San Luis Obispo IRWM Plan Region

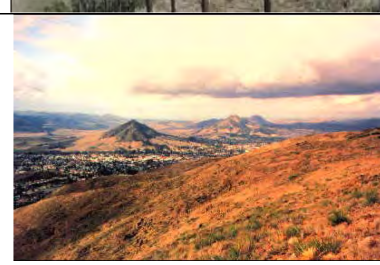
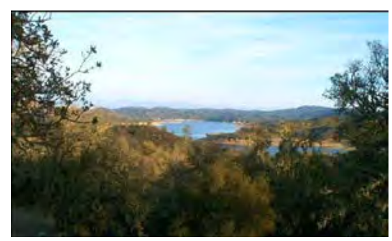
Environmental Resource	Description	Image
Santa Lucia Wilderness	20,412 acres of wilderness located inland from Arroyo Grande and San Luis Obispo include chaparral-covered peaks, stream fed valleys, and the vista of Morro Rock and seven of the nine volcanic morros that mark the region.	
Machesna Mountain Wilderness	Pine crowned peaks, majestic rocky crags and views of the snowcapped Sierras characterize the Machesna Wilderness. The 20,000 acre wilderness became part of the National Wilderness System in 1984. Chaparral oak woodlands and conifer forests blanket its rugged terrain. The Wilderness also contains a 1,500 acre Research Natural Area dedicated to the study of a unique strain of Coulter pine. Prairie falcon, deer, mountain lions, black bear, and tule elk make their home in the undisturbed landscape. Part of the wilderness is designated critical habitat for the California condor.	
Caliente Wildlife Area	Caliente Mountain, the highest peak in the county at more than 5,100 feet, is within the range of the endangered California Condor, the blunt nosed leopard lizard, and the rare San Joaquin kit fox.	 **View of Caliente Mountain proposed wilderness from the Carrizo Plain**
Greenbelts and Open Spaces	San Luis Obispo Greenbelt Program Los Osos Greenbelt	
Irish Hills Natural Reserve	The Irish Hills Natural Reserve contains a coastal terrace, Bishop pine and oak forests, and scenic canyons with waterfalls. The coastal terrace both north and south of Diablo Canyon supports a variety of coastal species that differ from other coastal areas. One of the largest conifer forests and some of the largest oaks in the county are located here. Ruda Ranch is located in the Irish Hills and includes a unique plant community.	
Nine Sisters of San Luis Obispo	Nine volcanic morros spanning from San Luis Obispo to Morro Bay including Morro Rock, Black Hill, Cabrillo Peak, Hollister Peak, Cerro Romauldo, Chumash Peak, Bishop Peak, San Luis Mountain, and Islay Hill. The Morros provide a unique habitat for many animal and plant species. Several plant communities exist along the chain, which, due to its orientation, has micro climates ranging from sea-spray saturated rocks, through moss draped oak forests to parched chaparral slopes.	 **Photo courtesy of Gary Felsman and the Santa Lucia Chapter of the Sierra Club**
San Andreas Fault Zone of Eastern San Luis Obispo County	The sag ponds along the fault have special ecological significance due to the extraordinary preservation of the fault trace in the arid climate and the presence of special status plants.	

Table C-21. Environmental Resources within the San Luis Obispo IRWM Plan Region

Environmental Resource	Description	Image
More than 50 hiking trails	Some examples include the California Coastal Trail (in progress), the East-West Ranch, the Pecho Valley Trail, and Reservoir Canyon Trail.	
Elfin Forest	The Elfin Forest Natural Area on the southeastern shore of Morro Bay is a diverse and complex assemblage of natural plant communities that includes coastal brackish marsh, riparian woodland fringe, pygmy oak woodland, grassland, coastal dune scrub and oak manzanita association. It supports a documented 25 species of mammals, over 110 kinds of birds, and 11 species of reptiles and amphibians.	
Los Osos Oaks State Reserve	85 acre area located near the town of Los Osos that contains a grove of coast live oaks including some mature oaks that are no more than six to eight feet in height. These dwarfed oaks grow in the mineral depleted soil of ancient sand dunes. A wide range of plants and animal diversity can be seen here including three kinds of lichens not found elsewhere.	 **Photo courtesy of Gary Felsman and the Santa Lucia Chapter of the Sierra Club**
Cambria Monterey Pine Forest	Cambria's Monterey pine forest, one of only three native stands left in the state, five in the world	 **Photo courtesy of Greenspace The Cambra Land Trust**
Knobcone Pine Forest	The Knobcone pine (Pinus attenuate) is restricted to an area at the Cuesta summit. Coulter pine (Pinus coulteri) is also in this area.	
Upper Salinas Oak Woodlands	Seven distinct native plant communities provide wildlife habitat. These communities include valley oak woodland, blue oak woodland, Central Coast live oak riparian forest, Central Coast cottonwood-sycamore riparian forest, Central Coast riparian scrub, freshwater seeps, and Claypan vernal pools.	

Table C-21. Environmental Resources within the San Luis Obispo IRWM Plan Region

Environmental Resource	Description	Image
Agricultural preserves	The county's rich agricultural resources are protected through a variety of activities in the Agricultural Resources Program. Nearly 1.3 million acres (over 61%) of the land area of the county is designated for agricultural land use.	
Class I Steelhead Streams	Arroyo Grande Creek Pismo Creek East Corral de Piedra West Corral de Piedra San Carpoforo Creek Santa Rosa Creek	
Black Lake Canyon	One of the few remaining freshwater marshes in this area used by migratory waterfowl. This unique canyon bisects the Nipomo Mesa and was once part of a stream system that flowed directly into the ocean. Over geologic time, however, the Canyon became isolated from its historic basin. Today, the bottom of the Canyon is still home to unique wetland habitats fed by groundwater and rain. The isolation of the canyon habitats has also encouraged the development of a unique set of plant species. Black Lake Canyon is one of the only known habitat areas that supports the endangered marsh sandwort and the Gambel's watercress.	 **Photo courtesy of the Land Conservancy of San Luis Obispo County**
Rocky Butte Botanical Area	This high ridge between Rocky Butte and Monterey County has outstanding botanical value and serves as a valuable scenic backdrop.	
Tierra Redonda Mountain Natural Area	Tierra Redonda Mountain, situated in northwestern San Luis Obispo County between Lake Nacimiento and Lake San Antonio was designated as open space to retain areas with fragile plant or animal communities in a natural or undisturbed state. The dominant plant community is blue-oak woodland. Grassland, chaparral, and unique sand dunes also occur here. One of the largest concentrations of Chorizanthe species in the world is found here. Sensitive plant species include one-awned spineflower, Salinas Valley goldfields, San Luis Obispo County lupine, and ribbonwood. Prairie falcons are also known from this area.	
Cuesta Ridge Botanical Area	Scenic ridge northwest of the Cuesta grade that contains a Sargent cypress grove with a rare local endemic plant, Cuesta Pass checkerbloom (Sidalcea hickmannii ssp. Anomala).	
Rinconada Mine Botanical Area	An outstanding representative foothill woodland community with a wide diversity of species including the rare and endangered Monardella palmeri.	
Fisheries	Morro Bay and Port San Luis are major fishing harbors. Sportsfishing is very popular in Lake Nacimiento, Santa Margarita Lake, and Lopez Lake.	

C.11 MANAGEMENT ISSUES

This section summarizes the known and potential watershed management issues within the San Luis Obispo IRWM Plan Region. The tables contain information collected from the Watershed Snap Shots.

C.11.1 North Coast

Table C-22. Management Issues for the North Coast Sub-Region

Watershed	Issue	Potential Causes
Big Creek	Seawater intrusion into GW basin	Reduced groundwater quantity
	Limited GW basin yield	
	Outdated Groundwater Basin data	
San Simeon - Arroyo De La Cruz	Loss of riparian vegetation	
	Lack of instream flow	Pumping/diversions from water right holders
	Excessive sedimentation	
	Gravel mining	
	Grazing/Cattle	
	Low dissolved oxygen kills fish in the lagoon	
	Water pollution	Sewage leaks/overflow, general agriculture/row crops
	Poaching	
	Sea Water Intrusion	
	Currently the water supply of San Simeon CSD is at a certified Level III severity rating (resource capacity has been met or exceeded) due to unreliability of the groundwater supply to meet existing demands (SLO County, 2008). As a result, a moratorium on development has been in place since 1991.	
	Outdated hydrological studies for area GW basins	
Santa Rosa Creek	Surface flow quantity	Extraction and diversions
	Surface Water Temperature	Limited riparian cover
	Low dissolved oxygen in lagoon	Low instream flows
	Fine sediment in lower reaches	Historical land clearing
	Fish Passage Barriers	Infrastructure changes over time
	Non-native invasive species	n/a
	Sedimentation	Grazing/Cattle
	Water Quantity	Groundwater extraction, low summer flow
	GW basin seawater intrusion	
	GW quality - chloride	
	Outdated basin studies – Villa Valley basin	
Cayucos Creek	Threat to lagoon	Channelization, pollution
	Loss of riparian width	Agriculture
	Lack of enforcement	

Table C-22. Management Issues for the North Coast Sub-Region

Watershed	Issue	Potential Causes
	Water quantity	Agricultural and residential extractions
	Sedimentation	
	Sea Water Intrusion (Cayucos Valley basin)	
	Nitrates	Agriculture
	Outdated Basin study – Cayucos Valley basin	
	Alluvial water deposits subject to drought impacts	
	Outdated groundwater basin analysis – Toro Valley	
Morro Bay	Accelerated sedimentation	Natural, increased impervious area, lack of vegetation due to land management and fire
	Bacterial contamination	Urban runoff, grazing area runoff, waste disposal from boats, domestic and wild animal waste, septic systems
	Elevated nutrient levels	Wastewater treatment effluent from California Men's Colony, cropland runoff, rangeland runoff, and natural
	Toxic pollutants	Historic mining operations, household and agricultural pesticides, detergents, soaps, oils and lubricants from street drainage, and household or commercial cleaning products, non-fouling paints and other chemicals used for boat maintenance, fuel spills, illegal dumping and emerging contaminants
	Scarce freshwater resources	Natural conditions plus use and impacted groundwater water quality
	Preserving biodiversity	species and habitat loss
	Environmentally balanced use	Important human uses necessarily have some impact on natural resources

C.11.2 North County

Table C-23. Management Issues for the North County Sub-Region

Watershed	Issue	Potential Causes
Black Sulphur Spring	Groundwater quality	
	Groundwater Quantity	Physical Limitations
	Outdated Studies of the GW basins	
Soda Lake	Groundwater quality	
	Groundwater Quantity	Physical Limitations
	Outdated Studies of the GW basins	
Upper San Juan Creek	Significant water level declines	
	Groundwater Quality	High concentrations of TDS, chlorides, sulfates, and boron
Atascadero Creek - Mid Salinas River	Significant water level declines	Range of groundwater uses in close proximity, including agricultural irrigation, municipal supply wells, golf course irrigation, and a relatively dense aggregation of rural "ranchette") users
	Groundwater Quality	High concentrations of TDS, chlorides, sulfates, and boron
	Limited Groundwater Basin information (rinconada basin)	

Table C-23. Management Issues for the North County Sub-Region

Watershed	Issue	Potential Causes
Santa Margartia Lake - South Salinas	No comprehensive studies to determine the perennial yield of the Santa Margarita Valley Groundwater Basin are known to exist	
	Outdated information for Pozo GW basin	
Paso Robles Creek - North Salinas River	Significant water level declines	Range of groundwater uses in close proximity, including agricultural irrigation, municipal supply wells, golf course irrigation, and a relatively dense aggregation of rural "ranchette") users
	Groundwater Quality	High concentrations of TDS, chlorides, sulfates, and boron
Cholame Creek	Significant water level declines	
	Limited groundwater quality information – Cholame Valley basin	
	No yield information and limited hydrogeologic information for Cholame Basin	
	Groundwater Quality	High concentrations of TDS, chlorides, sulfates, and boron
Estrella River	Significant water level declines	Range of groundwater uses in close proximity, including agricultural irrigation, municipal supply wells, golf course irrigation, and a relatively dense aggregation of rural "ranchette") users
	Groundwater Quality	High concentrations of TDS, chlorides, sulfates, and boron
Huer Huero Creek	Significant water level declines	Range of groundwater uses in close proximity, including agricultural irrigation, municipal supply wells, golf course irrigation, and a relatively dense aggregation of rural "ranchette") users
	Groundwater Quality	High concentrations of TDS, chlorides, sulfates, and boron
Indian Valley	Significant water level declines	Range of groundwater uses in close proximity, including agricultural irrigation, municipal supply wells, golf course irrigation, and a relatively dense aggregation of rural "ranchette") users
	Groundwater Quality	High concentrations of TDS, chlorides, sulfates, and boron
Lower San Juan Creek	Significant water level declines	
	Groundwater Quality	High concentrations of TDS, chlorides, sulfates, and boron
Nacimiento	Significant water level declines	
	Groundwater Quality	High concentrations of TDS, chlorides, sulfates, and boron

C.11.3 South County

Table C-24. Management Issues for the South County Sub-Region

Watershed	Issue	Potential Causes
Coastal Irish Hills	Residential development; loss of habitat	Construction of growth inducing infrastructure
	Agricultural development; loss of habitat	
	Sedimentation and loss of riparian cover	Overgrazing
	Proliferation of non-native species	Recreational uses
	Habitat degradation	Recreational uses

Table C-24. Management Issues for the South County Sub-Region

Watershed	Issue	Potential Causes
San Luis Obispo Creek	Riparian Vegetation / Buffer Quality (Lack of riparian canopy)	Removal of riparian vegetation by landowners and livestock
	Surface Water Nutrients and Dissolved Oxygen	Agriculture, municipal, lack of riparian canopy
	Surface Water Temperature	Lack of riparian canopy
	Surface Water Pathogens	Described in TMDL for Pathogens (RWQCB, 2004)
	Surface Water Treated Effluent	City of San Luis Obispo's Wastewater Facility discharged
	Surface Water Priority Organics	Unknown
	Surface Water Quantity	Natural, diversions (permitted and unpermitted), evaporation, and exotic plants
	Instream Fish Habitat	Lack of riparian canopy and instream shelter, sedimentation of stream cobble
	Fish Passage Barriers	Roads, culverts, other instream structures
	Streambank Stability (Erosion)	Development encroachment, channel incision, vegetation removal, overgrazing, agriculture, roads and utility construction
	Upland Erosion and Sedimentation	Vegetation removal, intensified grazing, unpaved roads, and disturbance associated with construction
	Exotic Plant Species	None identified.
	Non-Native Fish – Carp and Chinook Salmon	None identified.
	Debris Accumulation	garbage, residential, commercial and agricultural products
	Flooding	Natural, increased impervious areas, encroachment on floodplain
Arroyo Grande Creek	Surface Water Temperature	Lack of riparian canopy
	Surface Water Nutrients and Dissolved Oxygen	Increase in urban land use
	Surface flow Quantity	Natural, groundwater diversions, impoundment
	Groundwater Quantity	(Not IDed in WMP but can be inferred)
	Fish Passage Barriers	Road crossings, culverts, dams and other structures
	Erosion and Sedimentation	Natural, "hungry water" from dam release, lowering base flow level of mainstem, increased impervious areas, unvegetated roads and fields
	Flood Management	Loss of floodplain and encroachment of development
Nipomo - Suey Creeks	Flooding	Development in 100 year flood hazard zone, improperly sized culverts, lack of maintenance of existing drainage structures
	Habitat Fragmentation	Development
	Surface Water Quality	Erosion, Sedimentation, bacteria from wildlife, domestic animals/livestock and urban areas, nutrients from
	Invasive species	
Pismo Creek	Surface Water Temperature	Lack of riparian canopy
	Surface Water Nutrients and Dissolved Oxygen	Agriculture, increased runoff due to development
	Ocean Water Quality – Fecal coliform	Birds, domestic animal waste, faulty septic systems, homeless encampments
	Surface flow Quantity	Natural, groundwater diversions, impoundment
	Groundwater Quantity	Physical limitations, production
	Fish Passage Barriers	Multiple sites inaccessible to fish traffic
	Erosion and Sedimentation	Drought/storm years weaken banks, agricultural practices
	Flood Management	Development in floodplains
Santa Maria River	Effects of Cattle grazing Unknown	Limited Study
	Impaired surface water quality	Grazing, crop land
	Occurrence of endangered or threatened species on private land and potential for incidental take.	None

Table C-24. Management Issues for the South County Sub-Region

Watershed	Issue	Potential Causes
	Lack of data on plant and wildlife species.	Limited study
	Vegetation in the channel concentrates and diverts flows, and causes erosion and flooding of low-lying areas.	Vegetation in the channel
	Land use practices on [Santa Maria River] study reach and dune parcels may be incompatible with plan goals	Limited land available for enhancement
	Presence of levees that restrict or otherwise modify flows, flow channels, and sediment transport corridors	Levees along Santa Maria River
	Invasive riparian plant species that establish in the [Santa Maria River] study reach may impede flood flows, interfere with agricultural operations, cause ecological degradation, and spread into adjacent habitats	Invasive riparian plants
	Sediment accretion in the [Santa Maria River] study reach and erosion along the shoreline	Twitchell dam changes to sediment transport
	Run-off from urban areas contributes nitrates and other pollutants into the [Santa Maria River] study reach	Urban
	Oso Flaco Lake – DDT and dieldrin	Undetermined, sediment
Alamo Creek	Erosion – Upland	Not identified.
	Sedimentation of Twitchell Reservoir	Natural and upland erosion primarily from Cuyama River
Huasna River	Sedimentation of Twitchell Dam	Natural and upland erosion primarily from Cuyama River.
Cuyama River	Sedimentation of Twitchell Reservoir	Natural and upland erosion
	Groundwater Supplies	Natural, water extraction

C.12 CLIMATE CHANGE

The following information is based on analysis conducted for the Watershed Snap Shots. Based on a set of climate scenarios prepared for the California Energy Commission, Cayan et al. (2009) project that, under medium to medium-high greenhouse gas emissions scenarios, mean sea level along the California coast will rise from 3 to 5 feet (1–1.4 m) by the year 2100. In the Santa Rosa Creek watershed, such a rise in sea-level would put new areas at risk of flooding, increase the likelihood and intensity of floods in areas that are already at risk, and accelerate shoreline recession due to erosion (Heberger et al. 2009). Many Coastal residents are elderly and depend on transportation (and evacuation) routes that are at risk from erosion, flooding, wildfires, and landslides. Coastal habitats may experience increased sedimentation in marshes, estuaries and streams, a decline in number of coastal birds, sea water intrusion into estuaries, creeks and wells, decline of rare habitats, marine and nearshore marine species threatened by acidification of ocean waters and changes in ocean currents, changes in fog patterns could lead to loss of coastal oak (elfin) forests. Freshwater and riparian systems will be affected by increased groundwater pumping and dam building (ClimateWise, 2010).

Additional detailed information related to the potential climate change impacts related to the IRWM Plan and Project Implementation can be found in **Section P - Climate Change**.

C.13 IRWM PLAN REGIONAL ISSUES AND CONFLICTS

As discussed in **Section E – IRWM Goals and Objectives**, stakeholders were asked to provide input on their Sub-Region's three most critical water resources issues (i.e. major water related objectives and conflicts). **Section E** also describes how these major water related objectives and conflicts relate to the development of the objectives, implementation strategies, and implementation projects intended to provide resolution. These major water related objectives and conflicts are discussed in more detail herein in the form of a case-study for each Sub Region.

C.13.1 North Coast Sub Region

Figure E-2 indicates water reclamation as the issue of greatest concern for the North Coast Sub-Region due to the small coastal communities not having sufficient groundwater supplies or sea water intrusion (the third most important issue) limiting groundwater basins' safe yield.

For example, the coastal communities of Cambria and San Simeon are 100 percent dependent on their respective local watersheds to capture rainfall for groundwater basin recharge and to sustain continuous flows in creeks to feed municipal underflow wells near the their outlet to the Pacific Ocean. During dry months and extended drought conditions, Cambria and San Simeon lack sufficient water to meet peak water demands, leaving the community without water for outdoor irrigation and adequate fire flow protection. These communities are isolated from regional water supplies, making local recycled water, storage and desalination projects the most feasible projects from a supplemental water supply perspective. From a practical perspective, high cost-to-customer ratios, regulatory permitting challenges, and heated public debate about the appropriate approach to water resources management has historically prevented or slowed project development.

Nevertheless, these two communities (as with all North Coast Sub-region communities) have made conservation and drought response a way of life and have developed comprehensive water management plans that include the strategic use of recycled water as described in the Regional Recycled Water Strategic Plan (Appendix P). San Simeon currently produces recycled water that is trucked for use in the coastal communities. San Simeon's efforts to develop a recycled water distribution system and Cambria's effort to develop a drought response project that involves treating brackish groundwater are examples of objectives for these communities to address the issue.

C.13.2 North County Sub Region

Figure E-3 indicates the most significant issues for the North County Sub-Region. The most significant example of these issues is the debate over how to manage and stabilize water levels in the Paso Robles Groundwater Basin (Paso Basin)[13] and associated watersheds for human and environmental needs. There is general consensus that developing and implementing a comprehensive management plan to stabilize or improve groundwater levels is needed. However, the questions of who will make decisions, who will use less, what projects to implement, and who will pay are the subjects of current debate. The multiple (namely agricultural, ecosystem, municipal and rural) water users of this finite resource, the multiple legal ways the resource can be used and the multiple associated regulations and laws related to use of the resource creates multiple sets of conflicting answers, which are as diverse as the perspectives of the groundwater basin users. Consequently, multiple approaches to finding the answers are underway for the Paso Basin, and generally fall into three categories of effort - legislative-based, land-use based, and court-based - each with their own set of objectives to address the issue.

Legislative-Based Objectives: The majority of the Paso Basin is overlaid by individual property owners as illustrated in **Figure C-32**. Historically, the San Luis Obispo County Flood Control and Water Conservation District, in coordination with local agencies, local stakeholders and Monterey County agencies, has led the development of regional Paso Basin studies and plans, and Paso Basin-related regional projects, such as the Nacimiento Water Project. Declining water levels in a significant portion of the Paso Basin has led to the recognition by multiple Paso Basin stakeholder groups, most notably the Blue Ribbon Committee formed to implement the AB 3030 Groundwater Management Plan (AB 3030 Plan) for the Paso Basin, that an organized approach to groundwater management via the formation of a water district to unite the individual property owners is needed. These stakeholder groups advocate for an entity

[13] Please refer to Appendix Paso Robles Groundwater Basin Model Update Report (2014) and <www.pasobasin.org> for more information on the condition, current activities, and historical information for the Basin.

independent from the county to implement a groundwater management plan and to "sit at the table" with other agencies that overlay the Paso Basin to manage the basin as a whole. Upon review of the options in the California Water Code for such an entity, two stakeholder groups,[14] after months of debate, reached a compromise on a proposal for special legislation to modify the governing board of a California Water District, should one be formed in the Paso Basin, to better reflect the diversity of entities that rely on the basin. That legislation is currently being vetted through the legislative process, and, if approved, would allow the local stakeholder groups to move forward with a Local Agency Formation Commission-application to hold an election to possibly create a Paso Basin Water District.

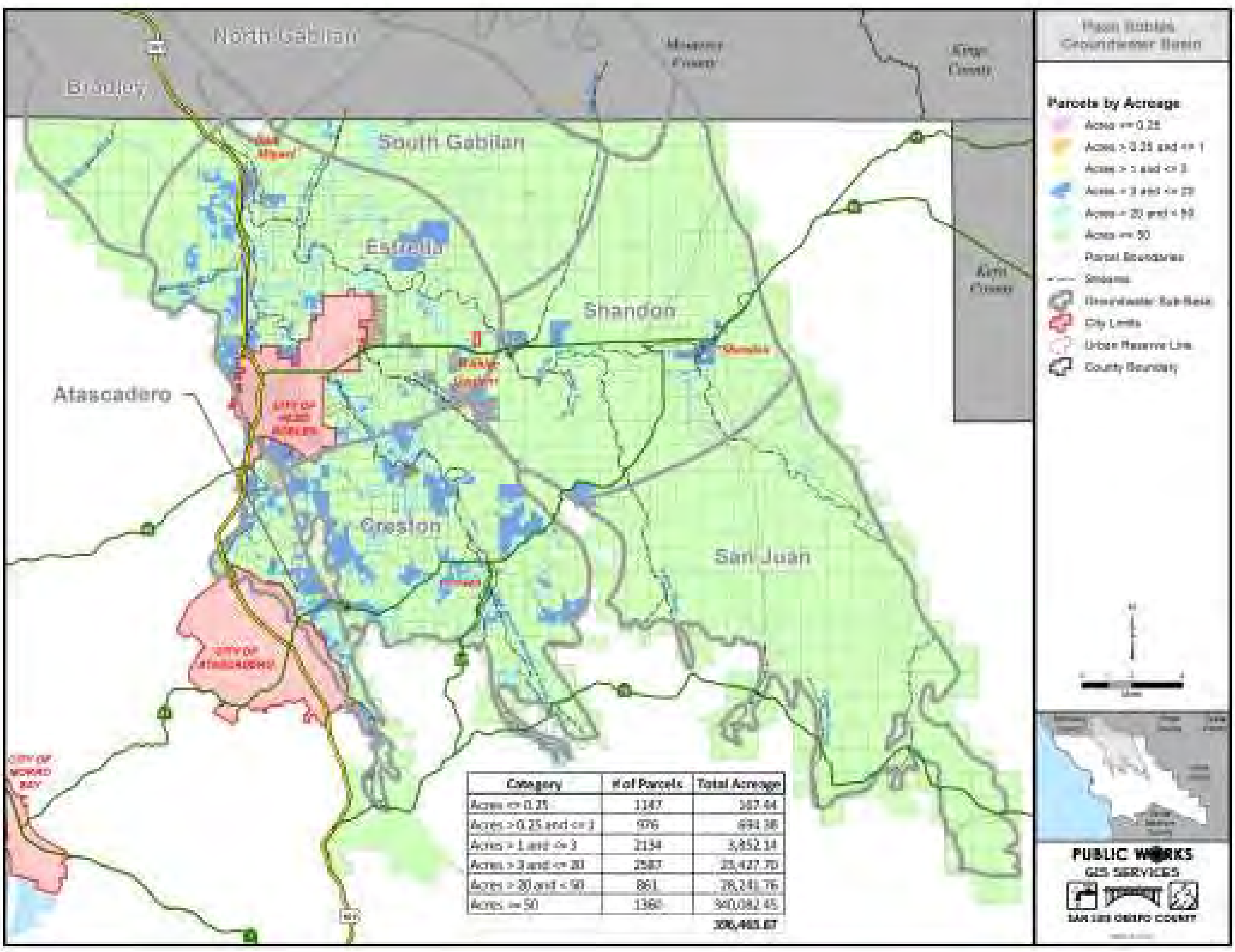


Figure C-32. Paso Basin Overlaid by Individual Property Owners

[14] PRAAGS (www.praags.org) and PWE <www.prowaterequity.org>

Concurrent to this process, the Flood Control District, in coordination with its Paso Basin Advisory Committee, is proceeding with 1) an analysis of water supply options for the Paso Basin, and 2) identifying an approach to update the existing AB 3030 Plan, which is intended to inform and guide the ultimate basin management authority. Issues to be addressed via the AB3030 Plan amendment process include addressing the requirements of any new groundwater legislation, identifying the conditions to achieve and/or maintain in the basin (i.e. Basin Management Objectives), identifying the detailed projects and programs (including conservation and monitoring) needed over time to achieve those conditions, and costs.

Land Use-Based Objectives: In response to declining levels, the County approved an urgency ordinance to establish a moratorium on new or expanded irrigated crop production, conversion of dry farm or grazing land to new or expanded irrigated crop production, and new development dependent upon a well in the Paso Robles Groundwater Basin (Basin) unless such uses offset their total projected water use by a ratio of 1:1. The ordinance also requires the installation of meters on new wells associated with the above uses. The ordinance specifies uses that are not subject to the ordinance and contains exemptions including replacement wells for any of the prohibited uses. The ordinance applies to all properties located within the unincorporated areas of San Luis Obispo County that overlie the Paso Robles Groundwater Basin except those properties that overlie the Atascadero Sub-Basin, and properties served by County Service Area 16 (Shandon) and the San Miguel Community Services District. The ordinance was extended for a full two years on October 8, 2013 (Ordinance 3247). The Urgency Ordinance will expire on August 26, 2015, and County staff has been directed to investigate options for long term ordinances to address land use over the basin and/or groundwater use.

Court-Based Objectives: A quiet title claim lawsuit has been filed by certain stakeholders that asks the court to affirm the rights of overlying property owners to access basin groundwater. The quiet title claim may be the first step towards an adjudication, in which the court decides who has rights to groundwater in the basin and in what quantity since water purveyors currently depend on water from the basin to serve their customers. These stakeholder groups advocate that court-supervised groundwater management is the most fair and beneficial option for landowners who wish to retain their full water rights under California law.

C.13.3 South Coast Sub Regions

Figure E-4 indicates groundwater management as the issue of greatest concern for the South County Sub-Region due to the challenges of managing the adjudicated Santa Maria

Groundwater Basin and water shortage problems, though additional issues of concern relate to flood control (second issue of concern).

The outcome of the adjudication has established certain requirements of the management groups formed, however basin users are still faced with the challenge of increasing competition for a limited resource. Opportunities for integrating water resource management strategies within the Santa Maria Groundwater Basin to address needs exist and are reflected in the various implementation strategies and projects identified in the IRWM Plan for the South County Sub-Region, however funding and affordability remains the major challenge for implementation.

C.14 ECONOMIC CONDITIONS AND TRENDS

Historically, SLO County has moved in tandem with the state in regards to a few key economic indicators. The historic unemployment rate has consistently been approximately two (2) percent below the state unemployment rate over the last 20 years. While SLO County has grown faster than the state since 1990, it has experienced similar trends in terms of job gains and losses over the analyzed time-period.[15] Table C-48. outlines the recent population growth from 2005 through 2012 and the anticipated growth through 2040.

Table C-25. San Luis Obispo County Population Data and Projections

	2005	2010	2012	2015	2020	2025	2030	2035
Cities	143,096	148,307	149,437	151,132	156,145	160,863	166,755	172,712
Unincorporated	98,775	104,324	105,575	107,452	113,789	118,982	125,467	132,023
Countywide	258,159	269,637	272,018	275,590	286,940	296,851	309,228	321,742

Source: AECOM for SLOCOG, July 2011
Note: Population projections include group quarters (estimated at 17,006 for 2010-2040).

The regional, state, and national economic conditions influence migration flows significantly. Furthermore, the perception of the place, housing market, available jobs, etc. will influence people throughout the region, state, and nation to relocate in SLO County. As a result, the economy in SLO County and the state are expected to grow slowly.[16]

[15] AECOM Technical Services, *San Luis Obispo County 2040 Population, Housing, & Employment Forecast*. Prepared for San Luis Obispo Council of Governments (SLOCOG), 11 August 2011.
[16] AECOM Technical Services, *San Luis Obispo County 2040 Population, Housing, & Employment Forecast*. Prepared for San Luis Obispo Council of Governments (SLOCOG), 11 August 2011.

Since 1990, SLO County has averaged approximately 1,450 new dwelling units per year. The medium estimate is below the 20-year average, yielding an average of 1,340 and 1,160 units, respectively.[17]

Table C-49 summarizes the economic conditions for places within the San Luis Obispo IRWM Plan Region.

Table C-26. Economic Characteristics for Selected Places within the San Luis Obispo IRWM Plan Region

Census Designated Place	Median Household Income	Unemployment Rate %	% Below Poverty Level
Morro Bay city	$53,585	3.7	11.6
Cambria CDP	$72066	5.3	5.2
Los Osos CDP	$56918	5.2	8.7
Arroyo Grande city	$58725	7.2	5.9
Grover Beach city	$49010	6	13.1
Pismo Beach city	$63802	5.6	5.5
San Luis Obispo city	$40812	8.5	31.3
Nipomo CDP	$61495	8.7	9.4
Oceano CDP	$39843	7.3	13.2
Atascadero city	$65479	7.6	8.8
El Paso de Robles (Paso Robles) city	$57459	7.6	10
San Miguel CDP (San Luis Obispo County)	$42176	13.9	26.6
Santa Margarita CDP	$60737	13.2	12.7
Shandon CDP	$63920	11.5	21.9
Templeton CDP	$69,426	4.8	4.8
San Luis Obispo County	$56,967	5.1	13.1
Source: United States Census Bureau, American Fact Finder, "2008-2010 American Community Survey 3-Year Estimates". Accessed 06 December 2013.			

C.14.1 State Designated Disadvantaged Communities (DACs)

For the purposes of this IRWM Plan, a DAC is "a community with a median household income less than 80% of the Statewide average", which was $61,632 in 2010 according to the US Census. Eighty percent of this amount equates to approximately $49,000 ($61,632 x .80 = $49,305). San Miguel is a State designated DAC with a median household income (MHI) of $42,176. Likewise, San Simeon is a State designated DAC with a median household income (MHI) of $43,092. **Figure C-58** shows the DACs within the San Luis Obispo IRWM Plan Region, also including the state designated DACs of Oceano and the City of San Luis Obispo, and areas based on U.S. Census Tract information.

[17] AECOM Technical Services, *San Luis Obispo County 2040 Population, Housing, & Employment Forecast*. Prepared for San Luis Obispo Council of Governments (SLOCOG), 11 August 2011.

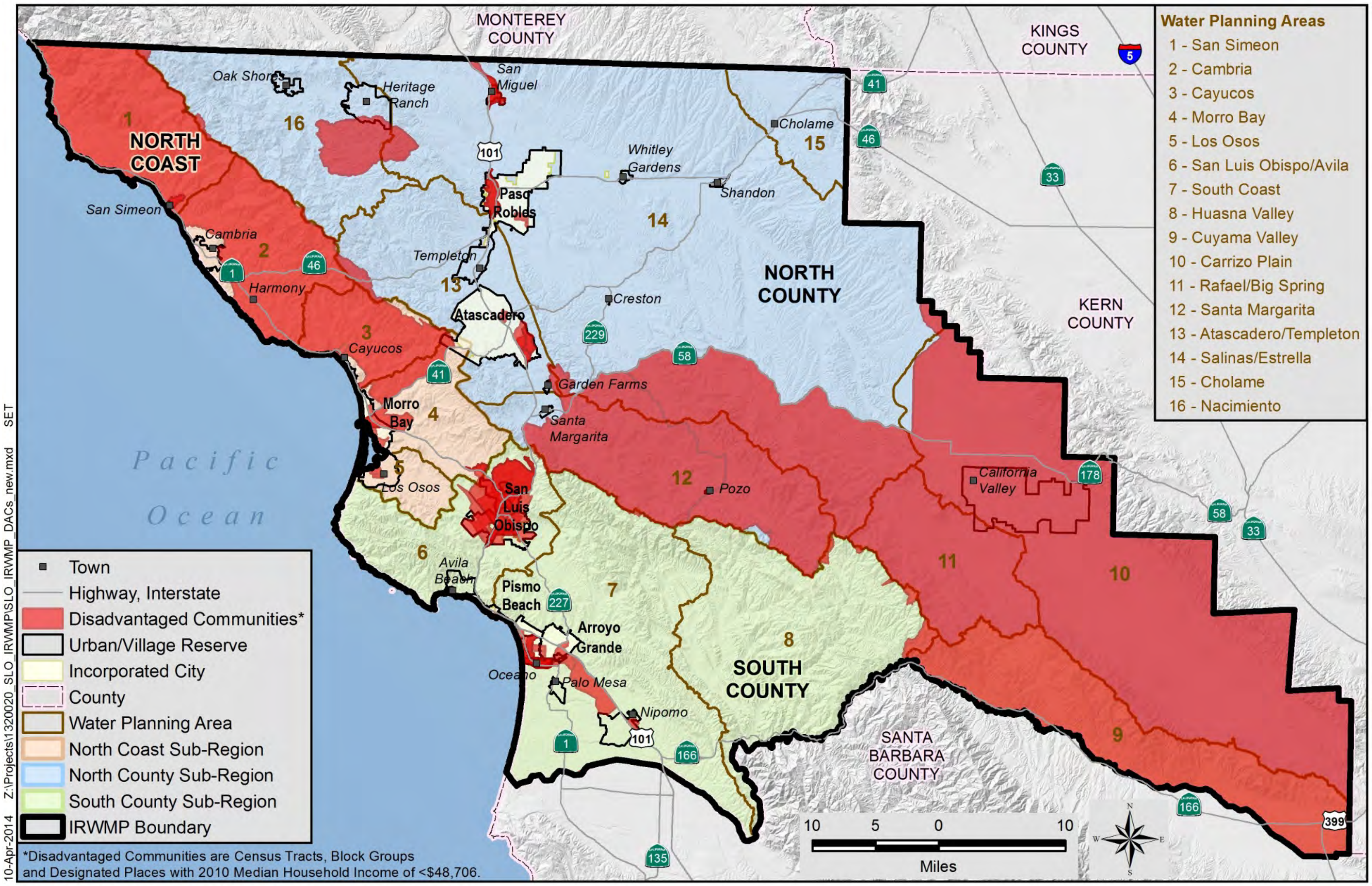


Figure C-33. Disadvantaged Communities by Census Tract and Census Designated Place

C.14.2 Projected Growth

Examining Census data since 1990, growth in SLO County has occurred mostly in Paso Robles and Unincorporated areas of SLO County. These two areas have attracted approximately 75 percent of net new population growth over the last 20 years. Other jurisdictions such as Grover Beach, Morro Bay, and Pismo Beach will continue historic trends of low population growth. Forecast information is based on the work conducted by AECOM, who analyzed California Department of Finance (DOF) data, the UCLA Anderson Forecast, and the Center for Continuing Study of the California Economy (CCSCE) California County Projections (2009/10 Edition).[18]

Based on the projections shown in **Table C-27**, buildout population would be reached sometime after 2035.[19]

The distribution of building permits in the unincorporated areas of the county has averaged 62% urban and 38% rural over the last 12 years. The County General Plan calls for directing development toward existing and strategically planned communities. In addition, a key element of the San Luis Obispo Council of Government's Regional Transportation Plan – Preliminary Sustainable Communities Strategy (RTP-PSCS) is to encourage development in existing urbanized areas with access to existing businesses and services.[20]

A key consideration in integrated regional water resource management planning is understanding the social and cultural makeup of the community. In U.S. EPA's Office of Sustainable Ecosystems and Communities guide, "Community Culture and the Environment: A Guide to Understanding a Sense of Place", EPA recommends profiling the community to understand the community's sense of place and shared community values. By understanding the social and cultural makeup of the community, social equity can be achieved through effective public participation and involvement in IRWM planning and implementation.

[18] AECOM Technical Services, *San Luis Obispo County 2040 Population, Housing, & Employment Forecast*. Prepared for San Luis Obispo Council of Governments (SLOCOG), 11 August 2011.
[19] County of San Luis Obispo, *2010-2012 Resource Summary Report San Luis Obispo County General Plan*, 12 March 2013.
[20] County of San Luis Obispo, *2010-2012 Resource Summary Report San Luis Obispo County General Plan*, 12 March 2013.

Table C-27. San Luis Obispo County Historic and Projected Population

	2000	2005	2010	2012	2015	2020	2025	2030	2035
North Coast Urban Area									
Morro Bay	10,152	10,338	10,073	10,100	10,152	10,244	10,482	10,778	11,078
Cambria	6,230	6,125	6,020	6,051	6,096	6,175	6,251	6,328	6,408
Cayucos	2,926	2,730	2,541	2,548	2,553	2,597	2,680	2,946	3,222
Los Osos	14,277	14,100	13,908	13,930	13,988	14,071	14,158	14,240	14,325
San Simeon	639	550	450	451	452	458	461	466	468
North Coast Total	**34,224**	**33,843**	**32,992**	**33,080**	**33,241**	**33,545**	**34,032**	**34,758**	**35,501**
South County Urban Area									
Arroyo Grande	15,641	16,360	17,078	17,256	17,524	18,407	18,933	19,591	20,256
Grover Beach	12,941	15,954	12,967	13,037	13,142	13,432	13,684	13,999	14,317
Pismo Beach	8,524	8,083	7,642	7,688	7,757	7,954	8,216	8,545	8,876
San Luis Obispo	42,312	43,125	43,937	44,229	44,668	45,969	46,704	47,622	48,550
Avila Beach/Valley	833	1,149	1,464	1,482	1,508	1,624	1,699	1,830	2,020
Nipomo	12,612	13,940	15,267	15,450	15,725	16,752	17,852	18,875	19,926
Oceano	7,244	7,176	7,108	7,194	7,322	7,799	8,153	8,670	9,001
South Coast Total	**100,107**	**105,787**	**105,463**	**106,336**	**107,646**	**111,937**	**115,241**	**119,132**	**122,946**
North County Urban Area									
Atascadero	24,945	25,966	26,986	27,138	27,366	28,003	28,940	30,109	31,292
Paso Robles	23,370	26,497	29,624	29,983	30,522	32,137	33,905	36,112	38,343
San Miguel	1,420	1,879	2,337	2,383	2,451	2,640	2,792	3,045	3,338
Heritage Ranch and Oak Shores	2,166	2,276	2,386	2,424	2,482	2,634	2,723	2,863	2,995
Santa Margarita	1,279	1,269	1,259	1,268	1,281	1,325	1,395	1,410	1,451
Shandon	979	1,137	1,295	1,316	1,347	1,562	2,002	2,630	3,306
Templeton	4,607	5,792	6,976	7,059	7,184	7,739	8,094	8,720	9,128
North County Total	**58,766**	**64,816**	**70,863**	**71,571**	**72,633**	**76,040**	**79,851**	**84,889**	**89,853**
San Luis Obispo County Total	193,097	204,446	209,318	210,987	213,520	221,522	229,124	238,779	248,300

Source: AECOM for SLOCOG, July 2011

Following is a list of community characteristics EPA recommends for consideration. These characteristics are described and considered throughout the IRWM Plan.

Table C-28. Community Characteristics for Community Profiling

- **Community Boundaries**
- **Community Capacity and Activism**
- **Community Interaction and Information Flow**
- **Demographic Information**
- **Economic Conditions and Employment**
- **Education**
- **Environmental Awareness and Values**
- **Governance**
- **Infrastructure and Public Services**
- **Local Identity**
- **Local Leisure and Recreation**
- **Natural Resources and Landscapes**
- **Property Ownership, Management, and Planning**
- **Public Health and Safety**

To understand the future of San Luis Obispo County, it is important to understand its past and its present. A brief history of San Luis Obispo County is presented in Table B6.1 below. Current census information provides a profile of the present.

C.15 A Brief History of San Luis Obispo County and the Influence of Tribal Culture

For centuries (see **Table C-52**), San Luis Obispo County was the heart of Chumash and Salinian Native American country. The Chumash and Salinians had a rich culture and were excellent craftspeople and artists. Exploration of the land by Europeans began in 1769 at the command of Gaspar de Portola of Spain. With Portola came the Franciscan friars to begin founding the California missions. Following the independence of Mexico and the secularization of the missions, the Central Coast entered the period of the rancheros. Many names of towns and places derive from these Spanish rancheros. San Luis Obispo was claimed for the United States in 1846. In 1850, California was admitted to the United States, and San Luis Obispo became one of the original counties.

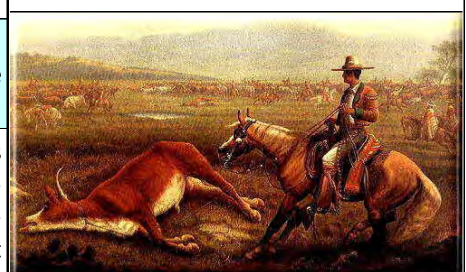
A severe drought gripped the state in 1862 to 1864 resulting in the devastation of much of the region’s cattle industry. Several wet seasons followed which prompted immigration to the County and the emergence of the dairy industry. By the 1870’s, San Luis Obispo County began to transform from a poor, remote, and sometimes violent outpost of rural California to a locale prized for its diverse and spectacular topography, breathtaking scenery, and rich farms and mines. The 1880s and 1890s brought the railroad that connected San Luis Obispo with San Francisco and Los Angeles.

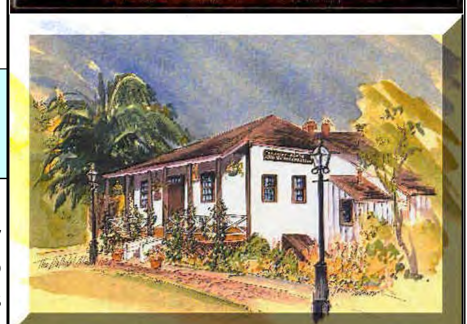
Throughout the 1900’s San Luis Obispo County remained largely an agricultural county. The World Wars and the Korean War brought economic growth to San Luis Obispo County as local suppliers supported the war effort. The second half of the century was punctuated with infrastructure projects needed to support post-war population increases.

Presently, over 260,000 residents enjoy San Luis Obispo County’s central coast location. With the ocean and mountains, the Spanish and historical flavor, and the mild climate, San Luis Obispo County provides an enviable quality of life for residents and tourists.

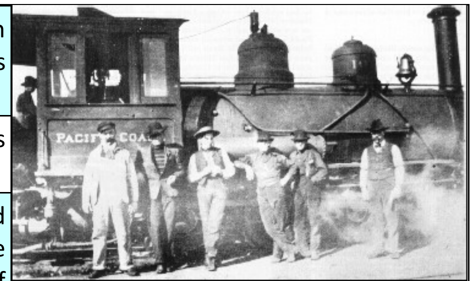
Table C-29. San Luis Obispo County Historical Timeline and Images from the Past

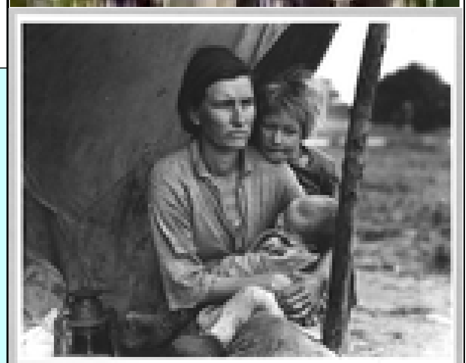
Key Events in History	
10,000 years ago	The area was inhabited by Chumash and Salinan Native Americans.
1542	The Spanish explorer Juan Rodriquez Cabrillo discovered Morro Rock during his exploration of the California Coast.
1587-1602	Portuguese explorers Pedro de Unamuno and Sebastian Rodriquez Cermeno and Basque explorer Sebastian Vizcaino came to the county.
1769	Spanish explorer Gaspar de Portola arrived by land.
1772	Father Junipero Serra established Mission San Luis Obispo de Tolosa.
1797	Father Fermin Francisco de Lasuen founded Mission San Miguel Arcangel at San Miquel.=
1822	Mexico gained possession of all California from Spain beginning the great land grant period that divided the land into huge ranchos.
1837	Mexican land grants were granted from secularized mission lands and the great adobes were built.
1846	General John Fremont took the city of San Luis Obispo from the Mexican government and governed briefly with his Bear Flag government.
1849	During the Gold Rush many people traveled through the county on their way north to the goldfields.
1850	California was admitted to the United States as the 31st state in the Union. San Luis Obispo became one of the original 27 counties. The population of the county was 336 persons almost all of whom were Spanish speaking and lived on the great ranchos.
1862-1864	The Great Drought brought mass cattle starvation and ended the cattle industry as it had existed during the Mexican ranchos era.
1870s	The cinnabar mining rush begins in the Cambria area and dairy farms predominate in Edna Valley and along the coast. The region begins to transform from a poor, remote and sometimes violent outpost of rural California to a locale prized for its diverse and spectacular topography, breathtaking scenery, and rich farms and mines. Dairy and mining commerce generated the need for improved modes of transportation.

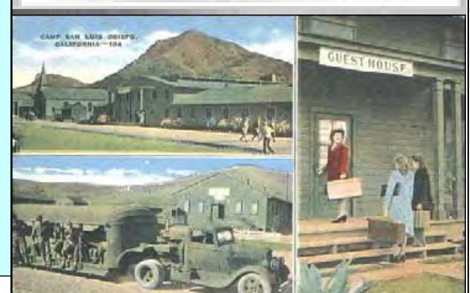


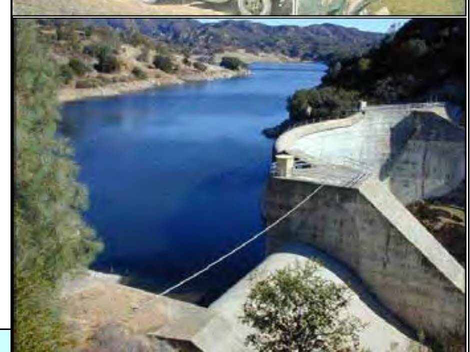


1880s and 1890	The Southern Pacific Railroad was built between San Francisco and Los Angeles. In 1894 San Luis Obispo could be reached by rail.
1901	California State Polytechnic College was established.
1914-1918	During World War I, many County farmers turned to the production of navy beans, since these were subsidized by the War Relief Administration. In those days before reliable refrigeration, beans could be shipped to the troops in Europe without spoiling, and the County's economy boomed.
1919-1947	The Hearst Castle was built.
1923	Highway 1 was completed connecting coastal areas to San Luis Obispo
1925	The Motel Inn in San Luis Obispo, the first motel in the world.
1930s	The County's agricultural diversity shielded it from the worst of the Great Depression of the 1930s. There were difficult times, however, for many of those who came from other areas looking for work. It was near a migrant camp in Nipomo that photographer Dorothea Lange, working for the Farm Security Administration, took her famous photograph entitled "Migrant Mother." The County benefited from such Depression-era federal programs as the Works Progress Administration (WPA) and the Civilian Conservation Corps (CCC). Through the involvement of these agencies, the County received a new Courthouse, flood-control projects, and highway improvements.
1941-1942	With the onset of World War II, the County's transportation links and open land areas were deemed useful by the U.S. War Department, which located training camps in the area: Camp Roberts and Camp San Luis Obispo, as well as a naval training base at Morro Bay and a Coast Guard station near Cambria. These camps brought into the County nearly 100,000 military personnel.
1942	Santa Margarita Dam was built by the Army Corps of Engineers to supply water for Camp San Luis Obispo. The water from the lake was never used for that purpose however.









1955	Pacific Gas and Electric Power Plant were completed in Morro Bay.	
1960	Whale Rock Dam was completed. Whale Rock was the first major dam designed and constructed by DWR.	
1968	San Luis Obispo County Flood Control and Water Conservation District completed the Lopez Dam to provide a reliable water supply for agriculture and municipal needs in the south county.	
1985	Pacific Gas and Electric Company's Diablo Canyon Nuclear Power Plant begins commercial operations.	
1994 - 1995	Morro Bay was designated as the first State Estuary and was accepted into the National Estuary Program.	
1997	The 100 mile long Coastal Branch of the State Water Project was completed to transport State Water Project water to Santa Barbara and San Luis Obispo Counties.	
2004	The Environmental Impact Report was certified for the Nacimiento Project to bring water from Lake Nacimiento to Paso Robles, Templeton, Atascadero, and San Luis Obispo.	

Taken from**:** The Library Associates, A Vast Pastoral Domain: San Luis Obispo County in the 1870s, Santa Barbara Chumash Museum, Mission San Luis Obispo de Tolosa,<http://www.historyinslocounty.com/Links.htm>, San Luis Obispo County Historical Society

C.15.1 Tribal History

Throughout Section C (i.e., watershed tables and history) mention is made of the two prominent Native American Tribes of San Luis Obispo; the Salinan and Northern Chumash Indian tribes. The Yokut Tribe is also mentioned under the Black Sulpher Spring Watershed **Section C.7.3.1**, but is shown to lie northeast of the IRWM Region. **Figure C-59** is a map of the Indian Tribes in and around the San Luis Obispo County Region.

Figure C-34. Tribal Lands Located Within and Near San Luis Obispo County

Source: Tribal Government Affairs < http://tribalgovtaffairs.ca.gov/pdf/CA_Tribal_Southern_Region.pdf>

C.15.1.1 Salinan Tribe of Monterey and San Luis Obispo[21]

The Salinan Tribe currently has 371 certified ancestors listed with 400 more seeking federal recognition. They have a Tribal Business Council that meets twice a month and a general meeting every second Sunday of the month. As a legal Tribe Government they quality under Senate Bill 18; requiring cities and counties to conduct consultations with California Native American tribes.

[21] <http://salinantribe.com/about.htm>

C.15.1.2 Northern Chumash Tribe of San Luis Obispo

The Northern Chumash Tribal Council (NCTC) is organized as a non-profit corporation under the guidelines of the state of California Senate Bill 18. The NCTC provides a foundation for the Chumash people of San Luis Obispo County to sustain the culture and heritage of the Tribe. The NCTC states that they have “over 20,000 years of habitation in San Luis Obispo County.”

Today the NCTC is involved in consultation with County and Local Governments to improve cultural resources, to bring awareness in the need for quality of archaeology in siting and constructing new projects, and to be a part of the decision making process for land use issues in San Luis Obispo County. This offers a more complete project analysis for the protection of “Cultural Places and Sacred Sites”. NCTC also works with the development community to assist in the planning process so that we better understand each-others’ concerns.

The NCTC is also looking at self-sustainability through working within the community. NCTC has leased land to start organic farming practices and strives to be self-reliant through agriculture and businesses in the community (vs. casino). They are of the belief that property should be preserved in its natural state to tell the story of the Chumash people.

C.16 CULTURAL AND SOCIAL PROFILE OF SAN LUIS OBISPO COUNTY

The arts flourish throughout the county at an exceptional level of quality. Layers of history can be seen in local historical landmarks such as the Spanish missions of Mission San Luis Obispo de Tolosa and Mission San Miguel Arcangel. The region’s well-known arts community is filled with many talented artists, arts advocates and supporters. Numerous arts events include a street chalk painting festival, Open Studios Tour and Plein Aire Festival. The region enjoys nearly thirty art galleries and two hundred local artists. For performances, the spectacular Christopher Cohan Performing Arts Center, located on the campus of California Polytechnic State University offers a variety of musical performances, theatrical acts, and local fare every month. The Clark Center in Arroyo Grande also offers stunning performances.

The 2010 Census provides this profile of the current day social characteristics of San Luis Obispo County as shown in **Figure C-60**. **Table C-53** provides a summary of census information identifying the following demographic information:

- Education levels
- Family Status
- Gender
- Length of Residency
- Nativity and Place of Birth

- Language
- Ancestry

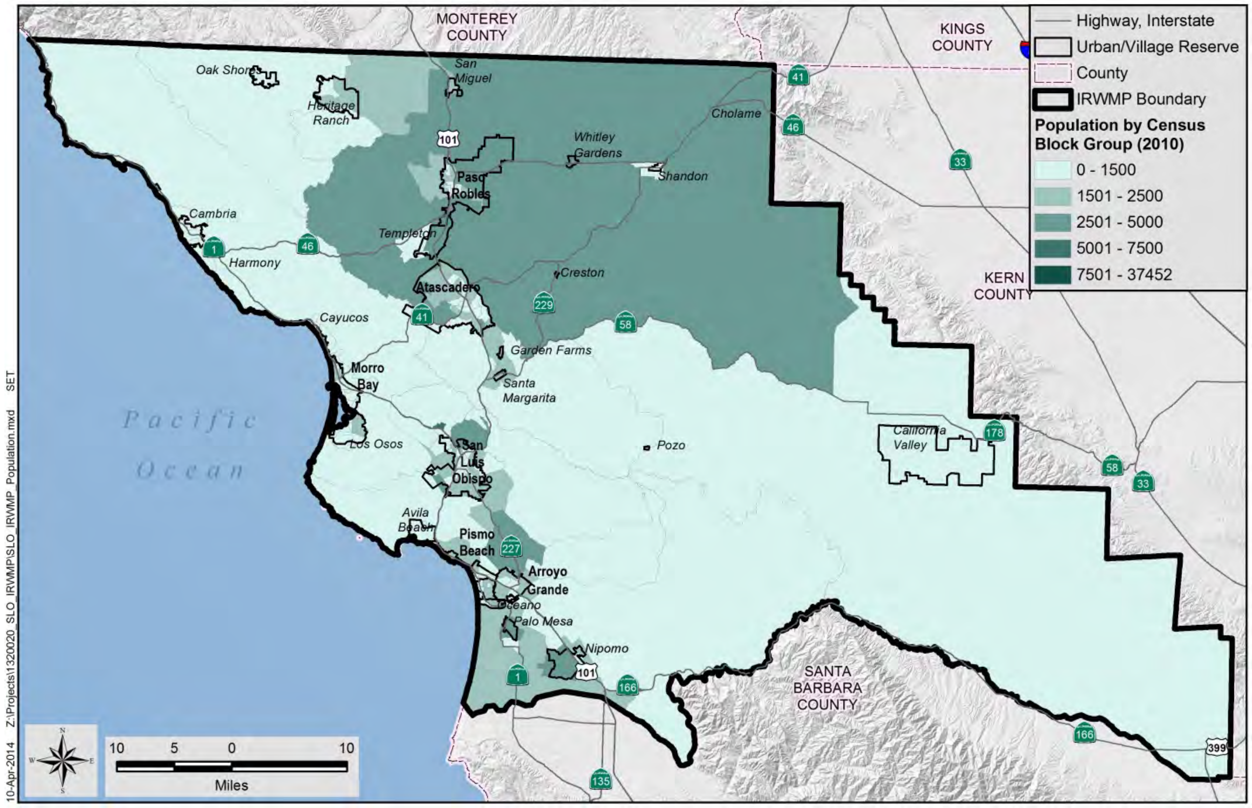


Figure C-35. Population by Census Block

C.16.1 The Arts in San Luis Obispo County

The arts in SLO County have a long history and are best summarized in the pamphlet developed by the Visitors & Conference Bureau, written in 2005, shown in **Figure C-61**. Many venues are available throughout the IRWM Region where arts can be enjoyed and appreciated over time.

The Arts in San Luis Obispo County

Courtesy of the San Luis Obispo County Visitors & Conference Bureau, www.sanluisobispocounty.com. From the San Luis Obispo County 2005 Official Destination Guide

When Juan Bautista de Anza shepherded his expedition of nearly 200 native Mexicans and 1000 head of livestock from Sonora, Mexico to the San Francisco Bay, he blazed a new overland trail. Arriving in San Luis Obispo early in 1776, he found the thriving Mission San Luis Obispo de Tolosa nestled along the creek.

Then and now, the Mission is the public square of San Luis Obispo for locals and tourists alike. Built four years before Anza's arrival, it still serves as a parish church as well as the backdrop for a plaza where an array of festivals and feasts abound year round.

The Mission is an occasional venue for classical choral and orchestral concerts and visitors are welcome to view photo-graphs, artifacts and the original Mission altar in a museum housed in the former padres' residence. The plaza hosts an array of visual and performing arts events such as a summer concert series presenting bluegrass to blues, book, poetry, chalk painting and plein air art festivals.

Visual Arts

The plaza's amphitheater, on the banks of San Luis Creek, is augmented by a metal sculpture backdrop, one of the early public art installations in San Luis Obispo. Nearly 25 years after the first sculpture was installed - the "Tankhead Fish" metal sculpture on the creek walk near the San Luis Obispo Art Center - the downtown now boasts more than two dozen pieces of public art. "Tequshi Wa Suwa" or "Child and Bear" adorns a corner of the Mission plaza as well as a pair of bronze bear cubs nearby by the same local artist.

A self-guided tour of the public art trail from Mission plaza leads to several kinetic sculptures, bronze sculptures "Puck" at the Downtown Centre and "Ironroad Pioneers" in the Railroad District. Two dozen public art installations beautify downtown and surrounding areas.

There are many other opportunities to view original art within San Luis Obispo. The first Friday night of every month, downtown art galleries open their doors to "Art After Dark" with later hours for patrons to appreciate displays of original art and chat with local artists while enjoying refreshments. There are also many fine art galleries north along the coast in Morro Bay, Cayucos and Cambria as well as south in Arroyo Grande and Pismo Beach. Many of the wineries around the County display art in their tasting rooms to better enjoy our award-winning vintages.

As the grape leaves turn golden, San Luis Obispo County celebrates visual arts month in October. The San Luis Obispo Art Center hosts the Plein Air Festival, a week-long outdoor painting extravaganza with 50 artists from around the country capturing on canvas the county's rural and urban landscapes, and culminating in a gala art auction. In addition, the Art Center offers year round gallery exhibitions showcasing national as well as local fine artists in a variety of media.

The breadth and depth of the arts in San Luis Obispo County is even more evident when two week-ends in October are set aside for the annual "Open Studios Tour," sponsored by the San Luis Obispo Arts Council. More than 200 countywide artists invite art aficionados into their work spaces to view and purchase pottery, paintings in a variety of media, photography, sculpture, fiber art, jewelry and more. Artists such as glass blowers and potters demonstrate their crafts.

Performing Arts

October kicks off the San Luis Obispo Symphony's season of five Saturday night concerts at the architecturally evocative and acoustically superior Performing Arts Center on the Cal Poly campus not far from downtown San Luis Obispo. For the more casual-minded, "No Ties Allowed" is Saturday afternoon's free dress rehearsal open to the public.

"Sundays at the Clark" presents ensembles in three chamber music concerts at the Clark Center in Arroyo Grande. The Symphony also makes music for the Civic Ballet's traditional production of The Nutcracker, one of the longest running dance productions in California.

Each summer the Mozart Festival offers ten days of orchestra, choral and chamber music against the backdrop of ocean, mountains, and vineyards as well as at the Performing Arts Center, the Clark Center and the Mission. Nearly a dozen free, informal "Fringe Concerts" are enjoyed around the county in lush gardens, wineries and seaside estates.

Classical music is but one component of the Central Coast music scene. There's an annual Blues Festival at Avila Beach. The Stone Soup Ethnic Faire offers African drummers and Japanese dragon dancers at the Obon Festival contribute to the diversity of Central Coast arts activities.

Theater also flourishes. One of the oldest arts organizations in the county at 57, San Luis Obispo's Little Theater presents six productions annually in an intimate 50-seat theater. Cambria also has a long-standing community theater. Pewter Plough Playhouse began in 1976 and stages seven or more plays and comedies year round at their jewel box theater on Main Street in the West Village.

South in Oceano, the Great American Melodrama and Vaudeville presents classic comedies, melodrama and thrillers to delight all ages. The cabaret setting enhances an entertaining vaudeville revue of lively and often funny song and dance performed at every show. In 2005, they will be celebrating 30 successful years of performances on the Central Coast.

Whether it is a feast for the eyes or ears, the arts are bountiful in San Luis Obispo County. As many arts as microclimates, our culturally-rich communities can satiate even those hungriest for visual and aural treats. Hopefully, we will see you at the public square.

Figure C-36. Exhibit on the Arts in San Luis Obispo County

Table C-30. Profile of Social Characteristics: San Luis Obispo County, 2000 Census

SUBJECT	NUMBER	PERCENT
SCHOOL ENROLLMENT		
Population 3 years and over enrolled in school	**77,496**	**100.0**
Nursery school, preschool	3,367	4.3
Kindergarten	2,910	3.8
Elementary school (grades 1-8)	25,246	32.6
High school (grades 9-12)	14,635	18.9
College or graduate school	31,338	40.4
EDUCATIONAL ATTAINMENT		
Population 25 years and over	**159,196**	**100.0**
Less than 9th grade	7,836	4.9
9th to 12th grade, no diploma	15,128	9.5
High school graduate (includes equivalency)	34,728	21.8
Some college, no degree	44,514	28.0
Associate degree	14,483	9.1
Bachelor's degree	27,648	17.4
Graduate or professional degree	14,859	9.3
MARITAL STATUS		
Population 15 years and over	**203,705**	**100.0**
Never married	56,001	27.5
Now married, except separated	109,818	53.9
Separated	3,885	1.9
Widowed	12,898	6.3
Female	10,096	5.0
Divorced	21,103	10.4
Female	12,171	6.0
RESIDENCE IN 1995		
Population 5 years and over	**234,524**	**100.0**
Same house in 1995	109,441	46.7
Different house in the U.S. in 1995	121,309	51.7
Same county	61,414	26.2
Different county	59,895	25.5
Same state	49,051	20.9
Different state	10,844	4.6
Elsewhere in 1995	3,774	1.6
NATIVITY AND PLACE OF BIRTH		
Total population	**246,681**	**100.0**
Native	224,665	91.1
Born in United States	222,105	90.0
State of residence	153,555	62.2
Different state	68,550	27.8
Born outside United States	2,560	1.0
Foreign born	22,016	8.9
Entered 1990 to March 2000	7,738	3.1
Naturalized citizen	8,924	3.6
Not a citizen	13,092	5.3
REGION OF BIRTH OF FOREIGN BORN		
Total (excluding born at sea)	**22,007**	**100.0**

SUBJECT	NUMBER	PERCENT
Europe	3,769	17.1
Asia	4,263	19.4
Africa	202	0.9
Oceania	146	0.7
Latin America	12,441	56.5
Northern America	1,186	5.4
LANGUAGE SPOKEN AT HOME		
Population 5 years and over	**234,524**	**100.0**
English only	200,112	85.3
Language other than English	34,412	14.7
Speak English less than "very well"	13,926	5.9
Spanish	25,089	10.7
Speak English less than "very well"	11,114	4.7
Other Indo-European languages	4,895	2.1
Speak English less than "very well"	983	0.4
Asian and Pacific Island languages	4,022	1.7
Speak English less than "very well"	1,741	0.7
ANCESTRY (single or multiple)		
Total population	**246,681**	**100.0**
Total ancestries reported	272,125	110.3
Arab	847	0.3
Czech'	1,366	0.6
Danish	3,311	1.3
Dutch	5,199	2.1
English	34,214	13.9
French (except Basque)'	8,688	3.5
French Canadian'	1,653	0.7
German	41,107	16.7
Greek	929	0.4
Hungarian	1,104	0.4
Irish'	32,202	13.1
Italian	14,632	5.9
Lithuanian	450	0.2
Norwegian	5,905	2.4
Polish	3,958	1.6
Portuguese	4,595	1.9
Russian	2,498	1.0
Scotch-Irish	5,227	2.1
Scottish	7,349	3.0
Slovak	137	0.1
Sub-Saharan African	420	0.2
Swedish	5,001	2.0
Swiss	2,793	1.1
Ukrainian	424	0.2
United States or American	12,135	4.9
Welsh	2,543	1.0
West Indian (excluding Hispanic groups)	217	0.1
Other ancestries	73,235	29.7

San Luis Obispo County benefits greatly from a high level of community participation and involvement. Many influential societal segments of the community are represented by a wide range of active community organizations and associations. The number of active community groups is too numerous to list here; however, in general, these groups along with many others, represent the economic, environmental, and social equity community interests that characterize the three “E’s” of sustainability in the region as shown in Table B6.3. These groups provide a potential source of stakeholders for public participation and involvement. See **Section B – Governance, Stakeholder Involvement, and Outreach** for more information about stakeholder involvement.

Table C-31. Examples of Influential Social Groups in San Luis Obispo County

Societal Segments	Examples of Local Organizations and Associations
Agriculture	Cattleman’s Association Vintners Associations Farm Bureau County Cooperative Extension Service
Business, Transportation, and Housing	Chambers of Commerce Economic Vitality Corporation of San Luis Obispo Realtors Associations Contractor and Builders Associations
Cultural	The San Luis Obispo County Arts Council Non-profit Arts Organizations Native American Heritage Commission Historical Societies Art Associations
Education	SLO County Office of Education California State Polytechnic University Cuesta College Local School Boards Private Schools
Environmental	Federal and State Resource Agencies State and Regional Waterboards Land Conservancies Morro Bay National Estuary Program Monterey Bay National Marine Sanctuary Non-profit Environmental Organizations
Health and Community Welfare	Hospitals and Medical Centers Philanthropic and Charity Groups Community Clubs League of Women Voters Youth Organizations Grant Making Foundations
Local Government	County Cities Community Service Districts (CSDs) San Luis Obispo Council of Governments (SLOCOG)
Religion	Churches and Religious Organizations
Tourism and Recreation	San Luis Obispo County Visitors and Conference Bureau Parks Commissions Sportsfishing Associations

The social, economic, and environmental profile of the community and community values and vision were considered while developing the IRWM goals and objectives. Examples of statements of local community values can be seen in the County of San Luis Obispo's Mission and Community Results Vision, which is also the same for the District, as shown below.

Table C-32. County and District Mission and Community Results Vision Statement

The County of San Luis Obispo's Vision and Mission Statements The County's elected representatives and employees are committed to serve the community with pride to enhance the economic, environmental, and social quality of life in San Luis Obispo County
Community Results In October of 2000, the Board of Supervisors adopted a set of Communitywide Results (shown below) that simply and succinctly describe the vision for the County – a place that is safe, healthy, livable, prosperous and well governed.
A Safe Community The County will strive to create a community where all people -- adults and children alike -- have a sense of security and well-being, crime is controlled, fire and rescue response is timely, and roads are safe.
A Healthy Community The County will strive to ensure all people in our community enjoy healthy, successful and productive lives, and have access to the basic necessities.
A Livable Community The County will strive to keep our community a good place to live by carefully managing growth, protecting our natural resources, promoting life-4long learning, and creating an environment that encourages respect for all people
A Prosperous Community The County will strive to keep our economy strong and viable and assure that all share in this economic prosperity.
A Well Governed Community The County will provide high quality 'results oriented' services that are responsive to community desires.

Community values of regional significance that were considered during development of the IRWM Plan include:

1. Environmental protection;
2. Ecosystem preservation and restoration;
3. Preservation of open spaces, public access, and recreational opportunities;
4. Preservation of the region's rural character and small town atmosphere;
5. Preservation of the region's scenic and aesthetic qualities;
6. Preservation of the region's rich agricultural heritage and resources;
7. Public health and safety protection; and
8. Sustainable growth and economic well-being.

This section reviewed the region's important environmental resources and needs and the social, cultural, and economic profile of the community. **Section E – IRWM Goals and Objectives**, describes the IRWM Plan's goals and objectives that were developed to meet the needs of all three "**E**'s" of sustainable water resource management: **E**nvironmental protection, **E**conomic well-being, and social **E**quity.

C.17 Relationship to Other IRWM Plan Efforts

The San Luis Obispo region is participating and coordinating with other IRWM Plan efforts to ensure that overlapping resources and projects are understood and coordinated and to maximize the opportunity for regional and integrated implementation across boundaries, when appropriate.

C.17.1 Central Coast Funding Region

In response to the State's definition of the Central Coast as a funding area for future IRWM grant programs, all six IRWM planning regions within the Central Coast began discussions regarding regional cooperation within the framework of the IRWM process pursuant to Propositions 50 and 84. The six IRWM Plan efforts within the Central Coast are:

- Northern Santa Cruz County
- Pajaro River Watershed
- Salinas River Watershed
- Carmel River Watershed
- San Luis Obispo County
- Santa Barbara County

Some of these sub-regions have common, overlapping water interests, but most water issues are effectively managed within the six geographic sub-regions. Water management interest that may be coordinated across the Central Coast funding area include, but are not limited to, water conservation, water quality monitoring and improvements, fisheries restoration, drought protection, and coastal watershed planning.

Along with the coordination throughout the Central Coast, the San Luis Obispo region has focused coordination efforts with the Salinas River Watershed to the north, Santa Barbara County to the South, and Kern County to the east. San Luis Obispo is committed to continued coordination with these IRWM Plan efforts and their associated agencies. These coordination efforts are further described below.

Northern Region

- The Paso Robles Groundwater Basin is scientifically defined as a hydrogeologically distinct sub-basin of the Salinas Groundwater Basin. At the Northern most edge of the Paso Basin, just south of San Ardo, the basin narrows to less than 3 miles wide. There is a natural bedrock high there that shallows up the basin to just a few hundred feet thick.
- The impact of activity in San Luis Obispo County's portion of the Paso Robles Groundwater Basin is minimal on the northern Salinas Basin and Monterey County's portion of the Paso Basin. The most significant influence on the northern Salinas Basin, and Monterey County's portion of the Paso Basin, is generated from Lake Nacimiento releases, which is operated by Monterey County.
- San Luis Obispo County and Monterey County coordinate on the Nacimiento Lake watershed:
    - The Nacimiento Agreement
    - The Nacimiento Watershed Management Group Agreement
    - Monterey County participation on the District's Paso Robles Groundwater Basin Advisory Committee
    - District participation on Monterey County Water Resources Agency's Reservoir Operations Committee
    - Coordination on Invasive Mussel prevention efforts

Southern Region

- Coordinated planning due to adjudication of the Santa Maria groundwater basin
- Two water management groups are in San Luis Obispo County and one is in Santa Barbara County and all three report to one Water Master.
- Physical solutions must be coordinated between the water management groups and in accordance with Santa Barbara and San Luis Obispo County land use authority.
- Coordination with Santa Barbara and Ventura Counties for the Cuyama Groundwater Basin

Eastern Region

- Due to the proximity of full State Water allocation delivery capacity to the Eastern boundary of San Luis Obispo County and existing infrastructure, opportunities exist for coordinating with both Kern and Santa Barbara Counties on State Water issues.

Section D.
Water Supply, Demand, and Water Budget

Section D. Water Supply, Demand, and Water Budget

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Section D. Water Supply, Demand, and Water Budget

San Luis Obispo's IRWM planning region area is approximately 3,322 square miles, and currently includes 36 actively reporting unincorporated and incorporated communities (see **Table D-1**) situated within 26 watersheds including urban, rural, and agricultural water demands. The need to separate the water demand and supply budgets and balance from **Section C – Region Description** is prudent to the importance of keeping track of the region's water issues. The content of this section is instrumental in the identification of the region's trends, the stakeholders involved, and the potential solutions amongst grouped water users in each of the Water Planning Areas (WPAs).

D.1 Introduction

This section of the San Luis Obispo IRWM Plan provides a discussion and analysis of the current and projected water supply and demand for the San Luis Obispo IRWMP planning region. This section is limited to descriptions of supply infrastructure and demand areas addressed in **Section C – Region Description**. To address the requirements of the IRWM Plan, the Region Description provides the broader descriptions of the San Luis Obispo watershed system and maintains a relatively high level evaluation of critical water issues; whereas, this section delves into the details of water demands and supplies for each water use sector of each WPA, using data from individual water districts and watersheds.

The data contained within this section is taken from existing published documents describing the water demands and supply of a water use sector, water district, or environmental demand. Unlike the 2012 San Luis Obispo Master Water Report (MWR), the analysis window used in this section specifies exact dates for the planning horizon. The years from 2010 through 2035, in five-year increments, are used to match the IRWM Plan's planning window as well as the planning windows of many General Plans and Urban Water Management Plans (UWMPs). The ramification of this change in definition is that water demand projections need to have a higher level of scrutiny to ensure the correct comparison of water demands and supplies occur over time. Schedules for water supply projects driven by increasing water demands can be phased appropriately over time; thereby, increasing the level of confidence for IRWM project implementation.

Table D-1. List of Communities and Water Districts with Active Water Demand Reporting

WPA No.	Joint Management Agencies	Community/Water District Name
North Coast		
1		San Simeon CSD
2		Cambria CSD
3	Cayucos Area Water Organization	Cayucos Cemetery District
		CSA 10A
		Morro Rock Mutual Water Co
		Paso Robles Beach Water Assn
4		City of Morro Bay
4	Chorro Valley Water System	California Men's Colony
		Camp SLO - National Guard
		County Operation Center of Education
		Cuesta College
5	Community of Los Osos	Golden State Water Company – Los Osos
		Los Osos CSD
		S & T Mutual Water Company
South County		
6		Avila Beach CSD
6		Avila Valley Mutual Water Co
6		Cal Poly San Luis Obispo
6		City of San Luis Obispo
6		CSA 12
6		Port San Luis
6		San Miguelito MWC
7		Golden State Water Company – Edna
7	Nipomo Mesa Management Area	Conoco Phillips Co
		Golden State Water Company – Nipomo
		Nipomo CSD
		Rural Water Company/Cypress Ridge Sewer Co
		Woodlands Mutual Water Company
7	Northern Cities Management Area	City of Arroyo Grande
		City of Grover Beach
		City of Pismo Beach
		Oceano CSD
North County		
12		CSA 23
12		Santa Margarita Ranch
13		Atascadero Mutual Water Co
13		Garden Farms C.W.D.
13		Paso Robles Municipal Well Pumping
13		Templeton CSD
14	Paso Robles Groundwater Basin Users	Camp Roberts
		City of Paso Robles
		San Miguel CSD
		SLO CSA No. 16 – Shandon
16		Heritage Ranch CSD
16		Nacimiento Water Company

D.1.1 *Intended Use of the Water Budget*

What follows is a relatively linear accounting of water supply and demand for each of the WPAs. The first subsections provide the setting for potential water supply and conservation efforts in relation to the different WPAs, and used to identify areas where: 1) water demands are known to be outpacing available water supplies, 2) opportunities for in-Region transfers exist, or 3) alternative water supply options can be studied. The importance is in the comparison between supply and demand and to Identify critical issues so that solutions can be sought.

D.1.2 *Use of IRWM Plan for Determining Adequacy of Water Supplies Under Senate Bill 610 and 221*

This section does not make any conclusions on the adequacy of water supplies to meet water demands, but does discuss likely deficiencies and probable actions. The rigor of analysis required as part of the required study of sustainable water supplies under Senate Bills 610 and 221 for new developments should be done as a separate evaluation supported by the latest local UWMPs and groundwater management plans.

D.2 Regional Water Supply Availability

Water is drawn from a number of supply sources, both inside and outside of the County. In-county reservoirs have a significant role in water supply, drainage and flood control, potential hydro-power, and recreation for the region. Groundwater basins, while currently threatened by contamination and over-pumping, are the largest source of in-county supply currently in use. As groundwater basins are relied upon for their Perennial yield of drinking water, imported surface water from the California State Water Project helps reduce the pressure on these basins when used conjunctively, based on availability of state water and facility capacity, over hydrologic wet and dry periods.

Below are brief summaries of the current supply sources either in use or being planned for near term implementation. By establishing what is known of water supplies currently (2013), future forecasting of supply needs can be placed in context with the constraints and costs associated with each supply source.

D.2.1 *Surface Water*

Water is drawn from a number of surface sources, both inside and outside of the County. This section describes the reservoirs in and out of the County that are used as water supply sources within the County. It also includes a brief description of the State Water Project. Allocations and key user agreements are described for each water source.

Local Surface Water

Many of the local reservoirs are multi-purpose by providing flood control, water supply, groundwater recharge, environmental, hydropower, and recreation benefits. Dams and reservoirs were constructed as the need for supplemental water supplies and flood control became apparent with growing development in the region.

Table D-2. In-County Reservoir Contracted Amounts

Surface Water Source (Year Built)	Storage Capacity (AF)	Contracted Amount/ Average Annual Yield in SLO IRWM Region (AFY)	Primary Purpose(s)	Owner/ Operator (if different)	Sub-Region(s) Supplied
Nacimiento Reservoir (1957)	377,900	15,750[1]	Water supply Flood control Groundwater recharge	Monterey County Water Resources Agency	North Coast, South County, North County
Whale Rock Reservoir (1961)	40,662	40,660[2]	Water supply	Whale Rock Commission / City of San Luis Obispo	North Coast, South County
Lopez Lake (1968)	49,388	4,530	Water supply Flood protection	San Luis Obispo County Flood Control & Water Conservation District	South County
San Margarita Lake/ Salinas Reservoir (1941)	23,843	6,950	Water supply	U.S. Army Corps of Engineers / San Luis Obispo County Flood Control & Water Conservation District	South County, North County
Chorro Reservoir (1941)	90	140	Water supply	CA Dept of Corrections[3]	North Coast
Twitchell Reservoir[4]	224,300	0	Irrigation	Santa Maria Valley Water Conservation District	South County

Notes:
1. 17,500 AFY total, less 1,750 AFY for lakeside users 15,750 AFY available to SLO Co Nacimiento Water Project.
2. 40,660 AFY of Whale Rock Reservoir water is allocated to the joint right-holders in addition to downstream water rights, which are accounted for separately.
3. Per CA Dam Safety website inventory.
4. Straddles SLO County with the Dam located in Santa Barbara County

D.2.2 *Groundwater Supply*

The IRWM planning region contains 25[1] hydraulically separated groundwater basins (see **Figure D-2**), each relatively independent of the others, with only a few exceptions. The availability of fresh groundwater supplies remain the primary staple for most of this Region's communities and, especially, for the private well owners living in rural and agricultural areas. Groundwater

[1] Based on 2012 Master Water Report (District, 2012) listed groundwater basins, not including sub-basins. See **Section C – Region Description** for brief descriptions, and **Appendix L – Groundwater Basin Descriptions** for detailed descriptions of each basin.

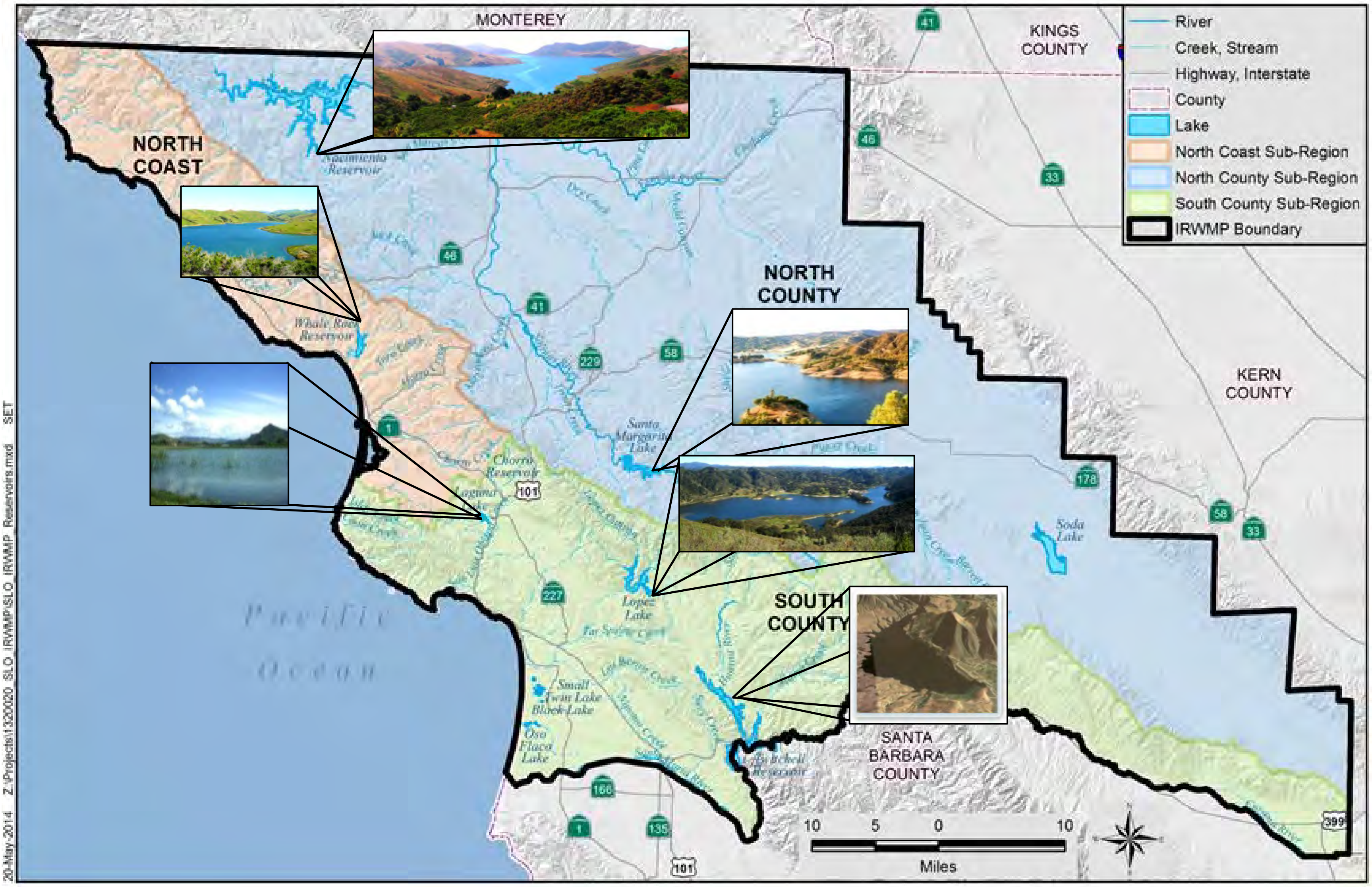


Figure D-1. San Luis Obispo County Reservoirs

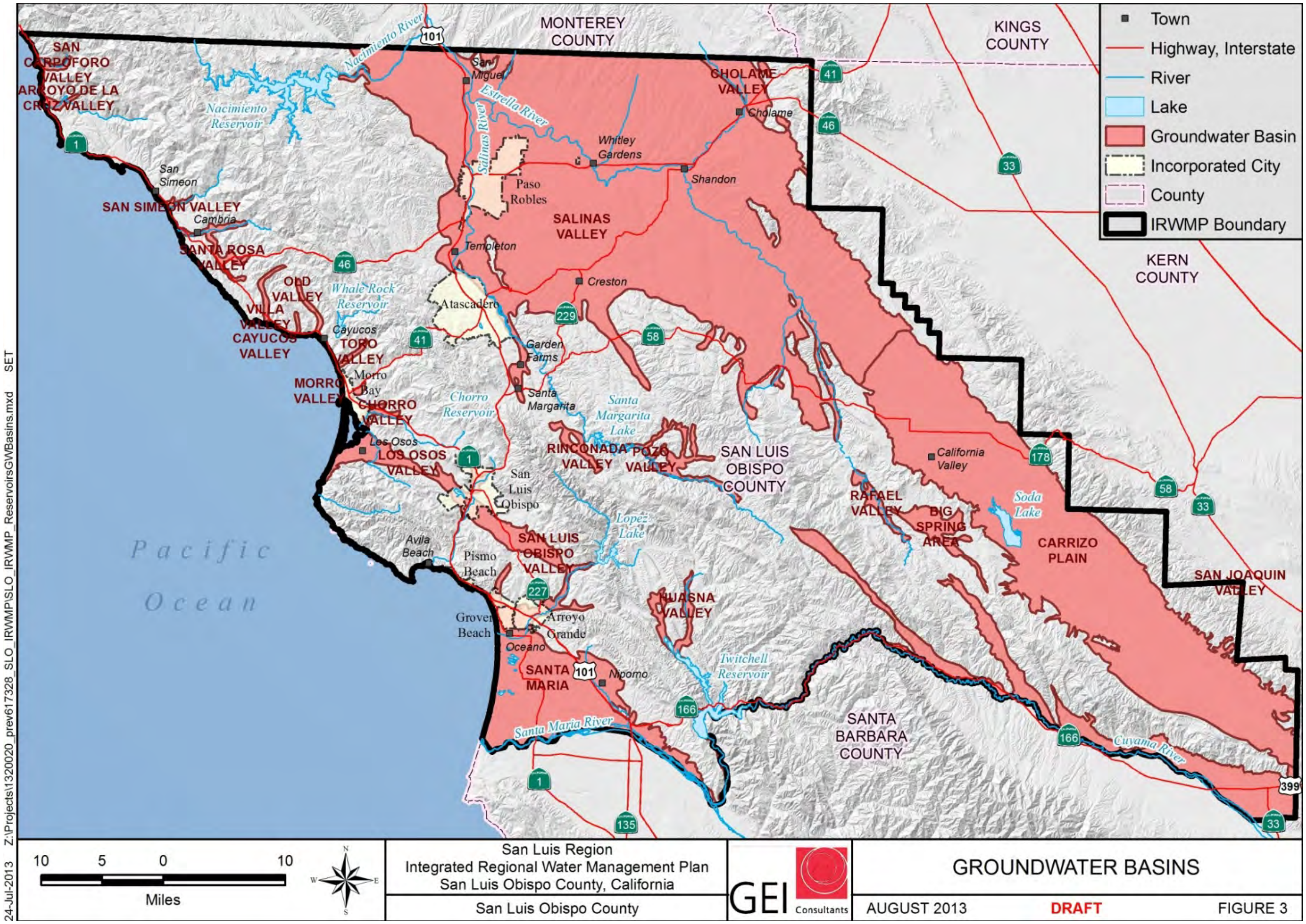


Figure D-2. San Luis Obispo County Groundwater Basins studies conducted in the past provide some understanding of the perennial average safe yield of the various groundwater basins, but many still are without some form of groundwater management and setting of a perennial yield amount as shown in **Table D-3**. Identified sources are based on the MWR identification of hydrogeologic studies and groundwater management plans containing the latest perennial yield annual volumes.

Table D-3. Groundwater Basin Yields

Groundwater Basin Name	Estimated Perennial Yield (AFY)	WPA	Groundwater Basin Name	Estimated Perennial Yield (AFY)	WPA
Arroyo de la Cruz Valley	1,244	1	Pismo Creek Valley Sub-basin[2]	No estimates of basin yield exist.	7
Pico Creek Valley	120	1	Nipomo Valley Sub-basin[2]	No estimates of basin yield exist.	7
San Carpoforo Valley	No estimates of basin yield exist.	1	Nipomo Mesa Management Area	4,800 - 6,000	7
San Simeon Valley	1,040	2	Northern Cities Management Area	5,600 - 6,800	7
Santa Rosa Valley	2,260	2	Santa Maria Valley Management Area	124,000	7
Villa Valley	1,000	2	Huasna Valley	No estimates of basin yield exist.	8
Cayucos Valley	600	3	Cuyama Valley	10,000	9
Old Valley	505	3	Carrizo Plain	8,000 - 11,000	10
Toro Valley	532	3	Big Spring Area	No estimates of basin yield exist.	11
Chorro Valley	2,210	4	Rafael Valley	No estimates of basin yield exist.	11
Morro Valley	1,500	4	Pozo Valley	1,000	12
Los Osos Valley	3,200	5	Rinconada Valley	No estimates of basin yield exist.	12
Avila Valley Sub-basin[1]	No estimates of basin yield exist.	6	Santa Margarita Valley	No estimates of basin yield exist.[3]	12
Edna Valley Sub-basin[2]	4,000	6	Atascadero Sub-Basin	16,400	13
San Luis Valley Sub-basin[1]	2,000	6	Paso Robles[4]	97,700	13, 14
Arroyo Grande Valley Sub-basin[2]	No estimates of basin yield exist.	7	Cholame Valley	No estimates of basin yield exist.	15
			Salinas River Underflow[5]	State Permitted 11,419	13, 14

Sources: 2012 Master Water Report (District, 2012), Paso Robles Groundwater Basin Modeling Report (Draft, 2014)

Notes:

1. Sub-basin of the San Luis Obispo Valley Groundwater Basin
2. Sub-basin of the Santa Maria River Valley Groundwater Basin
3. The average annual yield of the basin in the vicinity of the proposed Santa Margarita Ranch development may be in the range of 400 to 600 AFY.
4. Includes 16,400 AFY perennial yield from the Atascadero Groundwater Sub-basin.
5. The Salinas River Underflow is managed by the State Water Resources Control Board through issuance of water right permits; although consider to be groundwater and a sub-basin of the Paso Robles groundwater basin.

D.2.3 *California Department of Water Resources State Water Project Supply*

The California Department of Water Resources (CDWR) owns and operates the State Water Project (SWP). Shown in **Figure D-3,** it is the largest state-built water and power project in the United States. The SWP first started delivering water to Californians in the 1960s. In 1963, the San Luis Obispo County Flood Control and Water Conservation District (District) contracted with DWR for 25,000 AFY of State Water. However, the Central Coast was not served State Water until 1997 when the Coastal Branch conveyance and treatment facilities, serving Santa Barbara and San Luis Obispo counties, were completed.

Table D-4 below summarizes the regional SWP Water Service Amounts (WSAmt) for the San Luis Obispo Region. Additional detail on the SWP infrastructure delivering to the San Luis Obispo Region is discussed in **Section C – Region Description** and the MWR.

Table D-4. State Water Project Water Service Amount

Contractor	WSAmt (AFY)	Drought Buffer (AFY)	Total Reserved (AFY)	6 percent Allocation Year (1977) (AFY)	66-69% Allocation Year (AFY)	100% Allocation Year (AFY)	WPA
Chorro Valley Turnout							
Morro Bay, City of	1,313	2,290	3,603	216	1,313	1,313	4
California Men's Colony	400	400	800	48	400	400	4
County Operations Center	425	425	850	51	425	425	4
Cuesta College	200	200	400	24	200	200	4
Subtotal	**2,338**	**3,315**	**5,653**	**339**	**2,338**	**2,338**	
Lopez Turnout							
Pismo Beach, City of	1,240	1,240	2,480	149	1,240	1,240	7
Oceano CSD	750	0	750	45	495	750	7
San Miguelito MWC	275	275	550	33	275	275	6
Avila Beach CSD	100	0	100	6	66	100	6
Avila Valley MWC	20	60	80	5	20	20	6
San Luis Coastal USD	7	7	14	1	7	7	6
Subtotal	**2,392**	**1,582**	**3,974**	**239**	**2,103**	**2,392**	
Shandon Turnout							
Shandon	100	0	100	6	66	100	14
Subtotal	**100**	**0**	**100**	**6**	**66**	**100**	
Total Reserved	**4,830**	**4,897**	**9,727**	**584**	**4,507**	**4,830**	
Total District Allocation			**25,000**				
"Excess Allocation"			**15,273**				

Notes:

1. Minimum, average, and maximum allocations established in the State Water Project Delivery Reliability Report 2007 (August 2008), page 51, Table 6.13. This study used 66 percent for the average allocation year.

Figure D-3. California Department of Water Resources State Water Project Facilities

Maintenance schedules and repair requirements can cause reduced deliveries or a complete shutdown of the delivery system. Since delivery to the Central Coast began, the SWP has provided between 50 and 100 percent of the contracted allocations, but recently, drought conditions coupled with pumping restrictions in consideration of endangered species habitat lowered that amount to 35 percent in 2008, 40 percent in 2009, and 0 percent at the start of 2014. To receive a greater portion of State Water during these shortages (up to their full WSAmts), most agencies have entered into "Drought Buffer Water Agreements" with the District for use of an additional portion of the District's SWP allocation, as shown in the table above. For example, when the SWP can only deliver 50 percent of contracted allocations, an agency with 100 AFY WSAmt and 100 AFY drought buffer allocation can still receive 100 AFY WSAmt – 50 percent of their 100 AFY allocation plus 50 percent of their 100 AFY drought buffer allocation equals 100 AFY.

Coastal Branch

The District has 15,273 AFY of unsubscribed SWP allocation (equal to District allocation (25,000 AFY) minus Total Reserved (9,727 AFY)), commonly referred to as the "excess allocation." Hydraulics, treatment plant capacity, and contractual terms and conditions limit how the excess allocation (or capacity) can be used. In 2011, the District evaluated the available hydraulic capacity in the treated water portion of the Coastal Branch, and compiled a report in partnership with the Central Coast Water Authority (CCWA) titled, "Capacity Assessment of the Coastal Branch, Chorro Valley, & Lopez Pipelines." This comprehensive report can be found at:

<http://www.slocountywater.org/site/Major%20Projects/State%20Water%20Project/pdf/Capacity%20Study.pdf>

The reach of pipeline reviewed in the report begins at the Devil's Den Pumping Plant and ends at Tank 5 (see close-up figure above of **Figure D-3**), including the Chorro Valley and Lopez pipelines in San Luis Obispo county. The capacity assessment provides the recommendations to consider in rating the pipeline capacity, and develops operational scenarios for future optimal use.

The following is a summarized list of options for use of excess pipeline capacity:

- Direct delivery after contract-revision negotiation for use of any additional capacity available in the Coastal Branch treatment and conveyance facilities for use as a conjunctive use supply to relieve groundwater basins in the wet hydrologic years when surface water availability is at its highest
- As additional drought buffer water to supplement deficiencies in other supply sources in dry and critical years
- Permanent, multi-year or single year transfer or exchange to other SWP contractors, utilizing revenues to improve the reliability of existing water systems
- As a source of either direct groundwater recharge through injection or spreading basins, or as a source of water for reservoir storage
- As a source of irrigation supply in lieu of groundwater use in normal/wet year hydrology through extension of raw water conveyance and distribution facilities beginning at the Coastal Branch Water Treatment Plant, where the larger SWP raw water pipeline terminates, and delivering to Paso Robles Basin residents and agricultural lands

Further detailed discussion on the reliability of SWP supply to the San Luis Obispo Region can be found in the MWR.

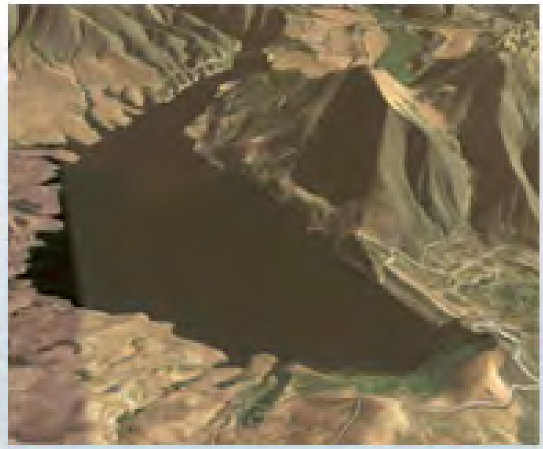
D.2.4 *Appropriated Water Rights*

The State Water Resources Control Board has historically regulated and permitted diversions from rivers and creeks for beneficial purposes. Appropriative water right permits are held by numerous entities (i.e., water agencies, landowners, industry, etc.) and typically have a maximum diversion limit stated in the permit. The seniority of water rights is based on the permit number with older permits having seniority over more recent permits. The location and diversions amounts of this type are perhaps the most difficult to site and quantify given that many diverters are private landowners using water for irrigation with no annual reporting of the quantity used. Urban water agencies, however, do report their diversion locations and amounts, and are included in the overall water budget for the IRWM Region.

D.2.5 *Other Sources of Water Supply*

In a few cases, water originating from outside the IRWM planning region is used within a WPA. In these cases, the source of water is either from a watershed and groundwater basin shared between two regions, resulting in coordinated management, or the water comes from non-potable sources such as ocean water or treated wastewater, delivered in the form of desalinated or recycled water supplies, respectively.

D.2.5.1 Twitchell Reservoir



Twitchell Dam is on the Cuyama River about six miles upstream from its junction with the Sisquoc River. Though the dam is located in Santa Barbara County to the south, and operated by the Santa Maria Valley Water Conservation District (SMVWCD), the reservoir straddles the county line and some agricultural land within San Luis Obispo County (South County Sub-Region) is irrigated from the Santa Maria Groundwater Basin, which is replenished by the reservoir's and downstream Cuyama River flood plain's natural groundwater recharge capacity.

The multiple-purpose Twitchell Reservoir has a total capacity of 224,300 AF. It stores floodwaters of the Cuyama River, which are released as needed to recharge the groundwater basin and to prevent sea water intrusion. The reservoir supplies on average 32,000 AFY of recharge to the Santa Maria Valley Groundwater Basin, though this value fluctuates significantly relative to annual precipitation. Because the reservoir is managed for flood control and groundwater recharge, the reservoir is empty much of the time. A majority of the groundwater flows towards the ocean, though a small gradient flows seasonally to the Nipomo Mesa Management Area groundwater basin.

D.2.5.2 Desalination

The Cambria CSD service area is isolated from inland areas by the Santa Lucia mountain range to the east and the Pacific Ocean to the west, and there are currently no nearby aqueducts from which to import freshwater into the area. These factors resulted in the CSD's Water Master Plan's Program-level EIR (WMP PEIR) to recommend sea water desalination as the most cost-effective alternative for supplemental potable drinking water supplies.

Since then, the Army Corps of Engineers conducted four facilitated workshops in 2012, which evaluated and screened numerous supply alternatives. This process identified a brackish water project located on CCSD property off of San Simeon Creek Road as being a technically preferred alternative. The CCSD's current emergency water supply project used this earlier San Simeon Brackish water supply alternative as a starting point in developing its design. The project's advanced water treatment plant will include reverse osmosis for removing salt from brackish water. The brackish water is a combination of creek underflow, percolated wastewater treatment plant effluent, and a mixture of freshwater and seawater from a deeper saltwater wedge area.

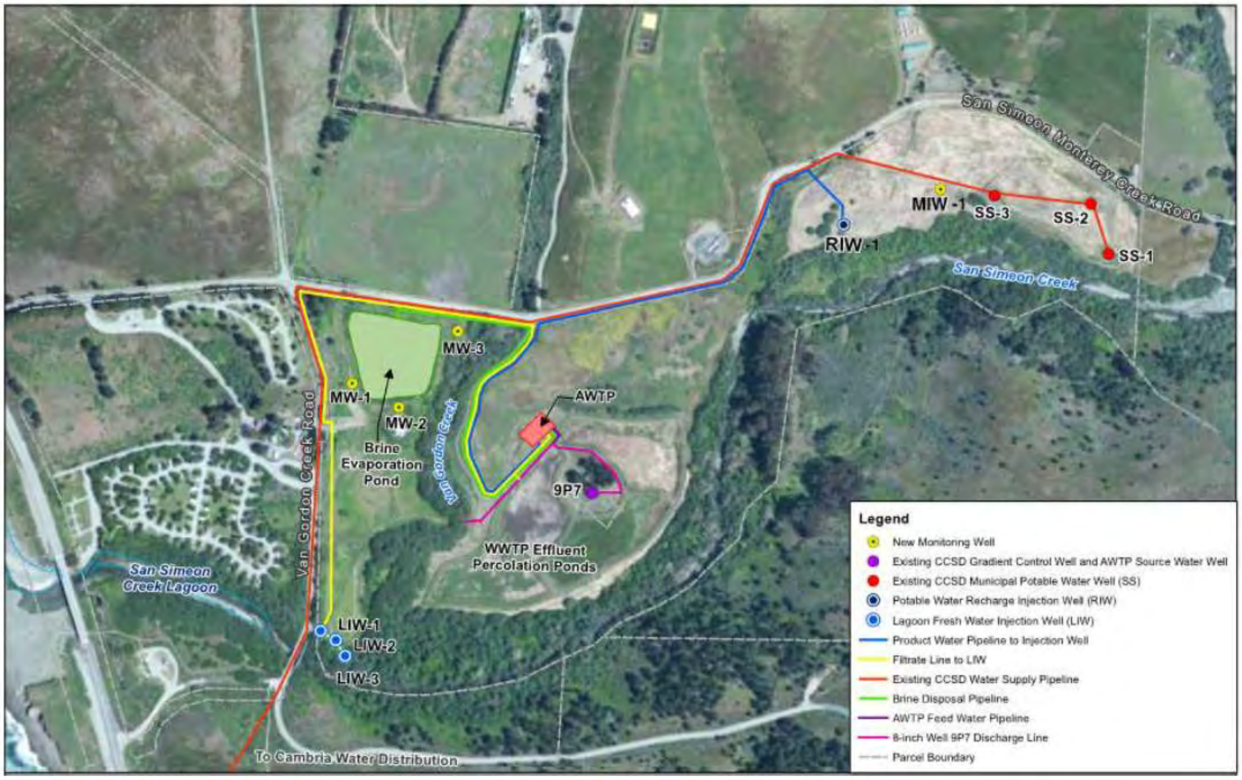


Figure D-4. Cambria CSD Desalination Schematic

Once completed, the emergency supply project will be capable of producing 250 AF of potable water over a six-month dry season period. In addition to the current emergency project, the CCSD Army Corps of Engineers is completing a longer term supply project through a WRDA authorization. An EIS is currently being completed by the Corps, which will identify a preferred long term water supply alternative.

The plant, if implemented, is expected to produce up to 602 AFY, and is planned to operate during the summer season to augment supply during the summer and high demand periods (from summer tourism). A recycled water system is also planned, with an estimated 65 AFY made available for unrestricted outdoor irrigation use.

In addition, the City of Arroyo Grande, the City of Grover Beach, and the Oceano Community Services District participated in the evaluation of a desalination project to supplement their existing potable water sources. Currently, all three agencies receive water from various sources, including the California State Water Project, Lopez Lake Reservoir, and groundwater from the Arroyo Grande Plain Hydrologic Subarea that is part of the Santa Maria Valley Groundwater Basin. Recent projections of water supply shortfalls in the region motivated the agencies to conduct a more detailed study of desalination as a supplemental water supply.[2] The study focused on utilizing the existing South San Luis Obispo County Sanitation District's (SSLOCSD) wastewater treatment plant to take advantage of utilizing the existing ocean outfall, while having the plant located near the ocean sea water source. The feasibility study, completed in 2008, was based on a 2,300 AFY sea water desalination facility. Some of the major points of interest and concern of this study include:

- Some 20 or more beach wells may be needed to provide enough sea water to produce the 2,300 AFY potable water
- Permitting and environmental issues could be complex, and implementation could take eight years or longer

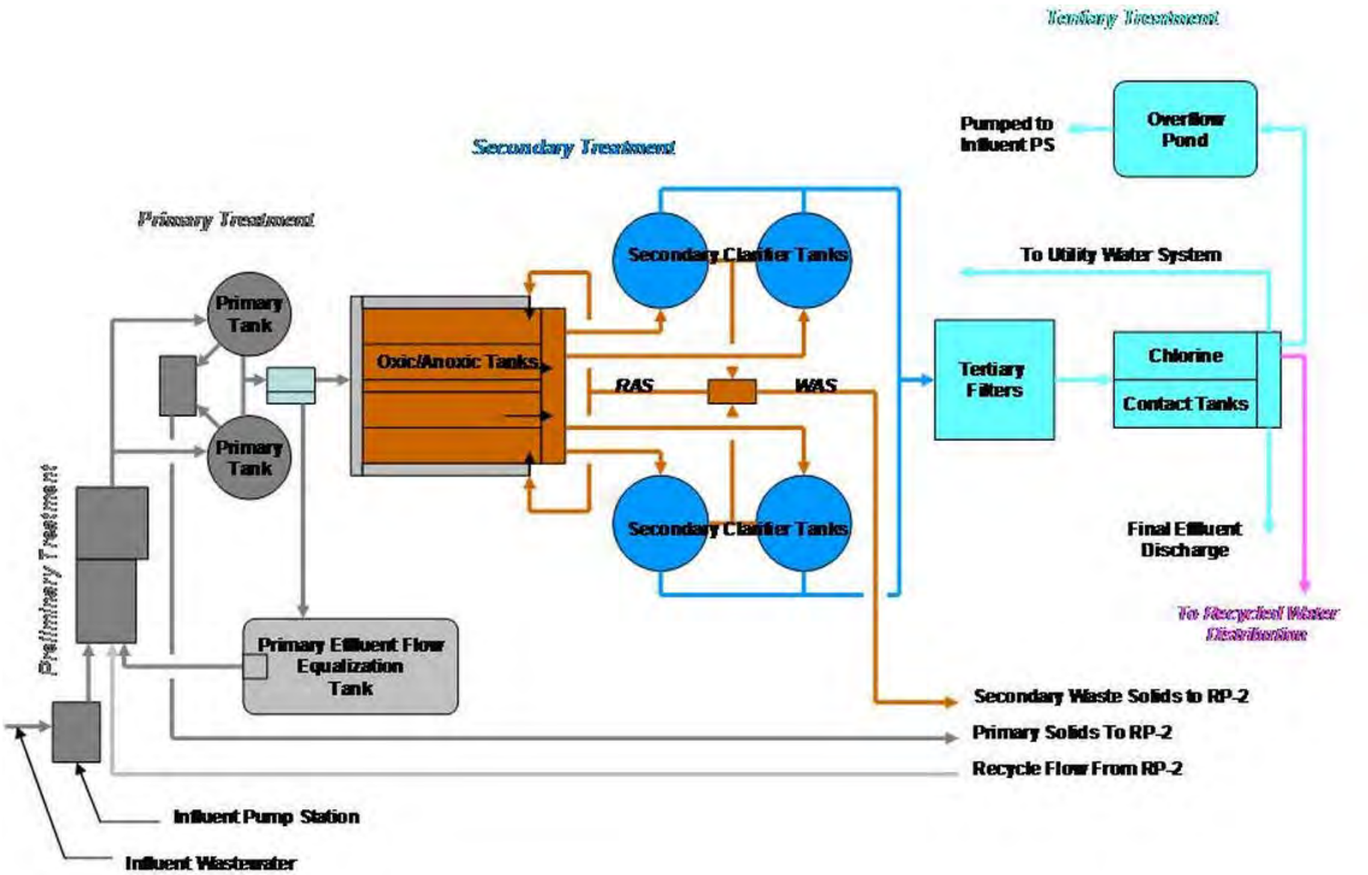
Initial capital cost could be in the range of $35 million, and customer rates could be impacted by 18 percent to over 100 percent to fund the project, and would cost approximately $2,300 per AF or more, on a 20-year life cycle basis; project design could begin by 2016, depending on availability of existing water supplies.

D.2.5.3 Water Recycling

Several purveyors and agencies in the County recycle municipal wastewater (see **Figure D-5** for illustration of water recycling process). Details of each purveyor or sanitary agency's recycled water program are discussed later in this report. Recycled water qualities range from secondary quality (as defined by Title 22 California Code of Regulations (CCR)) to the highest level of treatment for unrestricted use.

The most established water recycling program in the County is that of the City of San Luis Obispo. The City of San Luis Obispo currently delivers 135 AFY to nearby golf courses, schools, and commercial establishments, with expectations of increasing recycled water deliveries to 1,000 AFY. The City must also maintain treated effluent discharge from their wastewater treatment plant to San Luis Obispo Creek, and this flow amounts to approximately 1,800 AFY.

[2] City of Arroyo Grande 2010 UWMP currently cites a 2006 report entitled, *Water Supply Study; Desalination,* concluding that the estimated cost per acre-foot of desalination water of $2,675/AF (2010 Dollars) makes desalination infeasible.



Source: http://www.ieua.org/facilities/rp5.html

Figure D-5. Municipal Water Recycling Process

Other water recycling projects in the County include those listed in **Table D-5** and are discussed briefly in the MWR, and in the draft San Luis Obispo County Regional Recycled Water Strategic Plan (RRWSP).[3] The planned future use of recycled water from San Luis Obispo County agencies are included in their forecasted water supply portfolio discussed in water demand sections below.

[3] June 2014 Public Draft Regional Recycled Water Strategic Plan (Review for Public Comments) <http://www.slocountywater.org/site/Frequent%20Downloads/Integrated%20Regional%20Water%20Management%20Plan/Recycled%20Water/>

Table D-5. Existing and Projected Recycled Water Use

Agency / WWTP	Existing Effluent		Inland Discharge	Ocean / Coastal Discharge	Existing Reuse	Planned Future Reuse
North Coast Sub-Region	(mgd)	(AFY)	(AFY)	(AFY)	(AFY)	(AFY)
California Men's Colony	1.20	1,340	1,140 [3]	--	200 [3]	200
Cambria CSD	0.50	540	--	540	-- [4]	
Cayucos CSD	0.25	275	--	275	--	
Los Osos WWTP [5]	1.20	1,340	1,340	--	--	
Morro Bay	0.87	975	--	975	--	1,121
San Simeon CSD	0.07	80	--	80	-- [6]	
North County Sub-Region						
City of Atascadero	1.00	1,100	800	--	300	300
Heritage Ranch CSD	0.20	230	230	--	--	--
City of Paso Robles	3.00	3,300	3,300	--	--	--
San Miguel CSD	0.10	130	130	--	--	--
TCSD Meadowbrook WWTP [1]	0.15	170	170 [2]	--	--	750
South County Sub-Region						
Avila Beach CSD	0.05	50	--	50	--	
NCSD Blacklake WWTP	0.05	50	--	--	50	80
NCSD Southland WWTF	0.60	640	640 [7]	--	--	1,900
Pismo Beach	1.10	1,230	--	1,230	--	2,020
Rural Water Company	0.05	50	--	--	50	50
City of San Luis Obispo [8]	5.10	5,700	5,540 [8]	--	160	400
San Miguelito MWC	0.15	170	--	170	--	
SSLOCSD WWTP	2.60	2,910	--	2,910	--	3,920
Woodland MWC	0.05	50	--	--	50	50
Total	**18.29**	**20,330**	**13,290**	**6,230**	**810**	**10,791**

Source: (Public Draft RRWSP, June 19, 2014), MWR, and UWMPs

Notes:

1 Templeton CSD is considering diverting existing sewer flows that go to the Paso Robles WWTP (approximately 0.22mgd) and conveying the flow for treatment at the TCSD Meadowbrook WWTP.

2 Templeton CSD retrieves the percolated water at downstream wells.

3 Must maintain a minimum discharge of 0.75 cfs (0.5mgd ; 540AFY) to Chorro Creek.

4 Percolated effluent serves as a barrier to slow the seaward migration of subterranean fresh water.

5 Currently under construction and start of operations planned for 2016.

6 Trucking of recycled water for irrigation started in 2014.

7 Percolated water is accounted for in the Nipomo Mesa Management Area groundwater balance.

8 Must maintain a minimum discharge of 2.5 cfs (1.6mgd ; 1,800AFY) to San Luis Obispo Creek.

D.2.6 *Other Cooperative Supply Opportunities*

Other cooperative supply opportunities exist between agencies internal to the planning region. There are also future programs such as expansion of the existing Nacimiento Water Project (NWP). Currently, 9,655 AFY of water available from the project is subscribed for and 6,095 AFY is unsubscribed for. The following are examples from the MWR of how the use of the NWP could be used as a viable supply source in the future.

Unsubscribed Urban Use: This would entail direct delivery of the unsubscribed water to existing or new urban participants.

Unsubscribed Non-Urban Use: This would entail delivery to new rural and/or agricultural participants directly or via wheeling through existing participants' infrastructure.

Groundwater Banking or Recharge: This would entail direct or in-lieu delivery of subscribed and/or unsubscribed water to a recharge location for later extraction and/or to benefit the groundwater basin. In-lieu delivery refers to delivering additional NWP water to existing participants in-lieu of those existing participants pumping groundwater.

Exchanges: This would entail using the unsubscribed water in exchange of a currently used water resource. Examples include connecting CMC or Cal Poly to the NWP and freeing up State Water and/or Whale Rock Reservoir water for use by others; the City of San Luis Obispo utilizing additional water from the NWP and freeing up Salinas Reservoir water for use by others; or delivering unsubscribed water to urban areas to free up groundwater for rural and/or agricultural users.

Other more developed supply sources of the County that are outside of groundwater basins discussed above are listed in **Table D-6**. If the District requires more detailed information, focused studies would be necessary.

Table D-6. Other Developed Supply Sources

ıb-Region	Area
North Coast	Villa/Cayucos/Old/Willow/Toro Creek Roads
North County	Nacimiento/San Antonio Lakes
North County	Adelaida
North County	Park Hill
North County	Templeton Hills
South County	Coast San Luis Hills/Oak Park
South County	Coast Nipomo Valley/Los Berros/Tematte Ridge

Source: 2012 MWR

Most of these opportunities do provide a reliable source of water due to the nature of existing contract provisions and surface water rights. However, given the affordability and institutional challenges associated with new urban or non-urban participants working both inside and outside of the San Luis Obispo County IRWM region, and costs associated with a banking/recharge program that would likely only have a short-term benefit, further studies are needed to look at:

- Developing supply scenarios and evaluating each scenario regarding the needs, willingness of participants, capacity availability, stakeholder review and/or approval, exchange valuation assessments, and water rights issues.

- Conducting flow tests or reservoir releases to evaluate the benefit of outside cooperative new supply scenarios.

D.2.7 *Current Water Supply Total*

Total current water supplies of the IRWM planning region are presented in two different aggregations to present the supply totals on both a Sub-Region and WPA level. The breakdown of water supplies includes five categories of water supply sources:

1. **Groundwater** – groundwater indigenous to the Sub-Region
2. **SWRCB Water Rights Diversions** – SWRCB permitted surface water diversions within the IRWM Region
3. **Imported Surface Water** – includes SWP water from the Coastal Branch WTP
4. **Reuse/Recycled water** – includes recycled and desalination supplies
5. **Other Cooperative Supply Opportunities** – includes working within and adjoining IRWM regions in securing urban and non-urban supplies for direct use or banking and exchange using groundwater basins.

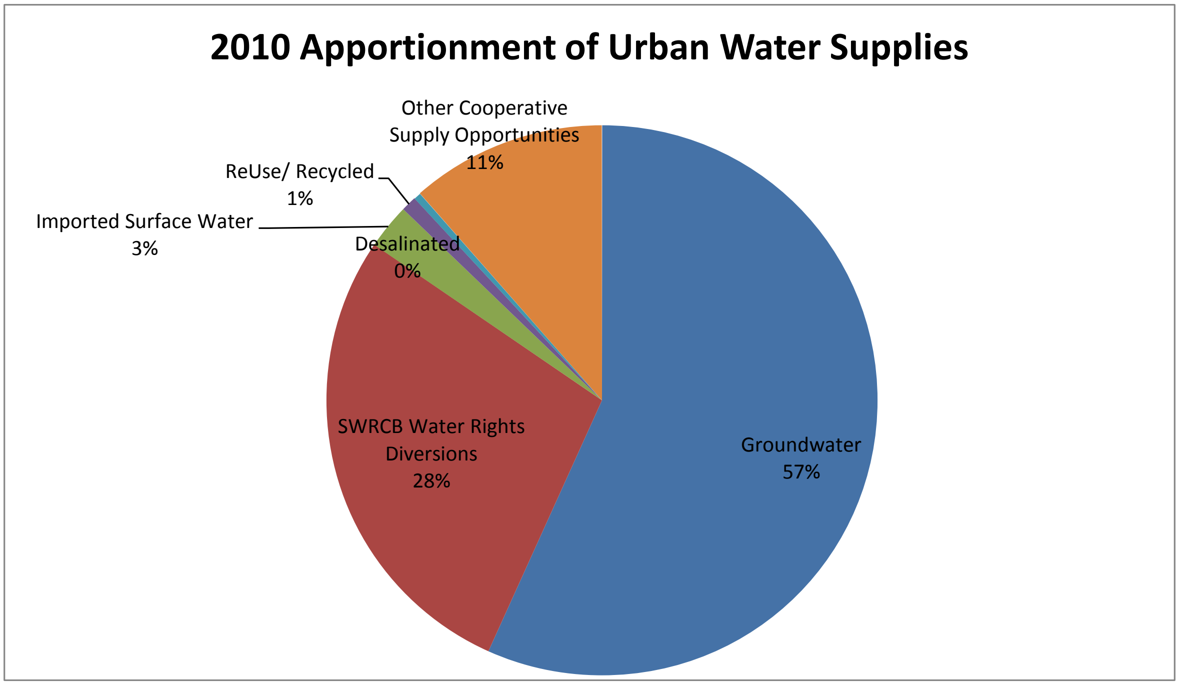
D.2.7.1 Current Urban Water Supply Breakdown by Sub-Region

As shown in **Table D-7** and **Figure D-6**, approximately two-thirds of the current urban water supply comes from groundwater. Typical for many regions, the dependency on groundwater is a result of using the least cost/best quality water supply alternative. With groundwater elevations continually sliding downward causing increased pumping costs, and with the real threat of sea water intrusion and upwelling of high TDS groundwater requiring expensive treatment, the reduced availability of low cost fresh groundwater supplies is driving the need for looking to supplemental surface water, recycled water, and desalinated water supplies.

Table D-7. Current (2010) Urban Water Supply for Entire IRWM Planning Region

Total Water Supply By Sub-Region (AFY)							Sub-Region Totals
Sub Region	Groundwater	SWRCB Water Rights Diversions	Imported Surface Water	ReUse/ Recycled	Desalinated	Other Cooperative Supply Opportunities	
North Coast	5,028	3,609	0	300	645	600	10,182
North County	24,093	7,672	66	475	0	1,700	34,006
South County	10,205	11,749	1,735	2,635	0	7,919	34,243
Region Total	**39,326**	**23,030**	**1,801**	**3,410**	**645**	**10,219**	**78,431**

Source: IRWM Database



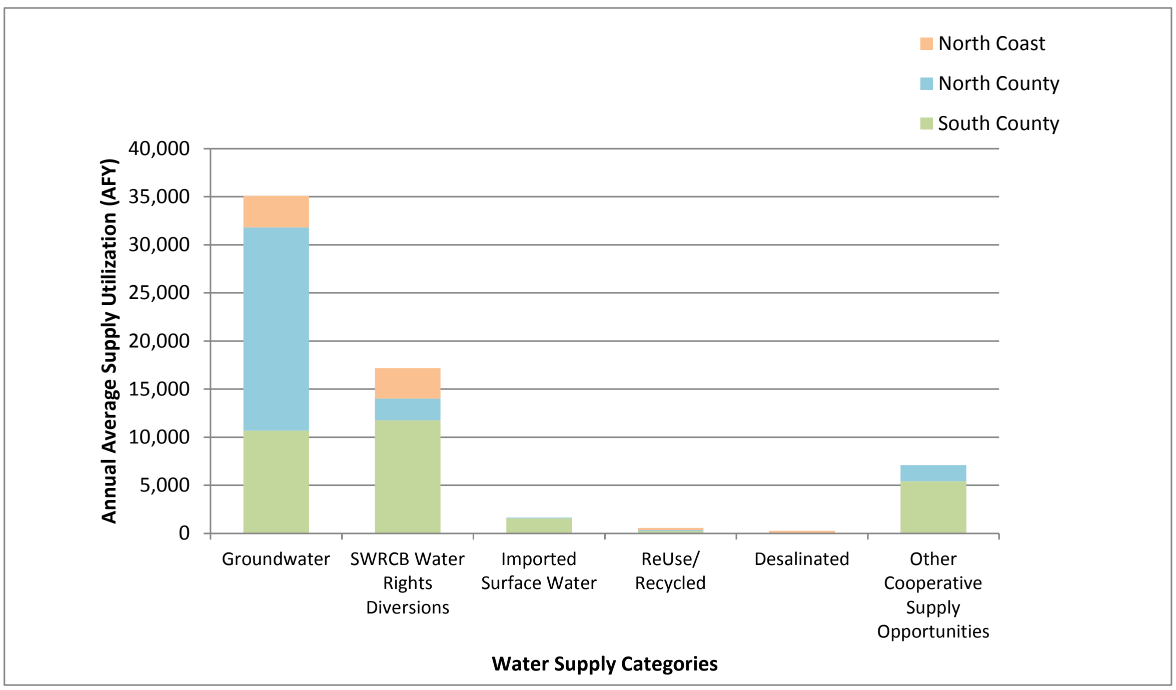


Figure D-6. Urban Water Supply Breakdown by Sub-Region and for Total Region

D.2.7.2 Urban Water Supply Summary by Water Sector and WPA

To better represent the urban supply usage, **Table D-8** and **Table D-9** provide a breakdown in water supplies in the IRWM planning region by WPA and Sub-Region for the years 2010 and 2035. Urban supplies often use a mix of groundwater, surface water, imported water, recycled water and/or desalinated water. **Figure D-7** illustrates the change in water supplies between

2010 and 2035 showing increases in all supply sources with recycled water and desalinated water having the largest percent change.

Table D-8. Water Supplies for 2010 Urban Uses

WPA	Total Water Supply (AFY) by WPA						Totals
	Groundwater	SWRCB Water Rights Diversions	Imported Surface Water	ReUse/ Recycled	Desalinated	Other Cooperative Supply Opportunities	
North Coast							
1.San Simeon	140	-	-	-	-	-	140
2.Cambria	673	-	-	-	-	-	673
3.Cayucos	-	661	-	-	-	-	661
4.Morro Bay	328	2,508	-	200	258	-	3,294
5.Los Osos	2,156	-	-	-	-	-	2,156
North Coast Total	**3,297**	**3,169**	**-**	**200**	**258**	**-**	**6,924**
North County							
10.Carrizo	-	-	-	-	-	-	-
11.Rafael/Big Spring	-	-	-	-	-	-	-
12.Santa Margarita	1,785	22	-	-	-	-	1,807
13.Atascadero/Templeton	12,452	2,250	-	132	-	-	14,834
14.Salinas/Estrella	6,898	-	66	-	-	-	6,964
15.Cholame	-	-	-	-	-	-	-
16.Nacimiento	-	-	-	-	-	1,700	1,700
North County Total	**21,135**	**2,272**	**66**	**132**	**-**	**1,700**	**25,305**
South County Total							
6.San Luis Obispo/Avila	238	11,749	-	151	-	23	12,161
7.South Coast	10,432	-	1,571	76	-	5,379	17,458
8.Huasna Valley	-	-	-	-	-	-	-
9.Cuyama Valley	-	-	-	-	-	-	-
South County Total	**10,670**	**11,749**	**1,571**	**227**	**-**	**5,402**	**29,619**
IRWM Total Urban	**35,102**	**17,190**	**1,637**	**559**	**258**	**7,102**	**61,848**

Sources: IRWM Database, 2014

D.3 CURRENT AND FUTURE WATER DEMANDS AND SUPPLIES

Having established the baseline of water supplies above, the balance of those supplies are compared against current and future water demands. This water balance is used to recognize where problems are either already occurring or will occur, and if there are data gaps making the balance of supplies and demands not possible unless further study is completed.

D.3.1 *Water Demand Data Sources*

The primary sources of data used to develop the water balance for the San Luis Obispo Planning Region were 2010 Urban Water Management Plans and the 2012 San Luis Obispo County Master Water Report. Additional information was provided by urban water suppliers within the San Luis Obispo Planning Region.

Table D-9. Water Supplies for 2035 Urban Uses

WPA	Total Water Supply (AFY) by WPA						Totals
	Groundwater	SWRCB Water Rights Diversions	Imported Surface Water	ReUse/ Recycled	Desalinated	Other Cooperative Supply Opportunities	
North Coast							
1.San Simeon	140	-	-	-	-	-	140
2.Cambria	809	-	-	100	-	600	1,509
3.Cayucos	-	661	-	-	-	-	661
4.Morro Bay	1,923	2,948	-	200	645	-	5,716
5.Los Osos	2,156	-	-	-	-	-	2,156
North Coast Total	**5,028**	**3,609**	**-**	**300**	**645**	**600**	**10,182**
North County							
10.Carrizo	-	-	-	-	-	-	-
11.Rafael/Big Spring	-	-	-	-	-	-	-
12.Santa Margarita	1,785	22	-	-	-	-	1,807
13.Atascadero/Templeton	13,447	2,250	-	475	-	-	16,172
14.Salinas/Estrella	8,861	5,400	66	-	-	-	14,327
15.Cholame	-	-	-	-	-	-	-
16.Nacimiento	-	-	-	-	-	1,700	1,700
North County Total	**24,093**	**7,672**	**66**	**475**	**-**	**1,700**	**34,006**
South County Total							
6.San Luis Obispo/Avila	238	11,749	-	400	-	23	12,410
7.South Coast	9,967	-	1,735	2,235	-	7,896	21,833
8.Huasna Valley	-	-	-	-	-	-	-
9.Cuyama Valley	-	-	-	-	-	-	-
South County Total	**10,205**	**11,749**	**1,735**	**2,635**	**-**	**7,919**	**34,243**
IRWM Total Urban	**39,326**	**23,030**	**1,801**	**3,410**	**645**	**10,219**	**78,431**

Sources: IRWM Database, 2014

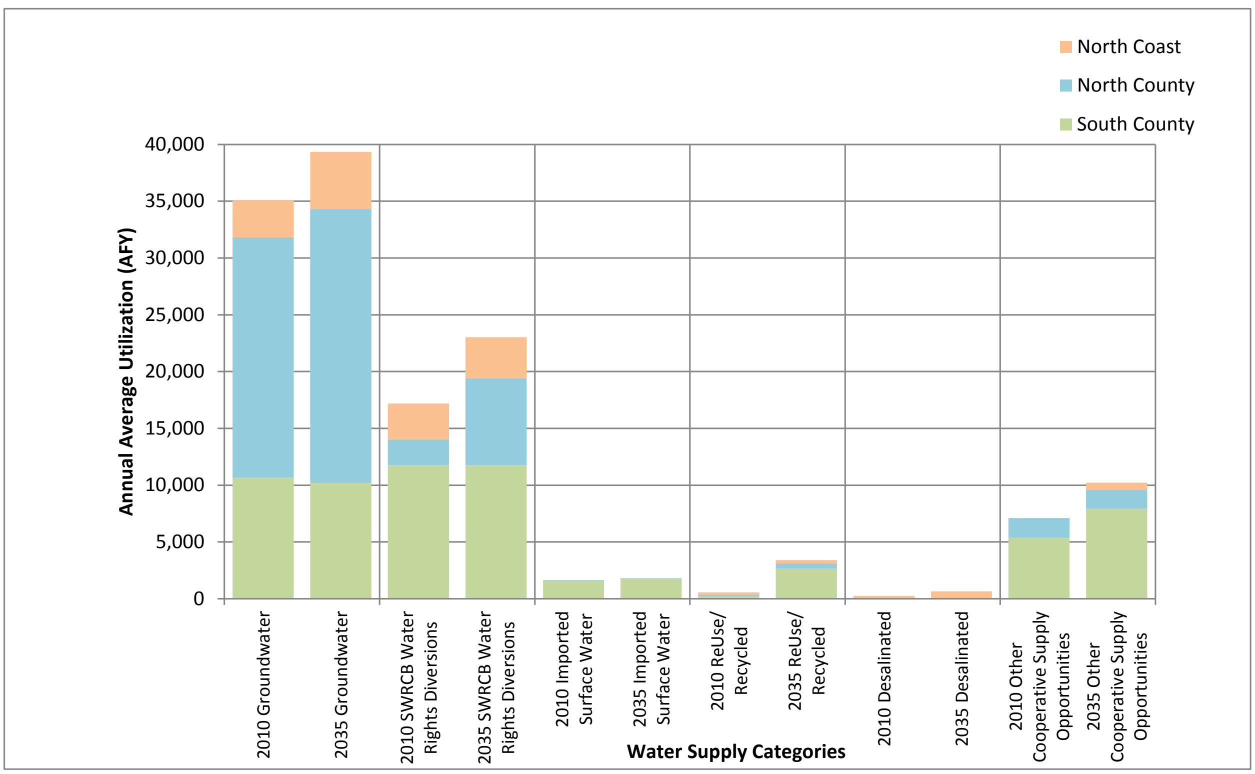


Figure D-7. Comparison in Urban Water Supply Portfolio 2010 and 2035

D.3.1.1 2010 Urban Water Management Plans

Urban Water Management Plans (UWMPs) are prepared by California's urban water suppliers to support their long-term resource planning and ensure adequate water supplies are available to meet existing and future water demands. Every urban water supplier that either provides over 3,000 acre-feet of water annually or serves 3,000 or more connections is required to assess the reliability of its water sources over a 20-year planning horizon considering normal, dry, and multiple dry years. This assessment is included in an urban water supplier's UWMP, which are prepared every five years and submitted to the Department of Water Resources. The following water suppliers prepared 2010 UWMPs that were used in this analysis (see **Section N – Relation to Local Water and Land Use Planning**, Table N-1 for list of UWMP and their URLs):

- City of Arroyo Grande
- Cambria Community Services District
- City of Grover Beach
- City of Morro Bay
- Nipomo Community Services District
- City of Paso Robles
- City of Pismo Beach
- City of San Luis Obispo

D.3.1.2 2012 San Luis Obispo Master Water Report

The Master Water Report (MWR) is a compilation of the current and future water resource management activities being undertaken by various entities within the County and is organized by WPA. The MWR explores how these activities interrelate, analyzes current and future supplies and demands, identifies future water management strategies and ways to optimize existing strategies, and documents the role of the MWR in supporting other water resource planning efforts.

The MWR evaluates and compares the available water supplies (apart from the untreated ocean) to the water demands for the different water planning areas. This was accomplished by reviewing or developing the following:

- Current water supplies and demands based on available information
- Forecast water demands and water supplies available in the future under current land use policies and designations
- Criteria under which there is a shortfall when looking at supplies versus demands
- Criteria for analyzing potential water resource management strategies, projects, programs, or policies
- Potential water resource management strategies, projects, programs, or policies to resolve potential supply deficiencies

Given the amount of overlap between the MWR and the IRWM Plan, the District is going to manage updates of the information in the MWR as part of the IRWM Plan update process. The IRWM Plan has to update urban water demands based on all of the 2010 UWMPs, which were not available when the MWR was written. Agricultural water demands are also updated from the MWR based on a 2013 updated county survey and groundwater modeling work currently taking place in the Paso Robles groundwater basin (see **Figure D-9**). Much of the descriptive information has either been brought into the IRWM Plan or is summarized with a reference to the MWR. To adhere to the MWR's methods of reporting, the water budget tables are kept very close to the same look and content, but the forecast numbers and supply sources have changed. More specifically, each demand source is assigned a supply source regardless of the uncertainty. For instance, in rural cases where the water supply comes from groundwater, groundwater supplies are assigned to equal the demand, even if "Other Groundwater Sources" is the named supply source.

D.3.2 *Method for Developing Projected Water Demands*

The IRWM region demand analysis period starts at the year 2010, corresponding to the most recent Urban Water Management Plans, and extends through 2035; the planning horizon of this IRWM Plan Update. Unlike the MWR, the IRWM analysis does not consider a build-out demand, unless the urban area is truly built-out by 2035. It is important, in this case, to place IRWM projects on a common timeline with the availability of water supplies, and regional statewide projects.

D.3.2.1 Urban Water Demand

Figure D-8 provides a mapping of population density by census block to identify urban areas requiring public water service for drinking water and outdoor water use. The Urban /Reserve Boundaries indicate the potential build-out of incorporated cities and communities. Urban water demand refers to residential, commercial, industrial, parks, institutional, and golf course water demand within the unincorporated communities and incorporated cities in the IRWM Region.

For purposes of the IRWM Plan, the urban water demand includes all unincorporated communities and incorporated cities in the County where water purveyors have provided water demand information for the purposes of reporting in the IRWM Plan. As mentioned above, the urban water demand analysis relies heavily on the 2010 UWMPs. Data analysis was completed in five-year estimates, reflecting the information provided by the 2010 UWMPs. Notification was made to all urban water districts not having a UWMP, with some not responding to the data request. In these cases, the MWR is used as the basis assuming the districts are small enough to not change significantly.

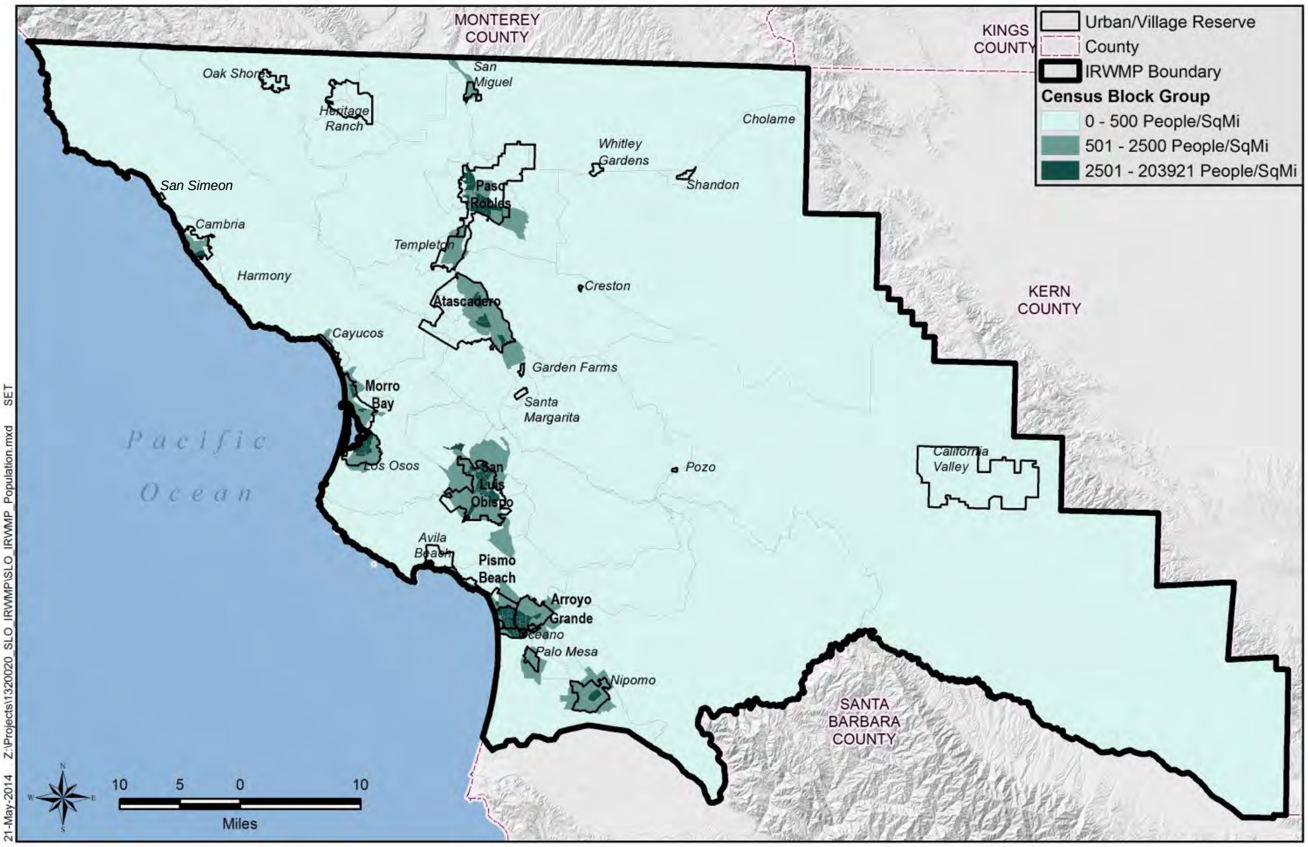


Figure D-8. Map of Urban and Rural Areas

D.3.2.2 Rural Water Demand

Rural water demand refers to water demands that are not considered agricultural or urban, and typically supplied through a private well or small water system. The typical land use is small to medium acreage ranchette homes of 5 to 20 acres in size with minimal urban-style landscaping. Since no update of the rural areas was conducted as part of the IRWM Plan Update, the analysis used herein, to determine rural water demands relies wholly on the estimated current and projected MWR demands. For purposes of illustration, the areas shown on **Figure D-8** to be of population densities 501 to 2,500 people per square mile are considered to be typical of rural residential zoning.

D.3.2.3 Agricultural Water Demand

Agricultural water demand (see **Figure D-9**) refers to the annual applied water in all agricultural areas in the IRWM planning region. The current agricultural water demand was calculated using the same method and crop-specific applied water variables employed by the MWR, which utilized information on crop evapotranspiration, effective rainfall, leaching requirements,

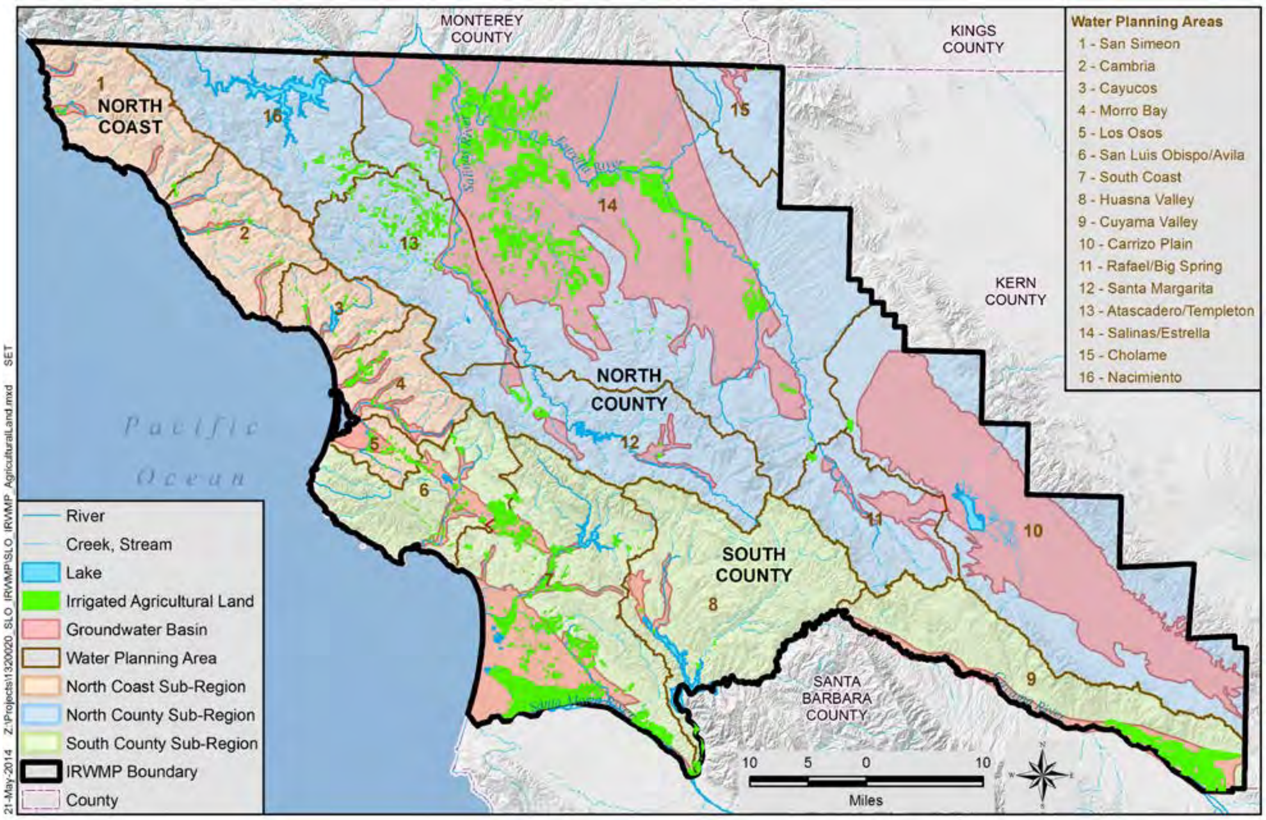


Figure D-9. Agricultural Areas

irrigation efficiency, deficit irrigation, and frost protection. The variables used in the 2012 MWR were reviewed and determined to be the most current values available. The Agricultural/Crop ArcGIS® layer for the San Luis Obispo County from August 2013 was provided to update the 2008 MWR agricultural water use estimates. The seven (7) crop categories presented in the IRWM represent approximately 37 crop types (or Primary Commodities, see **Table D-10**) with each category's water demand being based on a calculation of applied water using the crop-specific evapotranspiration, contribution from rain or shallow water table, leaching requirements, irrigation efficiency, and frost protection.

Table D-10. Crop Group Primary Commodities

Seven (7) Crop Categories	Crop Types (Primary Commodities)	
Alfalfa	• Alfalfa	
Nursery	• Christmas trees • miscellaneous nursery plants	• flowers
Pasture	• miscellaneous grasses • mixed pasture	• sod/turf • sudan grass
Citrus	• Avocados • Grapefruits • Lemons	• Oranges • Olives • Kiwis • pomegranates
Deciduous	• Apples • Apricots • Berries • Peaches • Nectarines • Plum	• Figs • Pistachios • Persimmons • Pears • Quince • strawberries
Vegetables	• Artichokes • Beans • miscellaneous vegetables	• mushrooms • onions • peas • peppers • tomatoes
Vineyard	• wine grapes • table grapes	

For the Paso Robles groundwater basin, agricultural areas were taken from the recent groundwater modeling effort to ensure consistency of the two ongoing efforts. Replacement of the Paso Basin areas in the county data was done in GIS to create a single agricultural area layer for calculation purposes.

For details on the methodology used for calculating agricultural water demands, see Chapter 4.6.3 of the MWR. For a detailed report on agricultural water demands presented in the IRWM, see **Appendix J-1 – Agricultural Water Demand Analysis**.

D.3.2.4 Environmental Demand and Unimpaired Runoff

Environmental water demand refers to the amount of water needed in an aquatic ecosystem, or released into it, to sustain aquatic habitat and ecosystem processes. The federally threatened south-central California coast steelhead (Oncorhynchus mykiss) was used as the primary indicator species for the development of a reasonable estimation of the amount of water needed to support this species. Mean daily flow values from stream gaging stations representative of long-term, unimpaired (or natural) flow conditions were used to derive unimpaired mean annual discharge (MAD) estimates. The Unimpaired Mean Annual Discharge (UMAD) is estimated to translate the total volume of water yielded from the watershed unimpaired from any impoundments or other regulated flow structures. The Environmental Water Demand and UMAD are calculated for the entire WPA and not for individual streams. These estimates, taken from the MWR, are not available for all WPAs and the calculation of both Environmental and UMAD flow volumes are described fully in the MWR.

> *Note: Environmental water demands were to be determined based on watershed "snapshots" provided by the County through a consultant contract being completed in parallel with the IRWM Plan Update. Given delays, the environmental demands provided in this section come directly from the MWR, unless updated demands become available prior to the Public Draft.*

As noted in the MWR, DWR identified over 1,000 water rights applications and permits for San Luis Obispo County (DWR, 2009b) in 2009. Because many of those water rights are uncertain as to their use and permitted amounts, and for purposes of the MWR analysis, the Environmental and UMAD flow volumes are presented without including an analysis of the 1,000 diversion rights in the IRWM region.

> *In order to obtain a better understanding of how much surface water is available for aquatic life, the District would need to identify and quantify all diversion rights and instream flow requirements in the watershed. (MWR)*

D.3.2.5 Assumptions

As in all planning studies where projections are based on what is known today, with an eye towards the future using General and Community plans and various population projections, the goal is to minimize the level of uncertainty to the extent possible given the data available. The three primary planning documents used in this section are the 2007 IRWM plan, the 2012 MWR, and various 2010 UWMPs. To achieve this goal, a number of assumptions are made in the development of the San Luis Obispo Region water demand analysis using these three sources, including the GIS analysis conducted for agricultural demands:

- Existing and projected urban water demand values are obtained from the 2010 UWMPs, if available. If no 2010 UWMP is available, such as in the case of a smaller water district, the water district is notified of the need to update their water demands
- For the purposes of IRWM Plan's reporting of urban water demands where no UWMP or requested update exists, 2010 is assumed to be the MWR demand labeled as existing, and 2035 is assumed to be the MWR demand labeled as Build-out. Moreover, a straight-line interpolation is used in most cases to obtain the urban demands in five-year intervals, unless information is available to change the assumption on the rate of growth
- Projected 2010 UWMP urban water demand values are assumed to include existing

and planned conservation measures, including those implemented to meet the California 20x2020 Water Conservation Plan (SBX7-7)

- Where the MWR water demand is used and demands are presented as a range representing conservation and maximum build-out, the average of that range is calculated and used in this analysis
- For rural and agricultural water demands, MWR and GIS updated values, respectively, are used for each WPA, and straight-line interpolation is used in most cases to obtain the demands in five-year intervals
- Agricultural and rural water supplies are approximated based on the area of each groundwater basin underlying the agricultural and rural land uses. Surface water use is estimated based on availability of water rights and assumed areas to utilize surface water for irrigation (e.g., areas not overlying a groundwater basin)

D.4 Water Demand and Supplies by Sub-Region and WPA

Each of the Sub-Regions and WPAs described in **Section C – Region Description** are included below to represent the forecast summary of water demands and 2035 water budget in the form of a water balance showing demands for urban, rural, and agriculture water uses and available supplies. Environmental water and estimated UMAD are also included to capture each WPA's full water supply requirements. This information is stored and managed in the Region Description Database (see **Section K – Data Management**) and the tables produced are exported for each WPA and Sub-Region. For further detailed information on supplies and demands, please refer to the MWR. One significant change from the MWR is the use of actual assumed values where, in some cases, supply amounts are listed as unknown. The purpose is to provide a placeholder that allows for the summation of demands and supplies for a comparison. Estimated values will be the focus of future updates to improve the understanding of a very complex water demand and supply comparison.

This section is organized by Sub-Region, starting with a summary table (**Table D-11**) and graph (**Figure D-10**) for the three Sub-Regions of the IRWM region, followed by a summary of the WPAs for each Sub-Region, and ending with detailed information for each WPA at the scale of a water district. More importantly, the collection of water demand and supply information contained below is a reporting of published material, especially the 2012 MWR and 2010 UWMPs included in **Section M – Technical Analysis**, and a reporting of calculated agricultural demands based upon analysis conducted by crop type for each WPA. No separate unpublished findings of water supply sufficiency are made within this section.

Table D-11. IRWM Plan Sub-Region Demand Totals

Sum Urban, Rural, Ag	2010	2015	2020	2025	2030	2035
North Coast	11,354	12,109	12,732	13,366	13,974	15,179
North County	117,909	126,043	134,414	142,760	148,316	154,457
South County	106,282	104,262	99,984	96,477	93,021	89,665
Total for IRWM Region	**235,545**	**242,414**	**247,130**	**252,603**	**255,311**	**259,301**

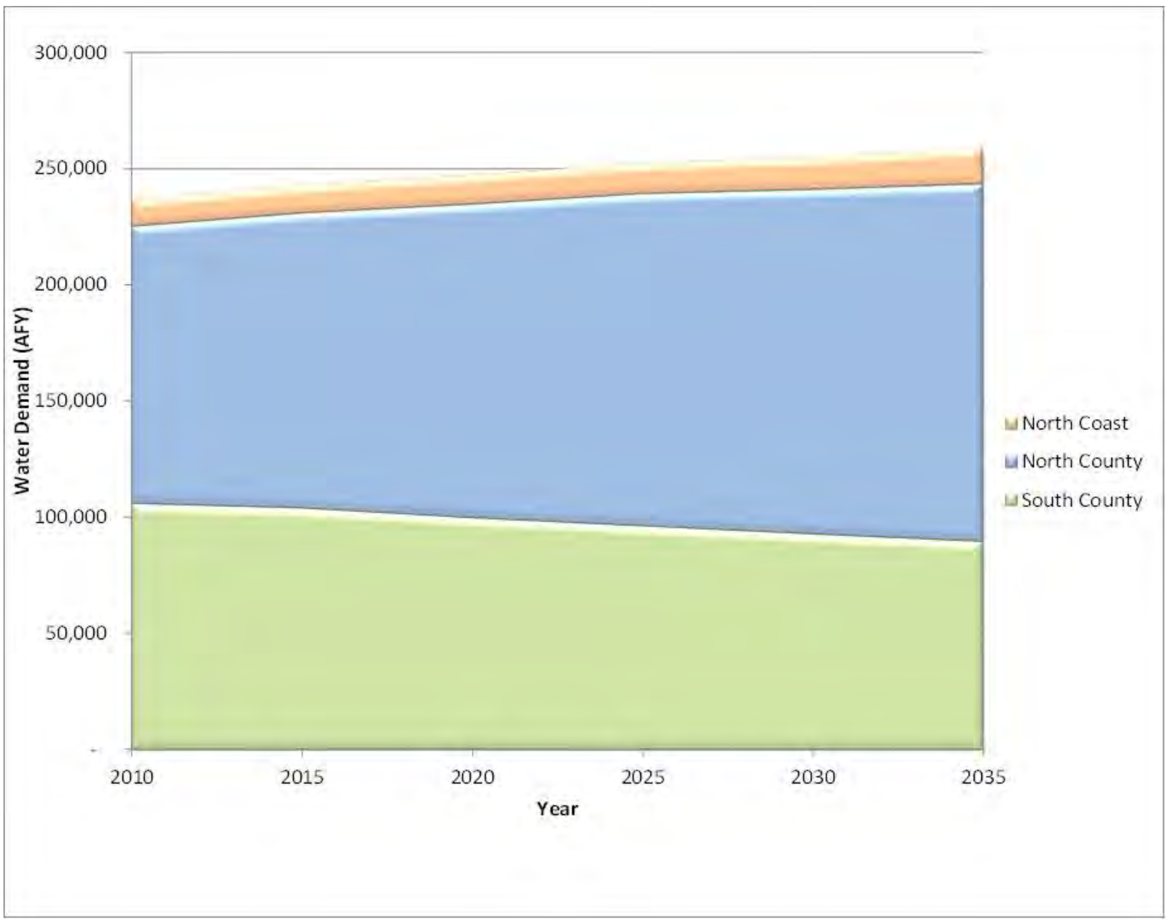


Figure D-10. IRWM Plan Sub-Region Projected Demand Totals

D.4.1 *North Coast Sub-Region*

As listed in **Table D-12**, the North Coast Sub-Region includes five WPAs (See **Figure D-8**). Most of the urban water demands stem from small coastal communities reliant on small groundwater basins where the ocean's salinity influence on fresh groundwater supplies is of critical concern (i.e., see basin descriptions in **Section C – Region Description**). A small amount of surface water, desalinated water, and recycled water is used in the southern portion of the sub-region. Pockets of rural and agricultural demands are reliant on local groundwater supplies using private wells to meet both irrigation and potable water demands.

Table D-12. North Coast Subregion WPA Annual Average Water Demand Summary (AFY)

Sum Urban, Rural, Ag	2010	2015	2020	2025	2030	2035
WPA No. 1 - San Simeon	169	203	238	271	305	339
WPA No. 2 - Cambria	1,293	1,563	1,768	1,949	2,088	2,581
WPA No. 3 - Cayucos	1,348	1,353	1,360	1,365	1,371	1,376
WPA No. 4 - Morro Bay	4,945	5,039	5,055	5,098	5,157	5,802
WPA No. 5 - Los Osos	5,052	5,113	5,185	5,263	5,342	5,435
Total for Sub-Region	**12,807**	**13,271**	**13,606**	**13,946**	**14,263**	**15,533**

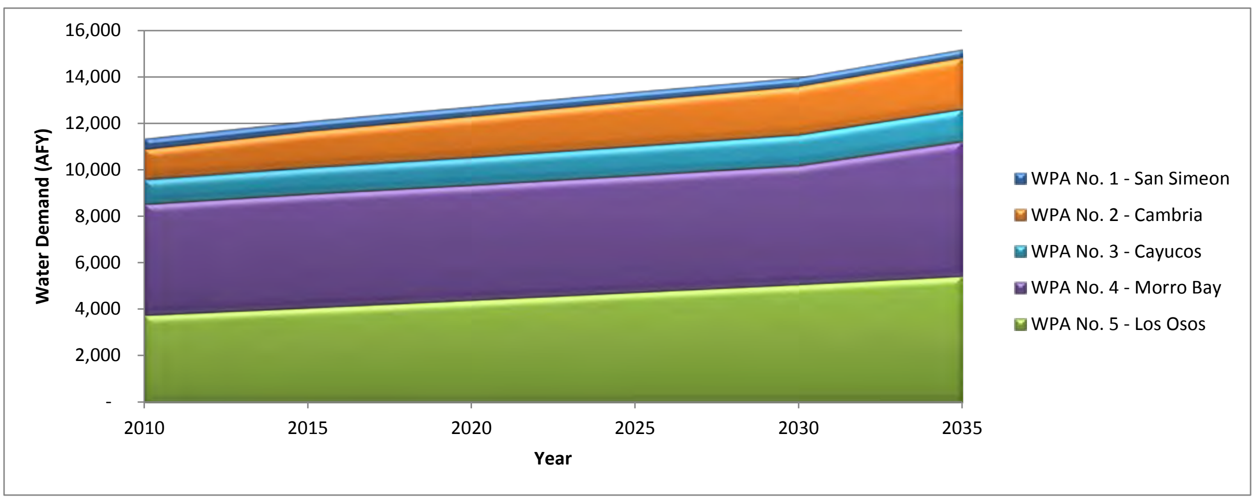


Figure D-11. North Coast WPA Water Demand Summary

D.4.1.1 WPA 1 – San Simeon

Water Demands

Water demands for the primary water use sectors are presented in both **Figure D-12** and **Table D-13**. For urban water demands, the San Simeon Community Services District (San Simeon CSD) is the only urban water supplier in WPA 1. With sea water intrusion being a continuous threat to their groundwater supplies, an effort to reduce groundwater demand included San Simeon CSD adopting strict conservation measures and critical ordinances. The first ordinance, passed in 1986, declared the serious water quality problem and issued a building moratorium citing the threat to public health and safety. In 1988, the San Simeon CSD issued a permanent building moratorium which, to this day, is still in place. San Simeon CSD is looking to implement recycled water in the near future to reduce the need for severe rationing in the summer months when both irrigation demands and tourism is at its highest. Urban demands indicated by the CSD in **Table D-13** reflect an aggressive growth schedule, in hopes that system improvements and alternative supplies will be perfected and the building moratorium lifted after 25+ years.

The existing annual applied water for agriculture in WPA 1 is approximately 324 AFY. The existing crops in this area include citrus, deciduous, pasture, and vineyards. The projected future annual applied water for WPA 1 decreases significantly to an average of 38 AFY in 2035. The projected future agricultural demand is less than existing, due to increased irrigation efficiencies, fallowing or redevelopment of agricultural lands, and reduced growth of agricultural uses in this area. Agriculture water can provide improved sustainability in groundwater supplies and better overall management of salinity intrusion and tidal influences currently occurring.

According to the MWR, the total UMAD in WPA 1 is approximately 104,490 AFY and environmental water demand is approximately 72,980 AFY.

Demand Supply Balance

Table D-14 indicates a deficit of water supply due to the current restriction of further growth on groundwater. Planned growth indicates a 2035 demand of 250 AFY with only 140 AFY of perennial groundwater supplies. Absent implementation of recharge, recycled water, and desalination projects and programs, the WPA 1 imbalance will continue into the future. Given the DAC status of the community of San Simeon, project formulation and implementation through grant and loan programs are needed to achieve the most cost-effective alternative supply.

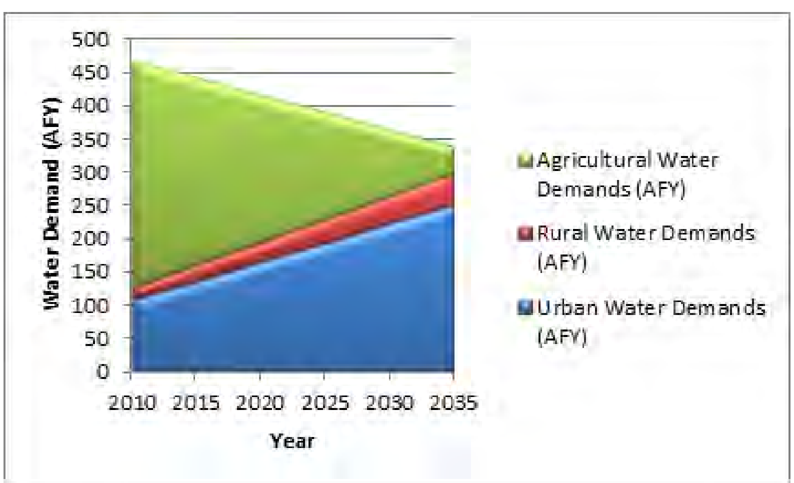


Figure D-12. WPA-1 San Simeon Water Demands

Table D-13. WPA No. 1 - San Simeon

Urban Water Demands (AFY)							
Urban Water District	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	**Notes**
San Simeon CSD	108	136	165	193	222	250	1
Total	**108**	**136**	**165**	**193**	**222**	**250**	
Rural Water Demands (AFY)							
Rural Areas/Districts	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	**Notes**
San Simeon - Rural	20	26	32	38	44	50	2
Total	**20**	**26**	**32**	**38**	**44**	**50**	
Agricultural Water Demands (AFY)							
Crop Types	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	**Notes**
Alfalfa	0	0	0	0	0	0	
Citrus	20	17	13	10	6	2	
Deciduous	2	2	2	1	1	0	
Nursery	0	0	0	0	0	0	
Pasture	286	236	186	135	85	34	
Vegetable	0	0	0	0	0	0	
Vineyard	16	13	10	8	5	2	
Total	**324**	**268**	**211**	**154**	**97**	**38**	
Total Water Demands (AFY)							
Sum Urban, Rural, Ag	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	
Total Water Demand	**452**	**430**	**408**	**385**	**363**	**338**	
Environmental Water Demands (AFY)							
Environmental Category	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	
Estimated Unimpaired Mean Annual Discharge	72,980	72,980	72,980	72,980	72,980	72,980	2
Estimated Environmental Water Demand	104,490	104,490	104,490	104,490	104,490	104,490	2

Notes:

1 Straight line interpolation between 2010 demand and 2035.

2 Straightline Interpolation 2010 to 2035

Table D-14. WPA No. 1 – San Simeon Demand Supply Balance

WPA No. 1 - San Simeon

Water Districts/Use Sectors/Environmental/Unimpaired Summary	San Simeon CSD		San Simeon - Agriculture		San Simeon - Rural		Environmental & UMAD		Total	
Urban/Ag/ Rural Water Demands	**Demand (AFY)**	***Notes***	**Demand (AFY)**	***Notes***	**Demand (AFY)**	***Notes***	**Demand (AFY)**	***Notes***	**Demand (AFY)**	***Notes***
Existing Demands	108	*1*	324	*6*	20	*6*	0		452	
Forecasted Demands (2035)	**250**	***2***	**38**	***6***	**50**	***6***	**0**		**338**	
Water Supply Source — **Groundwater**	**GW Supply (AFY)**		**GW Supply (AFY)**		**GW Supply (AFY)**		**GW Supply (AFY)**		**GW Supply (AFY)**	
Pico Creek Valley Basin	140	*3*	0	*3*					140	
San Carpoforo Valley	0	*4*	0	*7*					0	
Arroyo de la Cruz Valley	0		14	*8*	18	*8*			32	
Other GW Supply Sources	0				22				22	
Total GW	**140**		**14**		**40**		**0**		**194**	
Surface Water	**SW Supply (AFY)**		**SW Supply (AFY)**		**SW Supply (AFY)**		**SW Supply (AFY)**		**SW Supply (AFY)**	
SWRCB-WPA 1	0	*5*	8	*5*	10	*5*			18	
Total SW	**0**		**8**		**10**		**0**		**18**	
Total Supplies	**140**		**21**		**50**		**0**		**211**	
Balance (Supplies - Demand)	**-110**		**-17**		**0**		**0**		**-127**	
Environmental Water							72,980			
Unimpaired Mean Annual Inflow							104,490			

Notes:

1 Demands fluctuate between 70 and 140 AFY due to changes in tourism.

2 Extensive conservation program in place. No further conservation expected at build-out by San Simeon CSD.
Most recent master plan forecast a build-out demand of 224 AFY, but San Simeon CSD's current build-out demand estimate is 250 AFY.

3 Estimated safe basin yield of Pico Creek underflow is 120 AFY.

4 No estimates of basin yield exist

5 Diversions from sources other than the three basins noted above total 238 AFY according to diversion reporting forms to the SWRCB from Hearst Holdings Inc. (June 2010) and the SWRCB diversion database.

6 Agricultural and rural demand calculations do not account for livestock operations and likely underestimates actual water demands. For example Hearst Holdings Inc. makes up the majority of agriculture/rural land ownership in this WPA and has submitted surface water diversion reporting forms to the SWRCB estimating 1829 AFY of irrigation livestock and domestic usage for their property from surface sources.

7 No estimates of basin yield exist.

8 1,607 AFY of Arroyo De La Cruz Underflow is reported in the State Board diversion database as a permitted appropriative water right for Hearst Holdings Inc. Estimated safe basin yield is 1,244 AFY and all pumping is for agricultural or rural users.

D.4.1.2 WPA 2 – Cambria

Water Demands

As shown in **Table D-15**, the Cambria Community Services District (Cambria CSD) is the only urban water supplier in WPA 2. Cambria, along with other nearby water districts is currently in the feasibility stage of implementing recycled water in the local region. Planned implementation of recycled water use will increase potable supplies in summer months when tourism and irrigation demands are at their highest. Similar to San Simeon, Cambria is also under a building moratorium due to insufficient water supplies and infrastructure.

The existing annual applied water for agricultural uses in WPA 2 is approximately 521 AFY. The existing crops in this area include citrus, deciduous, pasture, vegetable, and vineyards. The projected future annual applied water for WPA 2 averages approximately 1,115 AFY. The projected future agricultural demand is higher than existing due to increases in acreage of existing crop groups, especially vegetables and vineyards.

The total UMAD in WPA 2 is approximately 87,050 AFY and environmental water demand is approximately 51,460 AFY.

Demand Supply Balance

Table D-16 indicates a total surplus of water supplies due to forecasted implementation of recycled water and possibly desalinated water by 2035. Absent the addition of new supplies or a groundwater basin management strategy to increase the perennial yield, the existing supplies are insufficient to accommodate the expected growth over the next 20 years as per the Cambria Community Plan.

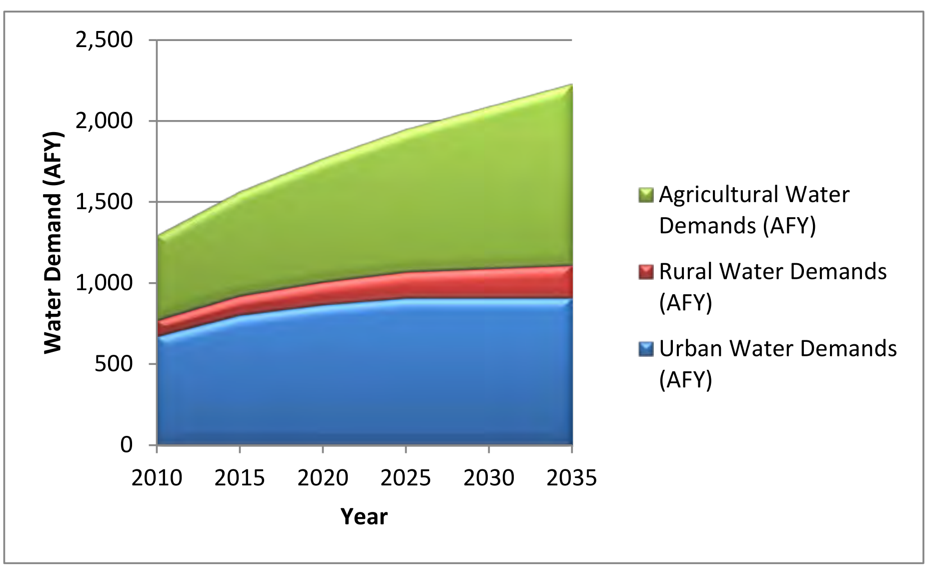


Figure D-13. WPA 2. Cambria Water Demands

Table D-15. WPA No. 2 - Cambria

		2010	2015	2020	2025	2030	2035	Notes
Urban Water Demands (AFY)								
	Urban Water District	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	**Notes**
	Cambria CSD	673	804	868	909	909	909	1
	Total	**673**	**804**	**868**	**909**	**909**	**909**	
Rural Water Demands (AFY)								
	Rural Areas/Districts	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	**Notes**
	Cambria - Rural	100	121	142	163	184	205	2
	Total	**100**	**121**	**142**	**163**	**184**	**205**	
Agricultural Water Demands (AFY)								
	Crop Types	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	**Notes**
	Alfalfa	0	0	0	0	0	0	
	Citrus	311	382	453	524	595	666	
	Deciduous	8	9	11	13	14	16	
	Nursery	0	0	0	0	0	0	
	Pasture	23	29	34	39	45	50	
	Vegetable	148	182	216	249	283	317	
	Vineyard	31	38	45	52	59	66	
	Total	**521**	**640**	**759**	**877**	**996**	**1,115**	
Total Water Demands (AFY)								
	Sum Urban, Rural, Ag	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	
	Total Water Demand	**1,294**	**1,565**	**1,769**	**1,949**	**2,089**	**2,229**	
Environmental Water Demands (AFY)								
	Environmental Category	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	
	Estimated Unimpaired Mean Annual Discharge	51,460	51,460	51,460	51,460	51,460	51,460	
	Estimated Environmental Water Demand	87,050	87,050	87,050	87,050	87,050	87,050	3

Notes:

1 2012 MWR Future demand given as a range, 1009-1514 AFY. Average of range used for 2035.

2 Straightline Interpolation 2010 to 2035

3 Mean daily flow values from stream gaging stations representative of long-term, unimpaired (or natural) flow conditions were used to derive unimpaired mean annual discharge (MAD) estimates. The unimpaired MAD is the cumulative flow for the creeks within the water planning area that were included in the calculation.

Table D-16. WPA No. 2 – Cambria Demand Supply Balance

WPA No. 2 - Cambria

	Water Districts/Use Sectors/Environmental/Unimpaired Summary	Cambria CSD		Cambria - Agriculture		Cambria - Rural		Environmental & UMAD		Total	
		Demand (AFY)	*Notes*	Demand (AFY)	*Notes*	Demand (AFY)	*Notes*	Demand (AFY)	*Notes*	Demand (AFY)	*Notes*
Urban/Ag/ Rural Water Demands	**Existing Demands**	673	*1*	521		100		0		1,294	
	Forecasted Demands (2035)	**909**	***2***	**1,115**		**205**		**0**		**2,229**	
Water Supply Source	**Groundwater**	**GW Supply (AFY)**		**GW Supply (AFY)**		**GW Supply (AFY)**		**GW Supply (AFY)**		**GW Supply (AFY)**	
	San Simeon Valley	610	*3*	11	*7*	2	*7*			623	
	Santa Rosa Valley - WPA 2	199	*4*	301	*8*	55	*8*			555	
	Villa Valley	0		112	*9*	21	*9*			132	
	Other GW Supply Sources	0		691		127				818	
	Total GW	**809**		**1,115**		**205**		**0**		**2,129**	
	Surface Water	**SW Supply (AFY)**		**SW Supply (AFY)**		**SW Supply (AFY)**		**SW Supply (AFY)**		**SW Supply (AFY)**	
	Other	600	*5*							600	
	Recycled Water	100								100	
	SWRCB-WPA 1	0	*6*							0	
	Total SW	**700**		**0**		**0**		**0**		**700**	
	Total Supplies	**1,509**		**1,115**		**205**		**0**		**2,829**	
	Balance (Supplies - Demand)	**600**		**0**		**0**		**0**		**600**	
Environmental Water								51,460			
Unimpaired Mean Annual Inflow								87,050			

Notes:

1 Existing Demand = Projected 2015 Water Demand using the 20x2020 interim water use target. 20x2020 target water use was calculated using DWR Method 3.

2 Assumes 20x2020 per capita target water use.

3 State Board allows Cambria CSD 1230 AFY maximum extraction and 370 AF dry season extraction.
California Coastal Commission limits Cambria CSD total diversion from both San Simeon and Santa Rosa Creeks to 1230 AFY

4 State Board allows Cambria CSD 518 AFY maximum extraction and 260 AF dry season extraction.
California Coastal Commission limits Cambria CSD total diversion from both San Simeon and Santa Rosa Creeks to 1230 AFY

5 Alternatives identified in a 2004 Assessment of Long-Term WS Alts included seawater desalination an exchange of buying Nacimiento reservoir water for the use of water stored in the Whale Rock Reservoir direct transmission of Nacimiento reservoir

6 Diversions do not distinguish type of use. Potentially 158 AFY could be diverted for use to either agriculture or rural residential.

7 Estimated safe basin yield is 1,040 AFY. State Board allows Cambria CSD 1,230 AFY maximum extraction and 370 AF dry season extraction

8 Estimated safe basin yield is 2,260 AFY. State Board allows Cambria CSD 518 AFY maximum extraction and 260 AF dry season extraction. California Coastal Commission limits Cambria CSD total diversion from both San Simeon and Santa Rosa Creeks to 1,230 AFY

9 Estimated safe basin yield is 1,000 AFY and all pumping is for agricultural or rural users.

D.4.1.3 WPA 3 – Cayucos

Water Demands

As shown in **Table D-17,** there are four urban water suppliers in WPA 3: Cayucos Cemetery District, Paso Robles Beach Water Association, Morro Rock Mutual Water Company, and County Service Area 3. Information on these water districts is in **Section C – Region Description**. The urban water demands for WPA 3 are shown below.

The existing annual applied water for WPA 3 is approximately 547 AFY. The existing crops in this area include citrus, pasture, vegetables, and vineyards. The projected future annual applied water for WPA 3 averages approximately 617 AFY. The projected future agricultural demand is higher than existing due to slight increases in acreage of citrus and vineyards, and a significant increase in vegetables.

For WPA 3, the total UMAD is approximately 33,340 AFY and environmental water demand is approximately 26,160 AFY.

Demand Supply Balance

Table D-18 indicates a reliance on Whale Rock Reservoir and the Nacimiento Water Project (CSA 10) for meeting potable supply needs. Supply sources for agriculture and rural come from local groundwater basins. With a moderate growth rate in all land uses (see **Figure D-14**), the existing supply sources are shown to meet forecasted water supply demands.

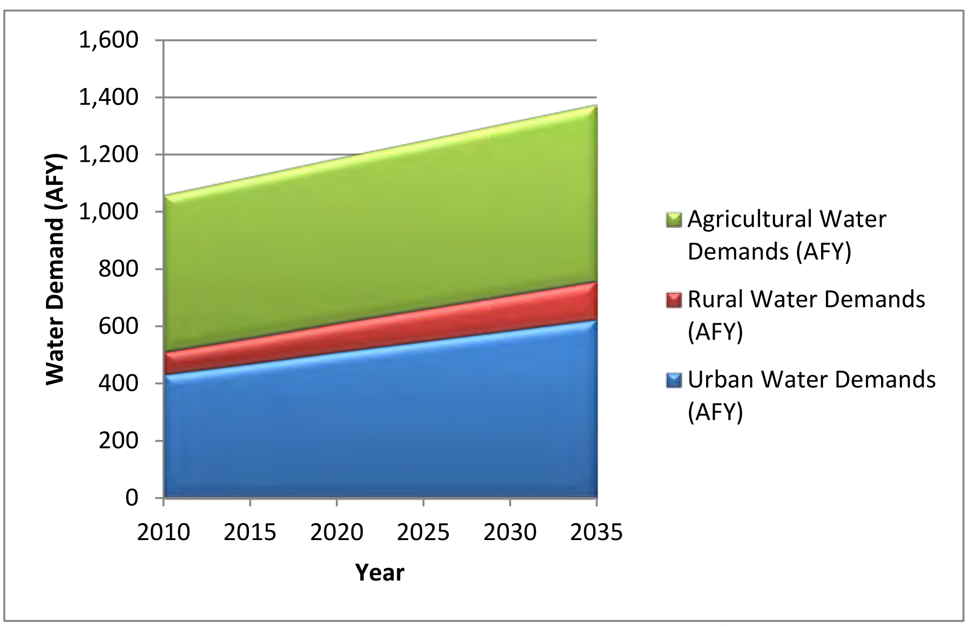


Figure D-14. WPA 3. Cayucos Water Demands

Table D-17. WPA No. 3 - Cayucos

Urban Water Demands (AFY)								
	Urban Water District	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	**Notes**
	Morro Rock Mutual Water Co	121	130	140	150	159	168	1
	Paso Robles Beach Water Assn	163	173	183	193	203	212	2
	CSA 10A	132	151	170	188	207	226	3
	Cayucos Cemetary District	16	16	17	17	17	18	4
	Total	**432**	**470**	**510**	**548**	**586**	**624**	
Rural Water Demands (AFY)								
	Rural Areas/Districts	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	**Notes**
	Cayucos - Rural	80	91	102	113	124	135	5
	Total	**80**	**91**	**102**	**113**	**124**	**135**	
Agricultural Water Demands (AFY)								
	Crop Types	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	**Notes**
	Alfalfa	3	3	3	3	3	3	
	Citrus	101	104	106	109	111	114	
	Deciduous	2	2	2	2	2	2	
	Nursery	0	0	0	0	0	0	
	Pasture	441	453	464	475	487	498	
	Vegetable	0	0	0	0	0	0	
	Vineyard	0	0	0	0	0	0	
	Total	**547**	**562**	**575**	**589**	**603**	**617**	
Total Water Demands (AFY)								
	Sum Urban, Rural, Ag	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	
	Total Water Demand	**1,059**	**1,123**	**1,187**	**1,250**	**1,313**	**1,376**	
Environmental Water Demands (AFY)								
	Environmental Category	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	
	Estimated Unimpaired Mean Annual Discharge	26,160	26,160	26,160	26,160	26,160	26,160	5
	Estimated Environmental Water Demand	33,340	33,340	33,340	33,340	33,340	33,340	5

Notes:

1 2012 MWR Future demand given as a range, 164-173 AFY. Average of range used for 2035. Straight line interpolation between 2010 demand and the average of the 2035 demand range.

2 2012 MWR Future demand given as a range, 207-218 AFY. Average of range used for 2035. Straight line interpolation between 2010 demand and the average of the 2035 demand range.

3 2012 MWR Future demand given as a range, 220-232 AFY. Average of range used for 2035. Straight line interpolation between 2010 demand and the average of the 2035 demand range.

4 2012 MWR Future demand given as a range, 17-18 AFY. Average of range used for 2035. Straight line interpolation between 2010 demand and the average of the 2035 demand range.

5 Straightline Interpolation 2010 to 2035

Table D-18. WPA No. 3– Cayucos Demand Supply Balance

WPA No. 3 - Cayucos

Water Districts/Use Sectors/Environmental/Unimpaired Summary	Morro Rock Mutual Water Co		Paso Robles Beach Water Assn		CSA 10A		Cayucos Cemetery District		Cayucos - Agriculture		Cayucos - Rural		Environmental & UMAD		Total	
Urban/Ag/ Rural Water Demands	Demand (AFY)	Notes	Demand (AFY)	Notes	Demand (AFY)	Notes	Demand (AFY)	Notes	Demand (AFY)	Notes	Demand (AFY)	Notes	Demand (AFY)	Notes	Demand (AFY)	Notes
Existing Demands	121	1	163	1	132	1	16	1	547		80		0		1059	
Forecasted Demands (2035)	**168**	**1**	**212**	**1**	**226**	**1**	**18**	**1**	**617**		**135**		**0**		**1,376**	
Water Supply Source — **Groundwater**	GW Supply (AFY)		GW Supply (AFY)		GW Supply (AFY)		GW Supply (AFY)		GW Supply (AFY)		GW Supply (AFY)		GW Supply (AFY)		GW Supply (AFY)	
Cayucos Valley	0		0		0				49	2	11	2			60	
Old Valley									12		3				15	
Other GW Supply Sources									555		122				677	
Total GW	**0**		**0**		**0**		**0**		**617**		**135**		**0**		**752**	
Surface Water	SW Supply (AFY)		SW Supply (AFY)		SW Supply (AFY)		SW Supply (AFY)		SW Supply (AFY)		SW Supply (AFY)		SW Supply (AFY)		SW Supply (AFY)	
SWRCB - WPA 3	3														3	
Whale Rock Reservoir	170		222		190		18								600	
Nacimiento Project					58										58	
Total SW	**173**		**222**		**248**		**18**		**0**		**0**		**0**		**661**	
Total Supplies	**173**		**222**		**248**		**18**		**617**		**135**		**0**		**1,413**	
Balance (Supplies - Demand)	**5**		**10**		**22**		**0**		**0**		**0**		**0**		**37**	
Environmental Water													26,160			
Unimpaired Mean Annual Inflow													33,340			

Notes:

1. The Cayucos Area Water Organization includes the Morro Rock MWC, the Paso Robles Beach Water Association, CSA 10A, and the Cayucos Cemetery District.
2. Estimated safe basin yield is 600 AFY and the majority of pumping is for agricultural or rural users but a small public water system does serve a mobile home park.

D.4.1.4 WPA 4 – Morro Bay

Water Demand

As shown in **Table D-19**, there are five urban water suppliers and users in WPA 4: City of Morro Bay, California Men's Colony, Camp San Luis Obispo – National Guard, County Operation Center of Education, and Cuesta College. Information on these water districts and water users is in **Section C – Region Description**. The urban water demands for WPA 4 are shown below:

The existing annual applied water for WPA 4 is approximately 1,923 AFY. The existing crops in this area include alfalfa, citrus, deciduous, irrigated pasture, vegetable, and vineyards. The projected 2035 annual applied water is estimated at approximately 2,065 AFY. The projected future agricultural demand is higher than existing due to increases in acreage of vegetables and vineyards.

The UMAD for WPA 4 is approximately 43,430 AFY and environmental water demand is approximately 27,880 AFY.

Demand Supply Balance

Table D-20 indicates a reliance on groundwater and surface water supplies. In addition, desalinated water use in the City of Morro Bay[4] is currently, and in the future, a large source of the region's water supply to reduce reliance on constrained groundwater aquifers in use by urban, agriculture, and rural sectors.

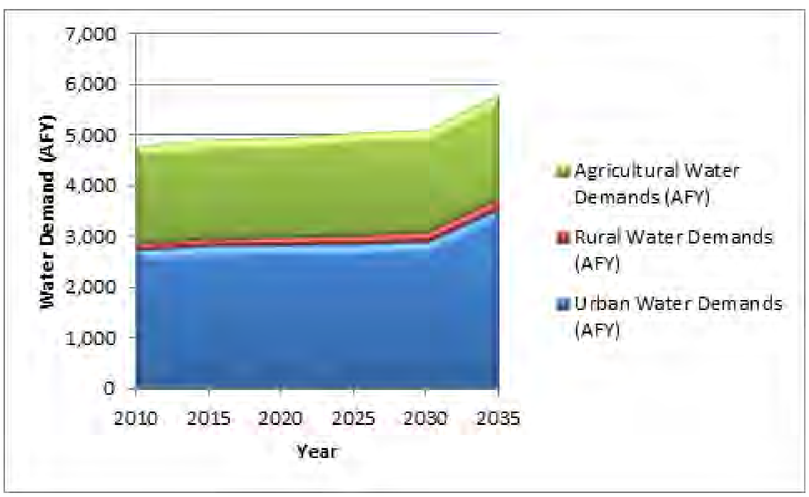


Figure D-15. WPA 2. Morro Bay Water Demands

[4] City of Morro Bay is currently (Feb 2014) going through a re-permitting process for their desalination plant with the California Coastal Commission. <http://www.newtimesslo.com/news/10642/the-run-on-state-water-is-creating-more-problems-for-morro-bay/>

Table D-19. WPA No. 4 - Morro Bay

Urban Water Demands (AFY)								
	Urban Water District	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	**Notes**
	City of Morro Bay	1,255	1,334	1,336	1,364	1,409	2,040	1
	California Mens Colony	1,135	1,135	1,135	1,135	1,135	1,135	2
	Camp SLO - National Guard	138	138	138	138	138	138	2
	County Operation Center of Education	94	94	94	94	94	94	2
	Cuesta College	125	125	125	125	125	125	2
	Total	**2,747**	**2,826**	**2,828**	**2,856**	**2,901**	**3,532**	
Rural Water Demands (AFY)								
	Rural Areas/Districts	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	**Notes**
	Morro Bay - Rural	120	137	154	171	188	205	3
	Total	**120**	**137**	**154**	**171**	**188**	**205**	
Agricultural Water Demands (AFY)								
	Crop Types	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	**Notes**
	Alfalfa	27	28	28	29	29	29	
	Citrus	1,196	1,213	1,231	1,249	1,267	1,284	
	Deciduous	6	6	6	7	7	7	
	Nursery	0	0	0	0	0	0	
	Pasture	19	19	19	20	20	20	
	Vegetable	613	623	632	641	650	659	
	Vineyard	62	63	63	64	65	66	
	Total	**1,923**	**1,952**	**1,979**	**2,010**	**2,038**	**2,065**	
Total Water Demands (AFY)								
	Sum Urban, Rural, Ag	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	
	Total Water Demand	**4,790**	**4,915**	**4,961**	**5,037**	**5,127**	**5,802**	
Environmental Water Demands (AFY)								
	Environmental Category	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	
	Estimated Unimpaired Mean Annual Discharge	27,880	27,880	27,880	27,880	27,880	27,880	3
	Estimated Environmental Water Demand	43,430	43,430	43,430	43,430	43,430	43,430	3

Notes:

1. 2012 MWR Future demand given as a range, 164-173 AFY. Average of range used for 2035. Straight line interpolation between 2010 demand and the average of the 2035 demand range.
2. Assumed demand was held constant between Current (2010) and Future (build-out/2035).
3. Straightline Interpolation 2010 to 2035

Table D-20. WPA No. 4 – Morro Bay Demand Supply Balance

WPA No. 4 - Morro Bay

	Water Districts/Use Sectors/Environmental/Unimpaired Summary	City of Morro Bay		California Mens Colony		Camp SLO - National Guard		County Operation Center of Ed.		Cuesta College		Morro Bay - Agriculture		Morro Bay - Rural		Environmental & UMAD		Total	
Urban/Ag/ Rural Water Demands		Demand (AFY)	Notes	Demand (AFY)	Notes	Demand (AFY)	Notes	Demand (AFY)	Notes	Demand (AFY)	Notes	Demand (AFY)	Notes	Demand (AFY)	Notes	Demand (AFY)	Notes	Demand (AFY)	Notes
	Existing Demands	1,255	*1*	1,135	*7*	138	*7*	94	*7*	125	*7*	1,923		120				4,790	
	Forecasted Demands (2035)	**2,040**	***2***	**1,135**	***7***	**138**	***7***	**94**	***7***	**125**	***7***	**2,065**		**205**		**0**		**5,802**	
Water Supply Source	**Groundwater**	GW Supply (AFY)		GW Supply (AFY)		GW Supply (AFY)		GW Supply (AFY)		GW Supply (AFY)		GW Supply (AFY)		GW Supply (AFY)		GW Supply (AFY)		GW Supply (AFY)	
	Morro Valley	581	*3*									310	*3*	31				922	
	Chorro Valley	1,142	*4*			200	*9*					124	*4*	12				1,478	
	Other GW Supply Sources											1,631		162				1,793	
	Total GW	**1,723**		**0**		**200**		**0**		**0**		**2,065**		**205**		**0**		**4,193**	
	Surface Water	SW Supply (AFY)		SW Supply (AFY)		SW Supply (AFY)		SW Supply (AFY)		SW Supply (AFY)		SW Supply (AFY)		SW Supply (AFY)		SW Supply (AFY)		SW Supply (AFY)	
	DeSal Plant - Other	645																645	
	SWRCB - WPA 4	1,313	*5*	735				150	*10*	140	*10*							2,338	
	Whale Rock Reservoir	0	*6*	420				25	*11*									445	
	Chorro Reservoir			25		140												165	
	Recycled Water			200	*8*													200	
	Total SW	**1,958**		**1,380**		**140**		**175**		**140**		**0**		**0**		**0**		**3,793**	
	Total Supplies	**3,681**		**1,380**		**340**		**175**		**140**		**2,065**		**205**		**0**		**7,986**	
	Balance (Supplies - Demand)	**1,641**		**245**		**202**		**81**		**15**		**0**		**0**		**0**		**2,184**	
Environmental Water																27,880			
Unimpaired Mean Annual Inflow																43,430			

Notes:

1 Existing Demand = Projected 2015 Water Demand using the 20x2020 interim water use target. 20x2020 target water use was calculated using DWR Method 3.
2 Assumes 20x2020 per capita target water use.
3 Estimated safe basin yield is 1500 AFY and the groundwater is used by urban agriculture and rural users.
4 Perennial yield estimated at 2210 AFY and the groundwater is used by urban agriculture and rural users.
5 State Water Project average allocation assumed 66 percent of contract water service amount.
6 Mutual aid agreements with CMC and Whale Rock Commission for emergency supply only.
7 Part of Chorro Valley Water System.
8 Must maintain a minimum discharge of 0.75 cfs (0.5mgd 540AFY) to Chorro Creek.
9 County Well No. 1.
10 CMC receives 60 AFY of Cuesta College 200 AFY allocation. County Operations Center provides up to 275 AFY from their 425 AFY State Water Project allocation to CMC. Totals in table reflect these agreements.
11 25 AFY of Whale Rock water provided by CMC as part of the County Well No. 1 development agreement.

D.4.1.5 WPA 5 – Los Osos

Water Demand

As shown in **Table D-21**, there are three urban water suppliers in WPA 5: S & T Mutual Water Company, Los Osos Community Services District, and Golden State Water Company-Los Osos. Information on these water districts and water users is in **Section C – Region Description**.

The majority of WPA 5 is composed of agricultural and urban areas, with only a small number of parcels in WPA 5 zoned for additional rural development.

The existing annual applied water for WPA 5 is approximately 1,888 AFY. The existing crops in this area include citrus, deciduous, nursery, pasture, vegetable, and vineyards. The projected future annual applied water for WPA 5 averages approximately 3,258 AFY. The increase is due primarily to an increase in irrigated pasture and nursery crops.

The UMAD for WPA 5 is approximately 8,200 AFY and environmental water demand is approximately 7,040 AFY.

Demand Supply Balance

Table D-21 indicates total reliance on local groundwater supplies in the Los Osos Valley.[5] Between urban and agriculture uses, demands exceed the existing groundwater supply of 3,200 AFY of perennial yield in the Los Osos Valley basin. The community and surrounding rural and agricultural pumpers are pro-actively managing the groundwater basin to improve yield through active management (i.e., improve recharge), reduced demand and improved water quality. No alternative source of supply has been identified to meet forecasted increases in demand; assuming that new growth will not occur unless sufficiency in supplies can be shown.

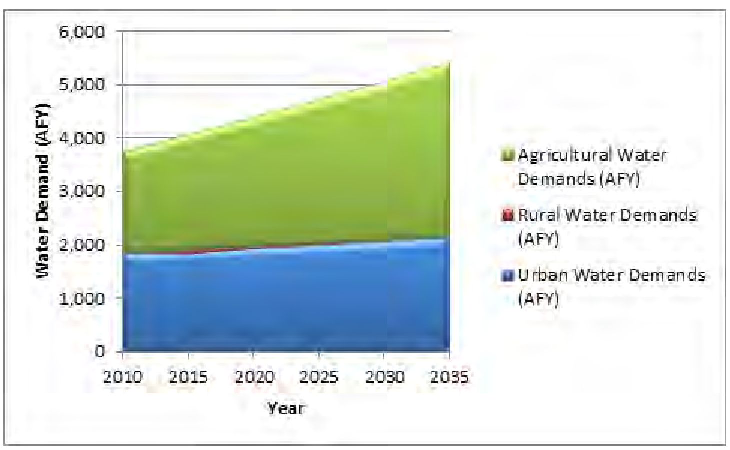


Figure D-16. WPA 5. Los Osos Water Demands

[5] Given active groundwater and water demand management activities taking place, groundwater supplies are shown to increase, with re-use and improved recharge increasing the effective basin yield in the future.

Table D-21. WPA No. 5 - Los Osos

Urban Water Demands (AFY)								
	Urban Water District	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	**Notes**
	S & T Mutual Water Company	998	1,106	1,213	1,321	1,429	1,557	
	Los Osos CSD	78	65	65	70	75	75	1
	Golden State Water Company – Los Osos	775	724	674	624	574	524	2
	Total	**1,851**	**1,895**	**1,952**	**2,015**	**2,078**	**2,156**	
Rural Water Demands (AFY)								
	Rural Areas/Districts	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	**Notes**
	Los Osos - Rural	20	20	20	20	20	20	3
	Total	**20**	**20**	**20**	**20**	**20**	**20**	
Agricultural Water Demands (AFY)								
	Crop Types	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	**Notes**
	Alfalfa	0	0	0	0	0	0	
	Citrus	33	37	42	47	51	56	
	Deciduous	11	13	14	16	18	19	
	Nursery	26	29	33	37	41	44	
	Pasture	35	40	45	50	55	60	
	Vegetable	1,781	2,040	2,299	2,558	2,817	3,076	
	Vineyard	2	2	2	2	2	3	
	Total	**1,888**	**2,161**	**2,435**	**2,710**	**2,984**	**3,258**	
Total Water Demands (AFY)								
	Sum Urban, Rural, Ag	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	
	Total Water Demand	**3,759**	**4,076**	**4,407**	**4,745**	**5,082**	**5,434**	
Environmental Water Demands AFY)								
	Environmental Category	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	
	Estimated Unimpaired Mean Annual Discharge	7,040	7,040	7,040	7,040	7,040	7,040	3
	Estimated Environmental Water Demand	8,200	8,200	8,200	8,200	8,200	8,200	3

Notes:

1 2015-2035 values were calculated using an average straight line interpolation of 2010-2012 values provided.

2 2012 MWR Future demand given as a range, 1384-1730 AFY. Average of range used for 2035. Straight line interpolation between 2010 demand and the average of the 2035 demand range.

3 Straightline Interpolation 2010 to 2035

Table D-22. WPA No. 5 – Los Osos Demand Supply Balance

WPA No. 5 - Los Osos

Urban/Ag/ Rural Water Demands

Water Supply Source

Water Districts/Use Sectors/Environmental/Unimpaired Summary	Golden State Water Company – Los Osos		S & T Mutual Water Company		Los Osos CSD		Los Osos - Agriculture		Los Osos - Rural		Environmental & UMAD		Total	
	Demand (AFY)	*Notes*	Demand (AFY)	*Notes*	Demand (AFY)	*Notes*	Demand (AFY)	*Notes*	Demand (AFY)	*Notes*	Demand (AFY)	*Notes*	Demand (AFY)	*Notes*
Existing Demands	998		78		775	*2*	1,888		20				3,759	
Forecasted Demands (2035)	**1,557**		**75**		**524**	*2*	**3,258**		**20**		**0**		**5,434**	
Groundwater	GW Supply (AFY)		GW Supply (AFY)		GW Supply (AFY)		GW Supply (AFY)		GW Supply (AFY)		GW Supply (AFY)		GW Supply (AFY)	
Los Osos Valley	1,557	*1*	75	*1*	524	*1*	1,271	*1*	8	*1*			3,434	
San Luis Obispo Valley							33	*3*	0				33	
Other GW Supply Sources							1,955	*4*	12				1,967	
Total GW	**1,557**		**75**		**524**		**3,258**		**20**		**0**		**5,434**	
Surface Water	SW Supply (AFY)		SW Supply (AFY)		SW Supply (AFY)		SW Supply (AFY)		SW Supply (AFY)		SW Supply (AFY)		SW Supply (AFY)	
SWRCB - WPA 5							0						0	
Total SW	**0**		**0**		**0**		**0**		**0**		**0**		**0**	
Total Supplies	**1,557**		**75**		**524**		**3,258**		**20**		**0**		**5,434**	
Balance (Supplies - Demand)	**0**		**0**		**0**		**0**		**0**		**0**		**0**	
Environmental Water											7,040			
Unimpaired Mean Annual Inflow											8,200			

Notes:

1 Estimated safe basin yield is 3200 AFY and all pumping is for urban agricultural or rural users. Purveyors have 2100 AFY available for their use. The remaining 1100 AFY is used for agricultural irrigation private domestic use and golf course irrigation.

2 2015-2035 values were calculated using an average straight line interpolation of 2010-2012 values provided.

3 Increased demands are assumed to be met with groundwater supplies. See MWR for local actions being taken to improve the effective groundwater yield in the future.

4 A small area of WPA 5 overlies the San Luis Obispo Valley sub-basin based on location of agricultural land uses.

D.4.2 *South County Sub-Region*

As listed in **Table D-23**, the South County Sub-Region includes four WPAs (See **Figure D-17**). Most of the urban water demands coastal communities reliant on groundwater basins constrained by both the ocean's salinity and by the long term impacts of septic systems. With use of local and SWP surface water supplies, active groundwater management, and agricultural fallowing and development, sufficient supplies are shown to meet the majority of future growth projections. A small amount of recycled water is also used to meet a portion of the sub-region non-potable demands. Pockets of rural and agricultural demands are reliant on local groundwater supplies using private wells to meet both irrigation and potable water demands. Southern WPAs have no urban demands, and supply source are primarily groundwater with little knowledge of the amount of water rights being diverted for agriculture.

Table D-23. South County WPA Annual Average Water Demand Summary (AFY)

Sum Urban, Rural, Ag	2010	2015	2020	2025	2030	2035
WPA No. 6 - San Luis Obispo/Avila	10,362	11,065	11,449	11,794	12,178	12,551
WPA No. 7 - South Coast	63,179	60,567	56,018	52,274	48,547	44,927
WPA No. 8 - Huasna Valley	1,548	1,807	2,065	2,327	2,585	2,845
WPA No. 9 - Cuyama Valley	30,724	30,380	30,035	29,691	29,347	29,003
Total for Sub-Region	**105,813**	**103,819**	**99,567**	**96,086**	**92,657**	**89,326**

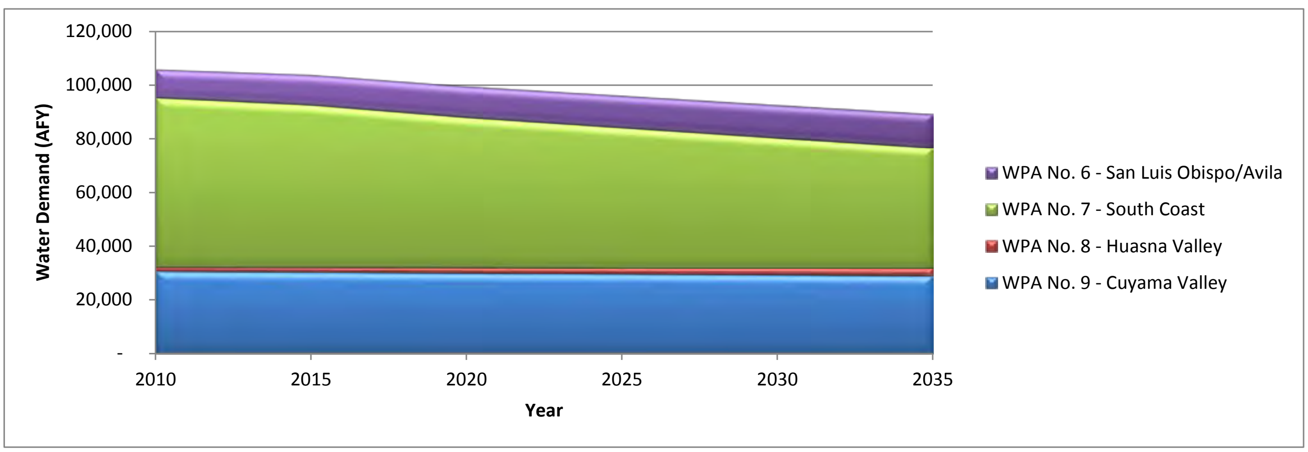


Figure D-17. South County WPA Water Demand Summary

D.4.2.1 WPA 6 – San Luis Obispo/Avila

Water Demands

There are seven urban water suppliers and users in WPA 6: City of San Luis Obispo, Cal Poly San Luis Obispo, Avila Beach Community Services District, Avila Valley Mutual Water Company, San

Miguelito Mutual Water Company, County Service Area 12, and Port San Luis. Information on these water districts and water users is in **Section C – Region Description**.

The existing annual applied water for WPA 6 is approximately 3,195 AFY. The existing crops in this area include citrus, deciduous, pasture, vegetable, and vineyards. The projected future annual applied water for WPA 6 increases gradually to a 2035 demand of 3,466 AFY. Increases in applied water are primarily due to a projected increase in vegetable crops.

The UMAD for WPA 6 is approximately 45,820 AFY and environmental water demand is approximately 33,030 AFY.

Demand Supply Balance

The urban water providers depend on primarily surface water from the SWP, Nacimiento Project, Salinas Reservoir and Whale Rock Reservoir. Local groundwater supplies are the primary source of supply for agriculture and rural users. Given the current surface water contracts and water rights, supplies are sufficient to meet projected water demands. The regionalization of water conveyance facilities ensures the maximum conjunctive use potential for the region to better manage groundwater quantity and quality in 2035.

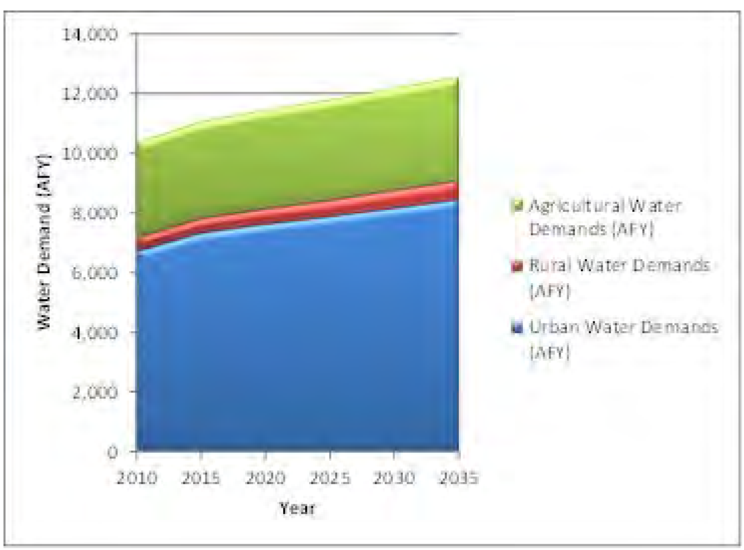


Figure D-18. WPA-6 San Luis Obispo/Avila Water Demands

Table D-24. WPA No. 6 - San Luis Obispo/Avila

Urban Water Demands (AFY)								
	Urban Water District	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	**Notes**
	City of San Luis Obispo	5,218	5,689	5,843	5,956	6,109	6,251	1
	Cal Poly San Luis Obispo	1,040	1,136	1,231	1,327	1,422	1,518	2
	Avila Beach CSD	51	74	97	120	143	166	3
	Avila Valley Mutual Water Co	32	32	32	31	31	31	4
	San Miguelito MWC	263	287	311	335	359	383	5
	CSA 12	68	68	67	67	67	66	6
	Port San Luis	35	35	35	35	35	35	6
	Total	**6,707**	**7,321**	**7,616**	**7,871**	**8,166**	**8,450**	
Rural Water Demands (AFY)								
	Rural Areas/Districts	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	**Notes**
	San Luis Obispo/Avila - Rural	460	495	530	565	600	635	7
	Total	**460**	**495**	**530**	**565**	**600**	**635**	
Agricultural Water Demands (AFY)								
	Crop Types	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	**Notes**
	Alfalfa	0	0	0	0	0	0	
	Citrus	359	365	371	377	383	389	
	Deciduous	475	483	491	499	507	515	
	Nursery	0	0	0	0	0	0	
	Pasture	235	239	243	247	251	255	
	Vegetable	1,114	1,133	1,152	1,171	1,190	1,209	
	Vineyard	1,012	1,029	1,046	1,064	1,081	1,098	
	Total	**3,195**	**3,249**	**3,303**	**3,358**	**3,412**	**3,466**	
Total Water Demands (AFY)								
	Sum Urban, Rural, Ag	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	
	Total Water Demand	**10,362**	**11,065**	**11,449**	**11,794**	**12,178**	**12,551**	
Environmental Water Demands (AFY)								
	Environmental Category	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	
	Estimated Unimpaired Mean Annual Discharge	33,030	33,030	33,030	33,030	33,030	33,030	
	Estimated Environmental Water Demand	45,820	45,820	45,820	45,820	45,820	45,820	

Notes:

1 Straightline Interpolation 2010 to 2039

2 2012 MWR Future demand given as a range, 1479-1557 AFY. Average of range used for 2035. Straight line interpolation between 2010 demand and the average of the 2035 demand range.

3 2012 MWR Future demand given as a range, 162-170 AFY. Average of range used for 2035. Straight line interpolation between 2010 demand and the average of the 2035 demand range.

4 2012 MWR Future demand given as a range, 30-32 AFY. Average of range used for 2035. Straight line interpolation between 2010 demand and the average of the 2035 demand range.

5 2012 MWR Future demand given as a range, 373-393 AFY. Average of range used for 2035. Straight line interpolation between 2010 demand and the average of the 2035 demand range.

6 2012 MWR Future demand given as a range, 65-68 AFY. Average of range used for 2035. Straight line interpolation between 2010 demand and the average of the 2035 demand range.

7 Straightline Interpolation 2010 to 2040

Table D-25. WPA No. 6 – San Luis Obispo/Avila Demand Supply Balance

WPA No. 6 - San Luis Obispo/Avila

Water Districts/Use Sectors/Environmental / Unimpaired Summary	City of San Luis Obispo		Cal Poly San Luis Obispo		Avila Beach CSD	Avila Valley Mutual Water Co		San Miguelito MWC	CSA 12		Port San Luis	San Luis Obispo/ Avila - Agriculture	San Luis Obispo/Avila - Rural	Environ-mental & UMAD	Total
Urban/ Ag/ Rural Water Demands	Demand (AFY)	*Notes*	Demand (AFY)	*Notes*	Demand (AFY)	Demand (AFY)	*Notes*	Demand (AFY)	Demand (AFY)	*Notes*	Demand (AFY)	Demand (AFY)	Demand (AFY)	Demand (AFY)	Demand (AFY)
Existing Demands	5,218	*1*	1,040		51	32	*7*	263	68		35	3,195	460		10,362
Forecasted Demands (2035)	**6,251**	*2*	**1,518**		**166**	**31**		**383**	**66**		**35**	**3,466**	**635**	**0**	**12,552**
Groundwater	GW Supply (AFY)		GW Supply (AFY)		GW Supply (AFY)	GW Supply (AFY)		GW Supply (AFY)	GW Supply (AFY)		GW Supply (AFY)	GW Supply (AFY)	GW Supply (AFY)	GW Supply (AFY)	GW Supply (AFY)
San Luis Valley Sub-basin	100		0									970	178		1,248
Avila Valley Sub-basin						20		118	0	*8*		0			138
Other GW Supply Sources												2,496	457		2,953
Total GW	**100**		**0**		**0**	**20**		**118**	**0**		**0**	**3,466**	**635**	**0**	**4,339**
Water Supply Source															
Surface Water	SW Supply (AFY)		SW Supply (AFY)		SW Supply (AFY)	SW Supply (AFY)		SW Supply (AFY)	SW Supply (AFY)		SW Supply (AFY)	SW Supply (AFY)	SW Supply (AFY)	SW Supply (AFY)	SW Supply (AFY)
Loss of Availability Due to Siltation	-500														-500
Nacimiento Project	3,380	*3*									0				3,380
Recycled Water	400	*4*													400
Salinas Reservoir	3,470	*5*													3,470
Whale Rock Reservoir	3,470	*5*	1,384	*6*											4,854
SWRCB - WPA 6			45												45
Lopez Lake					68	12			61		100				241
SWP - WPA 6								275	7	*9*					282
Total SW	**10,220**		**1,429**		**68**	**12**		**275**	**68**		**100**	**0**	**0**	**0**	**12,172**
Total Supplies	**10,320**		**1,429**		**68**	**32**		**393**	**68**		**100**	**3,466**	**635**	**0**	**16,511**
Balance (Supplies - Demand)	**4,069**		**-89**		**-98**	**1**		**10**	**2**		**65**	**0**	**0**	**0**	**3,960**
Environmental Water														33,030	
Unimpaired Mean Annual Inflow														45,820	

Notes:

1 Existing Demand = Projected 2015 Water Demand using the 20x2020 interim water use target. 20x2020 target water use was calculated using DWR Method 3.

2 Assumes 20x2020 per capita target water use.

3 Nacimiento Project went on-line in 2010

4 The City's current recycled water use is 130 AFY. Expansion of the City of San Luis Obispo Water Reclamation Facility could make 4690 AFY of recycled water available for use but the current plans are to use only 1000 AFY in the future.

5 The City of San Luis Obispo's withdrawals from the Salinas Reservoir are coordinated with Whale Rock Reservoir. San Luis Obispo's combined safe yield of the two reservoirs was 6940 AFY in 2010.

6 Includes 600 AFY of treated water delivered from the City of San Luis Obispo.

7 2012 MWR

8 Individual water users within CSA 12 boundary could request an exemption to install a private well and pump water from the Avila Valley Sub-basin. It is unknown the number of users with private wells but it is likely minimal.

9 7 AFY of SWP water allocated to the San Luis Coastal Unified School District.

D.4.2.2 WPA 7 – South Coast

Water Demands

There are ten urban water suppliers and users in WPA 7: Conoco Phillips Company, City of Arroyo Grande, City of Grover Beach, Oceano Community Services District, City of Pismo Beach, Golden State Water Company – Nipomo, Golden State Water Company – Edna, Nipomo Community Services District, Rural Water Company, and Woodlands Mutual Water Company. Information on these water districts and water users is in **Section C - Region Description**.

The existing rural demand for WPA 7 is 3,466 AFY and the average projected demand is 5,661 AFY. The existing annual applied water for agricultural lands within WPA 7 is estimated at 45,746 AFY, which supports citrus, deciduous, nursery, pasture, vegetable and vineyard crops. The projected future agricultural demand decreases to 20,222 AFY due to the significant decrease in vegetable crops. The 25,524 AFY decrease in agriculture is offset by the urban (increase of 5,000 AFY) and rural residential (increase of 2,200 AFY) areas.

The UMAD for WPA 7, inclusive of the water management areas, is approximately 49,100 AFY and environmental water demand of 32,960 AFY.

Demand Supply Balance

With a significant reliance on both surface water and groundwater, WPA 7 can meet its forecasted water demands through agricultural off-sets, surface water transfers, recycled water and expanded surface water and groundwater facilities. Groundwater is constrained in the region both in quantity and quality, and requires management efforts to increase its effective yield in providing for the region. See MWR for a full detailed description of the region's water supply portfolio.

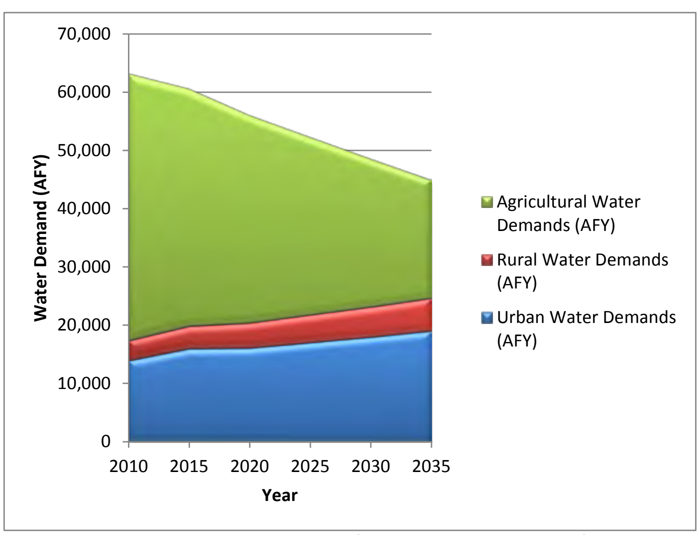


Figure D-19. WPA-7 South Coast Water Demands

Table D-26. WPA No. 7 - South Coast

Urban Water Demands (AFY)								
	Urban Water District	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	**Notes**
	Golden State Water Company – Edna	410	410	411	412	412	458	1
	City of Pismo Beach	1,944	2,036	2,002	2,182	2,364	2,550	1
	City of Arroyo Grande	2,956	3,288	2,987	3,089	3,176	3,318	2
	City of Grover Beach	1,605	1,781	1,634	1,669	1,703	1,755	2
	Oceano CSD	855	954	1,052	1,151	1,249	1,348	3
	Golden State Water Company – Nipomo	1,060	1,217	1,375	1,532	1,690	1,847	4
	Nipomo CSD	2,367	3,404	3,588	3,775	3,995	4,198	2
	Rural Water Company/Cypress Ridge Sewer Co	720	720	720	720	720	720	5
	Woodlands Mutual Water Company	850	984	1,118	1,252	1,386	1,520	6
	Conoco Phillips Co	1,200	1,226	1,252	1,278	1,304	1,330	7
	Total	**13,967**	**16,020**	**16,139**	**17,060**	**17,999**	**19,044**	
Rural Water Demands (AFY)								
	Rural Areas/Districts	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	**Notes**
	South Coast - Rural	3,466	3,905	4,344	4,783	5,222	5,661	8
	Total	**3,466**	**3,905**	**4,344**	**4,783**	**5,222**	**5,661**	
Agricultural Water Demands (AFY)								
	Crop Types	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	**Notes**
	Alfalfa	0	0	0	0	0	0	
	Citrus	7,614	6,765	5,915	5,065	4,216	3,366	
	Deciduous	4,701	4,176	3,651	3,127	2,602	2,078	
	Nursery	655	582	508	435	362	289	
	Pasture	725	644	563	483	402	321	
	Vegetable	29,263	25,998	22,732	19,467	16,201	12,936	
	Vineyard	2,788	2,477	2,166	1,854	1,543	1,232	
	Total	**45,746**	**40,642**	**35,535**	**30,431**	**25,326**	**20,222**	
Total Water Demands (AFY)								
	Sum Urban, Rural, Ag	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	
	Total Water Demand	**63,179**	**60,567**	**56,018**	**52,274**	**48,547**	**44,927**	
Environmental Water Demands (AFY)								
	Environmental Category	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	
	Estimated Unimpaired Mean Annual Discharge	32,960	32,960	32,960	32,960	32,960	32,960	
	Estimated Environmental Water Demand	49,100	49,100	49,100	49,100	49,100	49,100	

Notes:

1 2012 MWR Future demand given as a range, 434-482 AFY. Average of range used for 2035. Straight line interpolation between 2010 demand and the average of the 2035 demand range.
2 2035 demand calculated using straight line interpolation from 2020 and 2030 given demands.
3 2012 MWR Future demand given as a range, 1277-1419 AFY. Average of range used for 2035. Straight line interpolation between 2010 demand and the average of the 2035 demand range.
4 2012 MWR Future demand given as a range, 1750-1944 AFY. Average of range used for 2035. Straight line interpolation between 2010 demand and the average of the 2035 demand range.
5 Future (Build-out/2035) demand not available; calculations not performed.
6 2012 MWR Future demand given as a range, 1440-1600 AFY. Average of range used for 2035. Straight line interpolation between 2010 demand and the average of the 2035 demand range.
7 2012 MWR Future demand given as a range, 1260-1400 AFY. Average of range used for 2035. Straight line interpolation between 2010 demand and the average of the 2035 demand range.
8 Straightline Interpolation 2010 to 2035

Table D-27. WPA No. 7 – South Coast Demand Supply Balance

WPA No. 7 - South Coast

Water Districts/Use Sectors/Environmental/ Unimpaired Summary	Golden State Water Company – Edna		City of Pismo Beach		City of Arroyo Grande		City of Grover Beach		Oceano CSD		Golden State Water Company – Nipomo		Nipomo CSD		Rural Water Company/Cypress Ridge Sewer Co		Woodlands Mutual Water Company		Conoco Phillips Co	South Coast - Agriculture	South Coast - Rural	Environ-mental & UMAD	Total
Urban/Ag / Rural Water Demands	**Demand (AFY)**	***Notes***	**Demand (AFY)**	***Notes***	**Demand (AFY)**	***Notes***	**Demand (AFY)**	***Notes***	**Demand (AFY)**	***Notes***	**Demand (AFY)**	***Notes***	**Demand (AFY)**	***Notes***	**Demand (AFY)**	***Notes***	**Demand (AFY)**	***Notes***	**Demand (AFY)**	**Demand (AFY)**	**Demand (AFY)**	**Demand (AFY)**	**Demand (AFY)**
Existing Demands	410	*1*	1,944		2,956	*5*	1,605	*7*	855	*9*	1,060	*1*	2,367	*7*	720	*12*	850	*1*	1,200	45,746	3,466		63,179
Forecasted Demands (2035)	**458**	*1*	**2,550**	*3*	**3,318**	*6*	**1,755**	*3*	**1,348**		**1,847**		**4,198**	*3*	**720**	*13*	**1,520**		**1,330**	**20,222**	**5,661**	**0**	**44,927**
Groundwater	**GW Supply (AFY)**		**GW Supply (AFY)**		**GW Supply (AFY)**		**GW Supply (AFY)**		**GW Supply (AFY)**		**GW Supply (AFY)**		**GW Supply (AFY)**		**GW Supply (AFY)**		**GW Supply (AFY)**		**GW Supply (AFY)**	**GW Supply (AFY)**	**GW Supply (AFY)**	**GW Supply (AFY)**	**GW Supply (AFY)**
Water Supply Source																							
Edna Valley	482	*2*																					482
Northern Cities Management Area			700																				700
Pismo Creek Valley (outside NCMA)					160																		160
Arroyo Grande Plain (Part of Santa Maria Valley Basin)					1,323		1,423	*8*	900														3,646
Nipomo Mesa Hyd Sub-Area-Santa Maria Basin											852		1,448		462		817		1,400				4,979
San Luis Obispo Valley																				809	226		1,035
Santa Maria Valley																				7,482	2,095		9,577
Other GW Supply Sources																				11,931	3,340		15,271
Total GW	**482**		**700**		**1,483**		**1,423**		**900**		**852**		**1,448**		**462**		**817**		**1,400**	**20,222**	**5,661**	**0**	**35,850**
Surface Water	**SW Supply (AFY)**		**SW Supply (AFY)**		**SW Supply (AFY)**		**SW Supply (AFY)**		**SW Supply (AFY)**		**SW Supply (AFY)**		**SW Supply (AFY)**		**SW Supply (AFY)**		**SW Supply (AFY)**		**SW Supply (AFY)**	**SW Supply (AFY)**	**SW Supply (AFY)**	**SW Supply (AFY)**	**SW Supply (AFY)**
Lopez Lake			896		2,290		800		303														4,289
Recycled Water			1,985												50		200	*16*					2,235

WPA No. 7 - South Coast

Water Districts/Use Sectors/Environmental/ Unimpaired Summary	Golden State Water Company – Edna	City of Pismo Beach	City of Arroyo Grande	City of Grover Beach	Oceano CSD	Golden State Water Company – Nipomo	Nipomo CSD	Rural Water Company/Cypress Ridge Sewer Co	Woodlands Mutual Water Company	Conoco Phillips Co	South Coast - Agriculture	South Coast - Rural	Environ-mental & UMAD	Total
SWP - WPA 7		1,240 [4]			495 [10]									1,735
Ag Land Conversion Credit			112 [14]	209 [14]										321
In-Region Transfer			100 [11]											100
Transfers - WPA 7					-100 [11]									-100
Nipomo Supplemental Water Project						208 [15]	2,167 [15]	208 [15]	703 [15]					3,286
Total SW	**0**	**4,121**	**2,502**	**1,009**	**698**	**208**	**2,167**	**258**	**903**	**0**	**0**	**0**	**0**	**11,866**
Total Supplies	**482**	**4,821**	**3,985**	**2,432**	**1,598**	**1,060**	**3,615**	**720**	**1,720**	**1,400**	**20,222**	**5,661**	**0**	**47,716**
Balance (Supplies - Demand)	**24**	**2,271**	**667**	**677**	**250**	**-787**	**-583**	**0**	**200**	**70**	**0**	**0**	**0**	**2,789**
Environmental Water													32,960	
Unimpaired Mean Annual Inflow													49,100	

Notes:

1 2012 MWR

2 Edna Valley Sub-basin estimated safe basin yield is 4000 AFY and all pumping is for urban agricultural rural users golf courses and CSA 18.

3 Assumes 20x2020 per capita target water use.

4 140 AFY of the 1240 AFY contracted amount has been allocated for Pismo Ranch.

5 20x2020 target water use was calculated using DWR Method 1.

6 Provided by City of Arroyo Grande

7 Existing Demand = Projected 2015 Water Demand using the 20x2020 interim water use target. 20x2020 target water use was calculated using DWR Method 4.

8 Non-potable groundwater pumped from irrigation wells used on the State Parks Department golf course and a City park. The portion of the 225 AFY attributed to the golf course predates the Gentlemen's Agreement.

9 Ten percent additional water conservation (beyond what has already been accomplished) assumed for the low end of the forecast build-out demand, except for Grover Beach, which assumed 20% additional reduction.

10 Oceano CSD has a 750 AFY allocation but no drought buffer. Therefore the 66 percent assumption for State Water Project delivery is 495 AFY.

11 Arroyo Grande has an active agreement to purchase 100 AFY of Oceano CSD supplies from groundwater or Lopez Lake water. This temporary agreement ends in 2014.

12 Existing demand = 2010 demand. Currently there are over 100 lots within the service area that could request water service, plus other potential requests for service

13 2015 Demand

14 2002 Settlement Agreement provides that groundwater allocations can be increased when land within the incorporated boundaries is converted from agricultural uses to urban uses.

15 Nipomo supplemental water project includes Nipomo CSD, Woodlands MWC, Golden State Water Company, and Rural Water Company. Nipomo CSD will receive approximately 1,667 AFY and has reserved an additional 500 AFY. The other three will receive 833 AFY.

16 All effluent is currently reused at the Monarch Dunes Golf Course and capacity remains to reuse more effluent at the course as flows to the plant increase.

D.4.2.3 WPA 8 – Huasana Valley

Water Demand

There are no large population centers in WPA 8.

For WPA 8, the existing annual rural water demand is 90 AFY and the projected future demand is 405 AFY. The existing annual applied water for WPA 8 is approximately 1,458 AFY. The existing crops in this area include alfalfa, citrus, deciduous, pasture, vegetables, and vineyards. The projected future annual applied water for WPA 8 averages 2,440 AFY. The projected future agricultural demand is higher than existing due to increases in acreage of nursery, pasture, and vineyards.

The UMAD for WPA 8 inclusive of the water management areas is approximately 34,220 AFY and environmental water demand of 25,020 AFY.

Demand Supply Balance

The water supply sources for this WPA include the Santa Maria and Huasna Valley groundwater basins, other groundwater supply sources, and unquantified State Board water diversions. With no urban land uses, and the uncertainty of existing water rights and use of surface water supplies, groundwater is shown to meet demands to the extent sufficiency in all supplies can be achieved in the future.

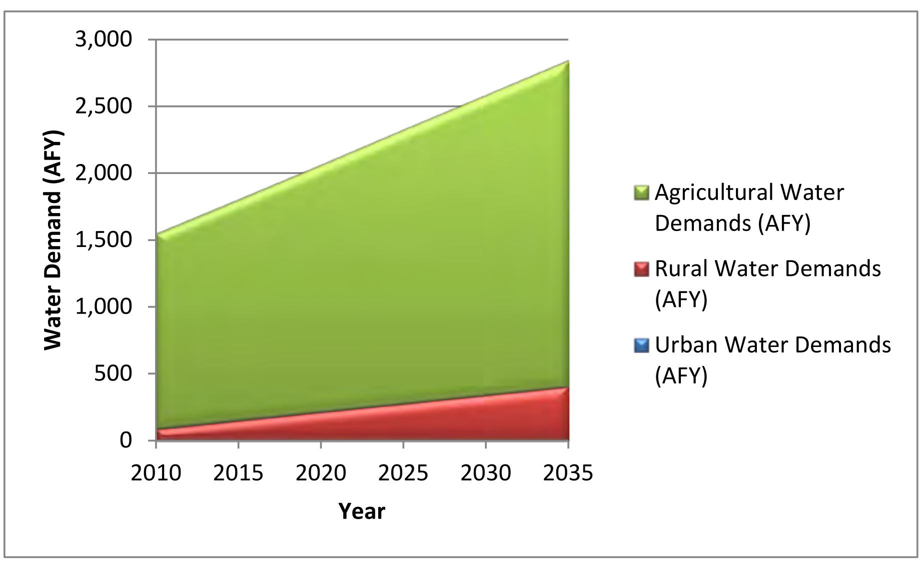


Figure D-20. WPA-8 Huasna Valley Water Demands

Table D-28. WPA No. 8 - Huasna Valley

Urban Water Demands (AFY)								
	Urban Water District	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	**Notes**
Rural Water Demands (AFY)								
	Rural Areas/Districts	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	**Notes**
	Huasna Valley - Rural	90	153	216	279	342	405	1
	Total	**90**	**153**	**216**	**279**	**342**	**405**	
Agricultural Water Demands (AFY)								
	Crop Types	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	**Notes**
	Nursery	202	229	256	284	311	338	
	Pasture	183	208	232	257	282	306	
	Vegetable	13	14	16	18	19	21	
	Vineyard	0	0	0	0	0	0	
	Alfalfa	18	20	22	25	27	30	
	Citrus	135	153	171	189	207	225	
	Deciduous	907	1,030	1,152	1,275	1,397	1,520	
	Total	**1,458**	**1,654**	**1,849**	**2,048**	**2,243**	**2,440**	
Total Water Demands (AFY)								
	Sum Urban, Rural, Ag	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	
	Total Water Demand	**1,548**	**1,807**	**2,065**	**2,327**	**2,585**	**2,845**	
Environmental Water Demands (AFY)								
	Environmental Category	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	
	Estimated Unimpaired Mean Annual Discharge	25,020	25,020	25,020	25,020	25,020	25,020	
	Estimated Environmental Water Demand	34,220	34,220	34,220	34,220	34,220	34,220	

Notes:

1 Straightline Interpolation 2010 to 2042

Table D-29. WPA No. 8 - Huasna Valley Demand Supply Balance

WPA No. 8 - Huasna Valley

	Water Districts/Use Sectors/Environmental/Unimpaired Summary	Huasna Valley - Agriculture		Huasna Valley - Rural		Environmental & UMAD		Total	
Urban/Ag/ Rural Water Demands		Demand (AFY)	*Notes*	Demand (AFY)	*Notes*	Demand (AFY)	*Notes*	Demand (AFY)	*Notes*
	Existing Demands	1,458		90				1,548	
	Forecasted Demands (2035)	**2,440**		**405**		**0**		**2,845**	
Water Supply Source	**Groundwater**	GW Supply (AFY)		GW Supply (AFY)		GW Supply (AFY)		GW Supply (AFY)	
	Santa Maria Valley	488		81				569	
	Huasna Valley	122		20				142	
	Other GW Supply Sources	1,830		304				2,134	
	Total GW	**2,440**		**405**		**0**		**2,845**	
	Surface Water	SW Supply (AFY)		SW Supply (AFY)		SW Supply (AFY)		SW Supply (AFY)	
	SWRCB - WPA 7	0						0	
	Total SW	**0**		**0**		**0**		**0**	
	Total Supplies	**2,440**		**405**		**0**		**2,845**	
	Balance (Supplies - Demand)	**0**		**0**		**0**		**0**	
Environmental Water						25,020			
Unimpaired Mean Annual Inflow						34,220			

D.4.2.4 WPA 9 – Cuyama Valley

Water Demand

There are no large population centers in WPA 9 that lie within San Luis Obispo County. The communities of Cuyama and New Cuyama both lie within Santa Barbara County.

For WPA 9, the existing annual rural water demand is 10 AFY and the average projected future demand is 180 AFY. The existing annual applied water for WPA 9 is approximately 30,714 AFY. The existing crops in this area include alfalfa, deciduous, vegetables, and vineyards. The projected future annual applied water for WPA 9 is shown to decrease to 28,823 AFY as a result of a reduction in vegetable crops.

The eastern portion of the County (i.e., WPAs 9, 10, 11, 14, and 15) was ultimately excluded from the environmental water demand analysis due to the lack of data and regional physiographic differences. No environmental flows are included for this WPA.

Supply Demand Balance

The water supply sources for this WPA include the Cuyama Valley Groundwater Basin, other groundwater supply sources, and unquantified State Board water diversions. With no urban land uses, and the uncertainty of existing water rights and use of surface water supplies, groundwater is shown to meet demands to the extent sufficiency in all supplies can be achieved in the future.

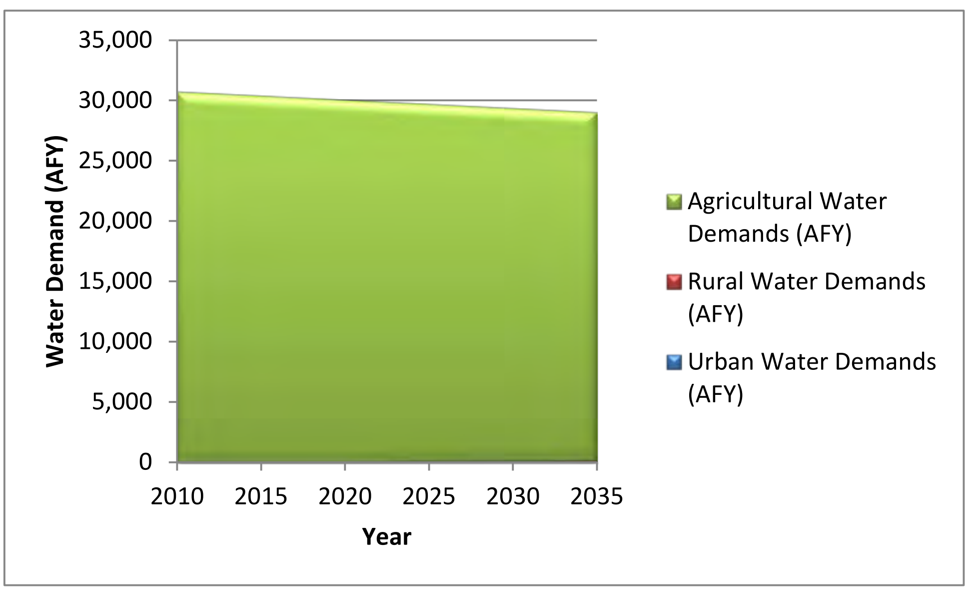


Figure D-21. WPA-9 – Cuyama Water Demands

Table D-30. WPA No. 9 - Cuyama Valley

Urban Water Demands (AFY)								
	Urban Water District	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	**Notes**
Rural Water Demands (AFY)								
	Rural Areas/Districts	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	**Notes**
	Cuyama Valley - Rural	10	44	78	112	146	180	1
	Total	**10**	**44**	**78**	**112**	**146**	**180**	
Agricultural Water Demands (AFY)								
	Crop Types	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	**Notes**
	Alfalfa	2,428	2,398	2,368	2,338	2,308	2,278	
	Citrus	0	0	0	0	0	0	
	Deciduous	172	170	167	165	163	161	
	Nursery	0	0	0	0	0	0	
	Pasture	0	0	0	0	0	0	
	Vegetable	28,114	27,768	27,422	27,076	26,730	26,384	
	Vineyard	0	0	0	0	0	0	
	Total	**30,714**	**30,336**	**29,957**	**29,579**	**29,201**	**28,823**	
Total Water Demands (AFY)								
	Sum Urban, Rural, Ag	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	
	Total Water Demand	**30,724**	**30,380**	**30,035**	**29,691**	**29,347**	**29,003**	
Environmental Water Demands (AFY)								
	Environmental Category	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	
	Estimated Unimpaired Mean Annual Discharge	0	0	0	0	0	0	2
	Estimated Environmental Water Demand	0	0	0	0	0	0	3

Notes:

1 Straightline Interpolation 2010 to 2043

2 Straightline Interpolation 2010 to 2042

3 The eastern portion of the County (i.e., WPAs 9, 10, 11, 14, and 15) was ultimately excluded from the environmental water demand analysis due to the lack of data and regional physiographic differences.

Table D-31. WPA No. 9 – Cuyama Valley Demand Supply Balance

WPA No. 9 - Cuyama Valley

	Water Districts/Use Sectors/Environmental/Unimpaired Summary	Cuyama Valley - Agriculture		Cuyama Valley - Rural		Environmental & UMAD		Total	
Urban/Ag/ Rural Water Demands		Demand (AFY)	*Notes*	Demand (AFY)	*Notes*	Demand (AFY)	*Notes*	Demand (AFY)	*Notes*
	Existing Demands	30,714		10				30,724	
	Forecasted Demands (2035)	**28,823**		**180**		**0**		**29,003**	
	Groundwater	**GW Supply (AFY)**		**GW Supply (AFY)**		**GW Supply (AFY)**		**GW Supply (AFY)**	
	Cuyama Valley	9,800	*1*	61	*1*			9,861	
	Other GW Supply Sources	19,023		119				19,142	
Water Supply Source	**Total GW**	**28,823**		**180**		**0**		**29,003**	
	Surface Water	**SW Supply (AFY)**		**SW Supply (AFY)**		**SW Supply (AFY)**		**SW Supply (AFY)**	
	SWRCB - WPA 9	0						0	
	Total SW	**0**		**0**		**0**		**0**	
	Total Supplies	**28,823**		**180**		**0**		**29,003**	
	Balance (Supplies - Demand)	**0**		**0**		**0**		**0**	
Environmental Water						0	*2*		
Unimpaired Mean Annual Inflow						0	*3*		

Notes:

1 There is no separate yield estimate for the San Luis Obispo County portion of the basin.

2 Not Available

3 The eastern portion of the County (i.e., WPAs 9, 10, 11, 14, and 15) was ultimately excluded from the environmental water demand analysis due to the lack of data and regional physiographic differences.

D.4.3 *North County Sub-Region*

As listed in **Table D-32**, the South County Sub-Region includes seven WPAs (See **Figure D-17**). Most of the urban water demands rely on groundwater supplies from the Paso Groundwater Basins and its many sub-basins.

Table D-32. North County Subregion WPA Water Demand Summary

Sum Urban, Rural, Ag	2010	2015	2020	2025	2030	2035
WPA No. 10 - Carrizo Plain	733	2,978	5,223	7,469	9,714	11,959
WPA No. 11 - Rafael/Big Spring	519	633	748	862	976	1,090
WPA No. 12 - Santa Margarita	3,523	4,513	5,500	6,488	7,477	8,465
WPA No. 13 - Atascadero/Templeton	22,151	23,644	25,167	26,687	27,832	29,559
WPA No. 14 - Salinas/Estrella	87,127	89,409	91,903	94,370	94,425	94,482
WPA No. 15 - Cholame	118	143	168	193	218	243
WPA No. 16 - Nacimiento	3,269	4,280	5,288	6,300	7,310	8,320
Total for Sub-Region	**117,440**	**125,600**	**133,997**	**142,369**	**147,952**	**154,118**

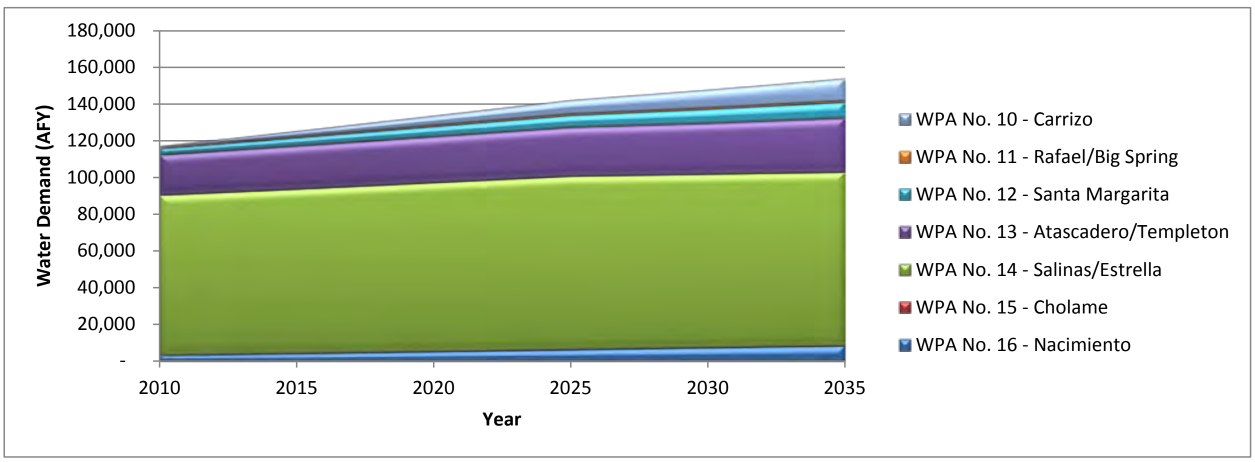


Figure D-22. North County WPA Water Demand Summary

D.4.3.1 WPA 10 – Carrizo Plain

Water Demand

There are no large population centers in WPA 10. Two solar power facilities exist in this WPA. These two large solar farms are referred to as the Topaz Solar Farm, and the SunPower-California Valley Solar Ranch. The estimated water demand of these facilities is 13.8 AFY, but is not shown in this water balance (for purposes of consistency with MWR).

The estimated rural demand for the Carrizo Plain, WPA 10, is 210 AFY and has a future demand of 11,175 AFY. However, it is unlikely that the number of residential units that are zoned as potential residential will be developed due to limited water availability and other factors. The existing annual applied water for WPA 10 is approximately 520 AFY. The existing crops in this area are primarily citrus crops. The projected future annual applied water for WPA 10 averages approximately 784 AFY.

The eastern portion of the County (i.e., WPAs 9, 10, 11, 14, and 15) was ultimately excluded from the environmental water demand analysis due to the lack of data and regional physiographic differences. No environmental flows are included for this WPA.

Supply Demand Balance

The primary source of water supply for this WPA is the Carrizo Plain Groundwater Basin, and to a limited extent, other groundwater basins and State Board water diversions. With no urban land uses, groundwater is shown to meet demands to the extent sufficiency in all supplies can be achieved in the future. Potential demands occurring from the two identified future solar power projects are not included.

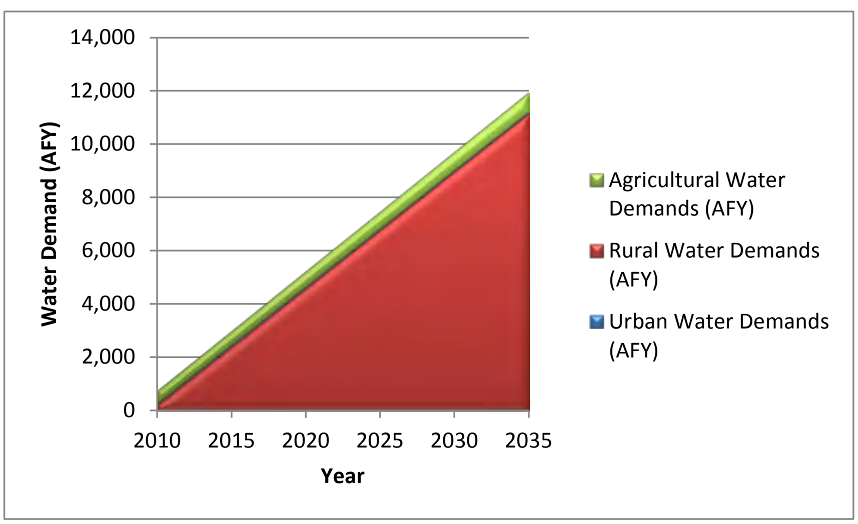


Figure D-23. WPA-10 Carrizo Plain Water Demands

Table D-33. WPA No. 10 – Carrizo Plain

Urban Water Demands (AFY)								
	Urban Water District	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	**Notes**
Rural Water Demands (AFY)								
	Rural Areas/Districts	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	**Notes**
	Carrizo - Rural	210	2,403	4,596	6,789	8,982	11,175	1
	Total	**210**	**2,403**	**4,596**	**6,789**	**8,982**	**11,175**	
Agricultural Water Demands (AFY)								
	Crop Types	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	**Notes**
	Alfalfa	0	0	0	0	0	0	
	Citrus	523	575	627	680	732	784	
	Deciduous	0	0	0	0	0	0	
	Nursery	0	0	0	0	0	0	
	Pasture	0	0	0	0	0	0	
	Vegetable	0	0	0	0	0	0	
	Vineyard	0	0	0	0	0	0	
	Total	**523**	**575**	**627**	**680**	**732**	**784**	
Total Water Demands (AFY)								
	Sum Urban, Rural, Ag	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	
	Total Water Demand	**733**	**2,978**	**5,223**	**7,469**	**9,714**	**11,959**	
Environmental Water Demands (AFY)								
	Environmental Category	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	
	Estimated Unimpaired Mean Annual Discharge	0	0	0	0	0	0	2
	Estimated Environmental Water Demand	0	0	0	0	0	0	2

Notes:

1 Straightline Interpolation 2010 to 2044. Carrizo Plain rural demand projections are based on existing zoning, which includes the potential for extensive California Valley development. The actual development may be much lower than the range shown due to water quality and other considerations.

2 The eastern portion of the County (i.e., WPAs 9, 10, 11, 14, and 15) was ultimately excluded from the environmental water demand analysis due to the lack of data and regional physiographic differences.

Table D-34. WPA No. 10 – Carrizo Plain Demand Supply Balance

WPA No. 10 - Carrizo

Water Districts/Use Sectors/Environmental/Unimpaired Summary	Carrizo - Agriculture		Carrizo - Rural		Environmental & UMAD		Total	
Urban/Ag/ Rural Water Demands	**Demand (AFY)**	***Notes***	**Demand (AFY)**	***Notes***	**Demand (AFY)**	***Notes***	**Demand (AFY)**	***Notes***
Existing Demands	523		210				733	
Forecasted Demands (2035)	**784**		**11,175**		**0**		**11,959**	
Water Supply Source								
Groundwater	**GW Supply (AFY)**		**GW Supply (AFY)**		**GW Supply (AFY)**		**GW Supply (AFY)**	
Carrizo Plain	800	1	224				1,023	
Other GW Supply Sources	0		10,952				10,952	
Total GW	**800**		**11,175**		**0**		**11,975**	
Surface Water	**SW Supply (AFY)**		**SW Supply (AFY)**		**SW Supply (AFY)**		**SW Supply (AFY)**	
SWRCB - WPA 10	0	2	0	2			0	
Total SW	**0**		**0**		**0**		**0**	
Total Supplies	**800**		**11,175**		**0**		**11,975**	
Balance (Supplies - Demand)	**16**		**0**		**0**		**16**	
Environmental Water					0	3		
Unimpaired Mean Annual Inflow					0	3		

Notes:

1 The safe seasonal yield was estimated at 8000 - 11000 AFY.

2 Diversions do not distinguish type of use. Potentially 81 AFY could be diverted for use to either agriculture or rural residential.

3 The eastern portion of the County (i.e., WPAs 9, 10, 11, 14, and 15) was ultimately excluded from the environmental water demand analysis due to the lack of data and regional physiographic differences.

D.4.3.2 WPA 11 – Rafael/Big Spring

Water Demand

There are no large population centers in WPA 11.

There is minimal or no existing rural demand for WPA 11, but in the future, if water is available and development occurs, there could be up to 1,090 AFY. There are minimal (519 AFY) applied water demands estimated in 2010, and no future agricultural demands, with existing citrus shown as declining to zero by 2035 likely being replaced by rural development, and constrained from a lack of reliable water supplies.

The eastern portion of the County (i.e., WPAs 9, 10, 11, 14, and 15) was ultimately excluded from the environmental water demand analysis due to the lack of data and regional physiographic differences.

Demand Supply Balance

The primary source of water supply for this WPA is the Rafael Valley and Big Spring Valley Groundwater Basins, and to a limited extent, State Board water diversions. The water supply sources for this WPA include other groundwater supply sources because the amount of groundwater taken from the two larger basins, and from smaller basins, has not been quantified. With no urban land uses, groundwater is shown to meet demands to the extent sufficiency in all supplies can be achieved in the future.

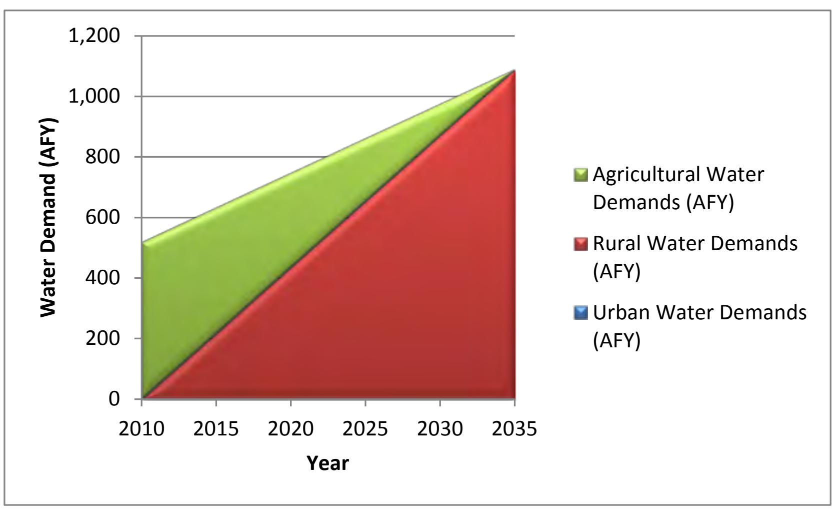


Figure D-24. WPA-11 Rafael/Big Spring Water Demands

Table D-35. WPA No. 11 - Rafael/Big Spring

Urban Water Demands (AFY)								
	Urban Water District	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	**Notes**
Rural Water Demands (AFY)								
	Rural Areas/Districts	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	**Notes**
	Rafael/Big Spring - Rural	0	218	436	654	872	1,090	1
	Total	**0**	**218**	**436**	**654**	**872**	**1,090**	
Agricultural Water Demands (AFY)								
	Crop Types	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	**Notes**
	Alfalfa	0	0	0	0	0	0	
	Citrus	519	415	312	208	104	0	
	Deciduous	0	0	0	0	0	0	
	Nursery	0	0	0	0	0	0	
	Pasture	0	0	0	0	0	0	
	Vegetable	0	0	0	0	0	0	
	Vineyard	0	0	0	0	0	0	
	Total	**519**	**415**	**312**	**208**	**104**	**0**	
Total Water Demands (AFY)								
	Sum Urban, Rural, Ag	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	
	Total Water Demand	**519**	**633**	**748**	**862**	**976**	**1,090**	
Environmental Water Demands (AFY)								
	Environmental Category	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	
	Estimated Unimpaired Mean Annual Discharge	0	0	0	0	0	0	2
	Estimated Environmental Water Demand	0	0	0	0	0	0	2

Notes:

1 Straightline Interpolation 2010 to 2045

2 The eastern portion of the County (i.e., WPAs 9, 10, 11, 14, and 15) was ultimately excluded from the environmental water demand analysis due to the lack of data and regional physiographic differences.

Table D-36. WPA No. 11 – Rafael/Big Spring Demand Supply Balance

WPA No. 11 - Rafael/Big Spring

	Water Districts/Use Sectors/Environmental/Unimpaired Summary	Rafael/Big Spring - Agriculture		Rafael/Big Spring - Rural		Environmental & UMAD		Total	
Urban/Ag/ Rural Water Demands		Demand (AFY)	*Notes*	Demand (AFY)	*Notes*	Demand (AFY)	*Notes*	Demand (AFY)	*Notes*
	Existing Demands	519						519	
	Forecasted Demands (2035)	**0**		**1,090**		**0**		**1,090**	
Water Supply Source	**Groundwater**	GW Supply (AFY)		GW Supply (AFY)		GW Supply (AFY)		GW Supply (AFY)	
	Rafael Valley	0	*1*					0	
	Big Spring Area	0	*1*					0	
	Other GW Supply Sources	0	*2*	1,090	*2*			1,090	
	Total GW	**0**		**1,090**		**0**		**1,090**	
	Surface Water	SW Supply (AFY)		SW Supply (AFY)		SW Supply (AFY)		SW Supply (AFY)	
	SWRCB - WPA 11	0	*3*					0	
	Total SW	**0**		**0**		**0**		**0**	
	Total Supplies	**0**		**1,090**		**0**		**1,090**	
	Balance (Supplies - Demand)	**0**		**0**		**0**		**0**	
Environmental Water						0	*4*		
Unimpaired Mean Annual Inflow						0	*4*		

Notes:

1. There is no information describing the basin yield.
2. It is uncertain which basins are used and the quantity of water pumped from each basin. Future studies should invest the resources to quantify the location and use of each basin.
3. Diversions do not distinguish type of use. Potentially 59 AFY could be diverted for use to either agriculture or rural residential.
4. The eastern portion of the County (i.e., WPAs 9, 10, 11, 14, and 15) was ultimately excluded from the environmental water demand analysis due to the lack of data and regional physiographic differences.

D.4.3.3 WPA 12 – Santa Margarita

Water Demand

There are two urban water suppliers and users in WPA 12: County Service Area 23 and Santa Margarita Ranch Mutual Water Company. Information on these water districts and water users is in **Section C – Region Description**.

The estimated rural demand for the Santa Margarita area, WPA 12, is 240 AFY and has a future demand of 485 AFY. However, it is unlikely that the number of residential units that are zoned as potential residential will be developed due to limited water availability and other factors. The existing annual applied water for WPA 12 is approximately 1,498 AFY. The existing crops in this area include alfalfa, deciduous, pasture, and vineyards. The projected future annual applied water for WPA 12 is estimated to be 2,202 AFY. The projected future agricultural demand is higher than existing due to increases in acreage of citrus, pasture, and vineyards.

The UMAD for WPA 12 inclusive of the water management areas is approximately 46,630 AFY and environmental water demand of 32,850 AFY.

Demand Supply Balance

The primary source of water supply for this WPA is the Santa Margarita, Rinconada, and Pozo Valley Groundwater Basins, Santa Margarita Creek Alluvial Aquifer, and to a limited extent other groundwater supplies and State Board water diversions. The water supply sources for this WPA include other groundwater supply sources because the amount of groundwater taken from the two larger basins, and from smaller basins, has not been quantified. Based on preliminary review of basin perennial yield, groundwater is shown to be in deficit for the two urban districts, requiring the development of alternative supplies from surface water and potentially recycled water.

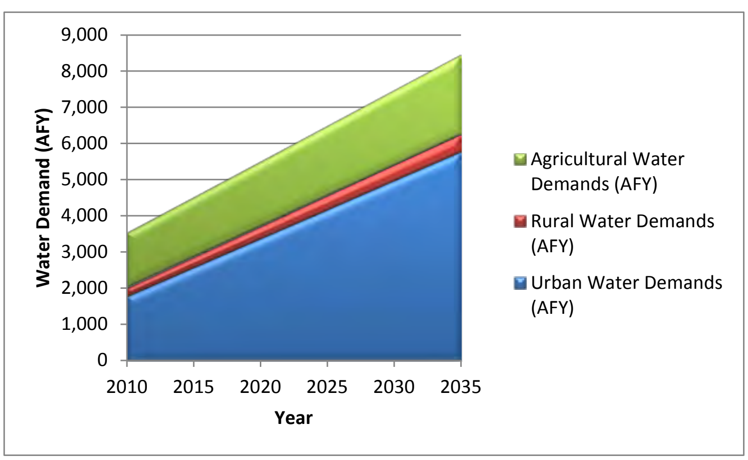


Figure D-25. WPA-12 Santa Margarita Water Demands

Table D-37. WPA No. 12 - Santa Margarita

Urban Water Demands (AFY)								
	Urban Water District	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	**Notes**
	CSA 23	164	168	171	175	179	182	1
	Santa Margarita Ranch Mutual Water Company	1,621	2,416	3,211	4,006	4,801	5,596	2
	Total	**1,785**	**2,584**	**3,382**	**4,181**	**4,980**	**5,778**	
Rural Water Demands (AFY)								
	Rural Areas/Districts	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	**Notes**
	Santa Margarita - Rural	240	289	338	387	436	485	3
	Total	**240**	**289**	**338**	**387**	**436**	**485**	
Agricultural Water Demands (AFY)								
	Crop Types	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	**Notes**
	Alfalfa	200	219	238	256	275	294	
	Citrus	0	0	0	0	0	0	
	Deciduous	29	32	34	37	40	43	
	Nursery	0	0	0	0	0	0	
	Pasture	21	23	25	27	29	31	
	Vegetable	0	0	0	0	0	0	
	Vineyard	1,248	1,366	1,483	1,600	1,717	1,834	
	Total	**1,498**	**1,640**	**1,780**	**1,920**	**2,061**	**2,202**	
Total Water Demands (AFY)								
	Sum Urban, Rural, Ag	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	
	Total Water Demand	**3,523**	**4,513**	**5,500**	**6,488**	**7,477**	**8,465**	
Environmental Water Demands (AFY)								
	Environmental Category	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	
	Estimated Unimpaired Mean Annual Discharge	32,850	32,850	32,850	32,850	32,850	32,850	
	Estimated Environmental Water Demand	46,630	46,630	46,630	46,630	46,630	46,630	

Notes:

1. 2012 MWR Future demand given as a range, 173-192 AFY. Average of range used for 2035. Straight line interpolation between 2010 demand and the average of the 2035 demand range.
2. 2012 MWR Future demand given as a range, 5301-5890 AFY. Average of range used for 2035. Straight line interpolation between 2010 demand and the average of the 2035 demand range.
3. Straightline Interpolation 2010 to 2046

Table D-38. WPA No. 12 – Santa Margarita Demand Supply Balance

WPA No. 12 - Santa Margarita

	Water Districts/Use Sectors/Environmental/Unimpaired Summary	CSA 23		Santa Margarita Ranch MWC		Santa Margarita - Agriculture		Santa Margarita - Rural		Environmental & UMAD		Total	
		Demand (AFY)	*Notes*	Demand (AFY)	*Notes*	Demand (AFY)	*Notes*	Demand (AFY)	*Notes*	Demand (AFY)	*Notes*	Demand (AFY)	*Notes*
Urban/Ag/ Rural Water Demands	**Existing Demands**	164	*1*	1,621		1,508		240				3,533	
	Forecasted Demands (2035)	**182**		**5,596**		**2,202**		**485**		**0**		**8,465**	
	Groundwater	**GW Supply (AFY)**		**GW Supply (AFY)**		**GW Supply (AFY)**		**GW Supply (AFY)**		**GW Supply (AFY)**		**GW Supply (AFY)**	
	Santa Margarita Valley	164	*2*	1,621	*2*	0	*2*					1,785	
	Rinconada Valley	0	*3*	0	*2*	308	*3*	68				376	
	Pozo Valley	0	*4*	0	*4*	110	*4*	24				134	
	Other GW Supply Sources					1,762		388				2,150	
	Salinas River Underflow					22		5				27	
Water Supply Source	**Total GW**	**164**		**1,621**		**2,202**		**485**		**0**		**4,472**	
	Surface Water	**SW Supply (AFY)**		**SW Supply (AFY)**		**SW Supply (AFY)**		**SW Supply (AFY)**		**SW Supply (AFY)**		**SW Supply (AFY)**	
	SWRCB-WPA 1			22	*5*							22	
	Total SW	**0**		**22**		**0**		**0**		**0**		**22**	
	Total Supplies	**164**		**1,643**		**2,202**		**485**		**0**		**4,494**	
	Balance (Supplies - Demand)	**-18**		**-3,953**		**0**		**0**		**0**		**-3,971**	
Environmental Water										32,850			
Unimpaired Mean Annual Inflow										46,630			

Notes:

1 2012 MWR

2 No comprehensive studies to determine the perennial yield are known to exist. However some reports indicate an average annual yield may range between 400 to 600 AFY.

3 There is no information describing the basin yield.

4 The safe available storage has been reported to be 1000 AFY. There is insufficient information to characterize water availability.

5 Supplemental water supply options for Santa Margarita Ranch are State Water and Nacimiento water.

D.4.3.4 WPA 13 – Atascadero/Templeton

Water Demand

There are three urban water suppliers and users in WPA 13: Garden Farms Community Water District, Atascadero Mutual Water Company, and Templeton Community Services District. Information on these water districts and water users is in **Section C – Region Description**.

The estimated rural demand for the Atascadero/Templeton area, WPA 13, is 1,480 AFY and has a future demand of 1,870 AFY. However, it is unlikely that the number of residential units that are zoned as potential residential will be developed due to limited water availability and other factors. The existing annual applied water for WPA 13 is approximately 7,852 AFY. All crop types are currently grown in this area. The projected future annual applied water for WPA 13 is estimated to be 12,170 AFY. The projected future agricultural demand is slightly higher than existing due to increases in acreage of deciduous, nursery, pasture, vegetable, and vineyards.

The UMAD for WPA 13 inclusive of the water management areas is approximately 74,090 AFY and environmental water demand of 41,010 AFY.

Demand Supply Balance

The primary source of water supply for this WPA is the Atascadero Groundwater Sub-basin (Paso Robles Formation and Salinas River Underflow), recycled water, Nacimiento Water Project, and to a limited extent, other groundwater supplies and State Board water diversions. The Templeton CSD can extract water from the Paso Robles Formation any time during the year; however, the Templeton CSD extracts the majority of the water during the summer months when the main river water allocation is not available. The agencies, County, District, and local land owners intend to actively and cooperatively manage the Paso Robles Groundwater Basin via the development of a Groundwater Management Plan.

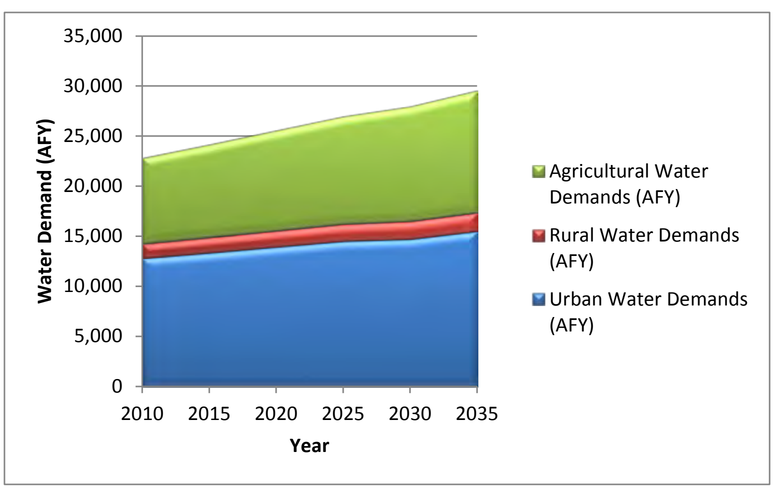


Figure D-26. WPA-13 Atascadero/Templeton Water Demands

Table D-39. WPA No. 13 - Atascadero/Templeton

Urban Water Demands (AFY)								
	Urban Water District	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	**Notes**
	Garden Farms C.W.D.	48	57	66	75	84	93	1
	Templeton CSD	1,682	1,775	1,868	1,961	2,054	2,147	2
	Atascadero Mutual Water Co	7,026	7,476	7,955	8,431	8,867	9,551	3
	Paso Robles Municipal Well Pumping	4,063	4,063	4,063	4,063	3,728	3,728	3
	Total	**12,819**	**13,371**	**13,952**	**14,530**	**14,733**	**15,519**	
Rural Water Demands (AFY)								
	Rural Areas/Districts	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	**Notes**
	Atascadero/Templeton - Rural	1,480	1,558	1,636	1,714	1,792	1,870	4
	Total	**1,480**	**1,558**	**1,636**	**1,714**	**1,792**	**1,870**	
Agricultural Water Demands (AFY)								
	Crop Types	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	**Notes**
	Alfalfa	319	354	389	424	459	494	
	Citrus	156	173	190	207	224	241	
	Deciduous	44	48	53	58	63	68	
	Nursery	25	28	31	34	37	39	
	Pasture	1,518	1,685	1,852	2,019	2,186	2,353	
	Vegetable	34	38	42	46	50	53	
	Vineyard	5,756	6,389	7,022	7,655	8,288	8,922	
	Total	**7,852**	**8,715**	**9,579**	**10,443**	**11,307**	**12,170**	
Total Water Demands (AFY)								
	Sum Urban, Rural, Ag	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	
	Total Water Demand	**22,151**	**23,644**	**25,167**	**26,687**	**27,832**	**29,559**	
Environmental Water Demands (AFY)								
	Environmental Category	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	
	Estimated Unimpaired Mean Annual Discharge	41,010	41,010	41,010	41,010	41,010	41,010	
	Estimated Environmental Water Demand	74,090	74,090	74,090	74,090	74,090	74,090	

Notes:

1 Straight line interpolation between 2010 demand and 2035 demand.

2 2012 MWR Future demand given as a range, 2034-2260 AFY. Average of range used for 2035. Straight line interpolation between 2010 demand and the average of the 2035 demand range.

3 2035 demand calculated using straight line interpolation from 2020 and 2030 given demands.

4 Straightline Interpolation 2010 to 2047

Table D-40. WPA No. 13 - Atascadero/Templeton Demand Supply Balance

WPA No. 13 - Atascadero/Templeton

Water Districts/Use Sectors/Environmental/Unimpaired Summary	Garden Farms C.W.D.		Templeton CSD		Atascadero Mutual Water Co		Paso Robles Municipal Well Pumping		Atascadero/ Templeton - Agriculture		Atascadero/ Templeton - Rural		Environ-mental & UMAD	Total
Urban/ Ag/ Rural Water Demands	**Demand (AFY)**	***Notes***	**Demand (AFY)**	***Notes***	**Demand (AFY)**	***Notes***	**Demand (AFY)**	***Notes***	**Demand (AFY)**	***Notes***	**Demand (AFY)**	***Notes***	**Demand (AFY)**	**Demand (AFY)**
Existing Demands	48	*1*	1,682	*1*	7,026	*1*	4,063		7,852		1,480			22,151
Forecasted Demands (2035)	**93**		**2,147**		**9,551**		**3,728**		**12,170**		**1,870**		**0**	**29,559**
Water Supply Source														
Groundwater	**GW Supply (AFY)**		**GW Supply (AFY)**		**GW Supply (AFY)**		**GW Supply (AFY)**		**GW Supply (AFY)**		**GW Supply (AFY)**		**GW Supply (AFY)**	**GW Supply (AFY)**
Paso Robles	93	*2*	1,050	*3*	3,193	*8*	0	*10*			0	*14*		4,336
Salinas River Underflow			500	*4*	4,883	*9*	3,728	*11*	2,434	*12*	374			11,919
Atascadero					0	*7*								0
Other GW Supply Sources									9,736		1,496			11,232
Total GW	**93**		**1,550**		**8,076**		**3,728**		**12,170**		**1,870**		**0**	**27,487**
Surface Water	**SW Supply (AFY)**		**SW Supply (AFY)**		**SW Supply (AFY)**		**SW Supply (AFY)**		**SW Supply (AFY)**		**SW Supply (AFY)**		**SW Supply (AFY)**	**SW Supply (AFY)**
Nacimiento Project			250	*5*	2,000									2,250
Recycled Water			475	*6*										475
SWRCB - WPA 13									0	*13*	0	*13*		0
Total SW	**0**		**725**		**2,000**		**0**		**0**		**0**		**0**	**2,725**
Total Supplies	**93**		**2,275**		**10,076**		**3,728**		**12,170**		**1,870**		**0**	**30,212**
Balance (Supplies - Demand)	**0**		**128**		**525**		**0**		**0**		**0**		**0**	**653**
Environmental Water													41,010	
Unimpaired Mean Annual Inflow													74,090	

Notes:

1 2012 MWR

2 Perennial yield estimated to be 16400 AFY. Extractions occur primarily from Salinas River Underflow and deeper formations. Depending on the estimated use sub-basin studies are indicating that the perennial yield may be exceeded in the future.

3 Nine of Templeton CSD's wells extract groundwater from the Atascadero Groundwater Sub-basin.

4 Templeton CSD is permitted to extract 500 AFY from the Salinas River Underflow between October 1 and April 1.

5 Nacimiento Project went on-line in 2010

6 Percolation of treated wastewater effluent into the Salinas River underflow and extraction of the same amount 28 months later. Currently about 132 AFY is percolated and extracted. This could increase to 475 AFY in the future.

7 The agencies County District and local land owners intend to actively and cooperatively manage the Paso Robles Groundwater Basin (which includes the Sub-basin) via the development of a Groundwater Management Plan.

8 Included with Salinas River Underflow

9 Atascadero MWC currently has rights to 3372 AFY from Salinas River underflow. Increased supplies from the underflow are shown due to UWMP shwing 4613 AFY in 2030.

10 Amount included in Salinas River Underflow

11 It was assumed that half (4063 AFY) of the existing Paso demand of 8126 AFY was extracted from the Salinas River Underflow via the Thunderbird Well Field in WPA 13

12 SWRCB records indicate that 745 AFY could have been diverted from the Salinas River (direct diversion or underflow). It is assumed that the entire amount is used for agriculture.

13 Diversions do not distinguish type of use. Potentially 1431 AFY could be diverted for use to either agriculture or rural residential. Diversions were not analyzed as to whether they are within or outside the Sub-basin.

14 It is assumed that the majority of water supply for rural users and about 13 percent of the supply for agricultural users comes from the Sub-basin.

D.4.3.5 WPA 14 – Salinas/Estrella

Water Demand

There are four urban water suppliers and users in WPA 14: Camp Roberts, City of Paso Robles, San Miguel Community Services District, and San Luis Obispo County Service Area 16 (Shandon). Information on these water districts and water users is in **Section C – Region Description**.

The estimated rural demand for the Salinas/Estrella area, WPA 14, is 3,590 AFY and has a future demand of 5,900 AFY. However, it is unlikely that the number of residential units that are zoned as potential residential will be developed due to limited water availability and other factors. The existing annual applied water for WPA 14 is approximately 76,639 AFY. All crop types are currently grown in this area. The projected future annual applied water for WPA 14 is estimated to decrease slightly to 73,782 AFY. The projected future agricultural demand is slightly lower than existing due to decreases in acreage of alfalfa, citrus, and vineyards.

The eastern portion of the County (i.e., WPAs 9, 10, 11, 14, and 15) was ultimately excluded from the environmental water demand analysis due to the lack of data and regional physiographic differences.

Demand Supply Balance

The primary source of water supply for this WPA is the Paso Robles Groundwater Basin (Paso Robles Formation (and/or alluvium) and Salinas River Underflow), Nacimiento Water Project, and to a limited extent, other groundwater supplies and State Board water diversions. The DAC community of San Miguel overlies a portion of the Paso Basin not constrained by groundwater. The City of Paso Robles is currently construction the Nacimiento Project providing for an estimated 5,400 AFY of surface water. Shandon is also planning for the construction of a turnout for SWP water, but will continue to rely mostly on less costly groundwater supplies to the extent that the basin can sustain the total demands of all pumpers.

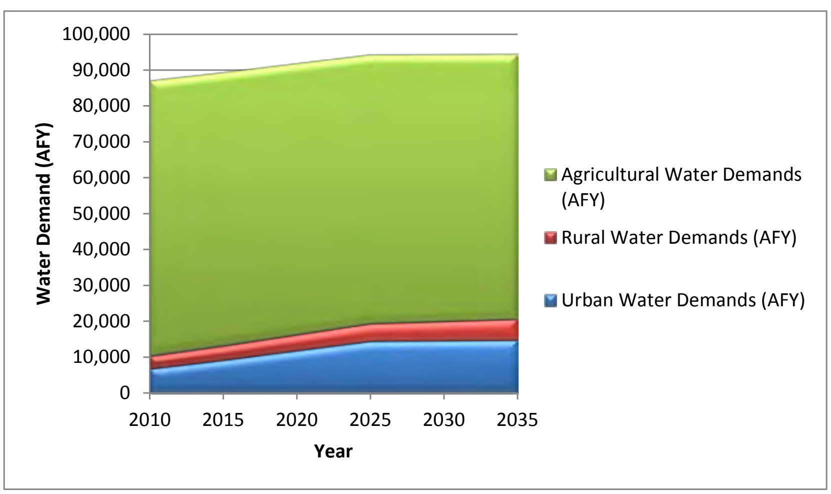


Figure D-27. WPA-14 Salinas/Estrella Water Demands

Table D-41. WPA No. 14 - Salinas/Estrella

Urban Water Demands (AFY)							
	Urban Water District	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	**Notes**
	San Miguel CSD	235	293	351	408	466	524	1
	Camp Roberts	190	190	190	190	190	190	2
	City of Paso Robles	6,326	8,550	10,990	13,400	13,400	13,400	2
	SLO CSA No. 16 – Shandon	147	255	362	470	578	686	3
	Total	**6,898**	**9,288**	**11,893**	**14,468**	**14,634**	**14,800**	
Rural Water Demands (AFY)								
	Rural Areas/Districts	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	**Notes**
	Salinas/Estrella - Rural	3,590	4,052	4,514	4,976	5,438	5,900	4
	Total	**3,590**	**4,052**	**4,514**	**4,976**	**5,438**	**5,900**	
Agricultural Water Demands (AFY)								
	Crop Types	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	**Notes**
	Alfalfa	10,560	10,481	10,402	10,323	10,245	10,166	
	Citrus	1,190	1,182	1,173	1,164	1,155	1,146	
	Deciduous	1,585	1,573	1,561	1,550	1,538	1,526	
	Nursery	147	146	145	144	143	142	
	Pasture	3,815	3,787	3,758	3,730	3,701	3,673	
	Vegetable	2,878	2,857	2,835	2,814	2,792	2,771	
	Vineyard	56,464	56,043	55,622	55,201	54,779	54,358	
	Total	**76,639**	**76,069**	**75,496**	**74,926**	**74,353**	**73,782**	
Total Water Demands (AFY)								
	Sum Urban, Rural, Ag	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	
	Total Water Demand	**87,127**	**89,409**	**91,903**	**94,370**	**94,425**	**94,482**	
Environmental Water Demands (AFY)								
	Environmental Category	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	
	Estimated Unimpaired Mean Annual Discharge	0	0	0	0	0	0	5
	Estimated Environmental Water Demand	0	0	0	0	0	0	5

Notes:

1 2012 MWR Future demand given as a range, 466-582 AFY. Average of range used for 2035. Straight line interpolation between 2010 demand and the average of the 2035 demand range.

2 Assumed demand was held constant between Current (2010) and Future (build-out/2035).

3 2012 MWR Future demand given as a range, 271-1100 AFY. Average of range used for 2035. Straight line interpolation between 2010 demand and the average of the 2035 demand range.

4 Straightline Interpolation 2010 to 2048

5 The eastern portion of the County (i.e., WPAs 9, 10, 11, 14, and 15) was ultimately excluded from the environmental water demand analysis due to the lack of data and regional physiographic differences.

Table D-42. WPA No. 14 – Salinas/Estrella Demand Supply Balance

WPA No. 14 - Salinas/Estrella

Water Districts/Use Sectors/Environmental/Unimpaired Summary	San Miguel CSD		Camp Roberts		City of Paso Robles		SLO CSA No. 16 – Shandon		Salinas/Estrella - Agriculture		Salinas/ Estrella - Rural		Environmental & UMAD		Total
Urban/Ag/ Rural Water Demands	Demand (AFY)	*Notes*	Demand (AFY)	*Notes*	Demand (AFY)	*Notes*	Demand (AFY)	*Notes*	Demand (AFY)	*Notes*	Demand (AFY)	*Notes*	Demand (AFY)	*Notes*	Demand (AFY)
Existing Demands	235	*1*	190	*1*	6,326	*3*	147	*1*	76,639		3,590				87,127
Forecasted Demands (2035)	**524**		**190**		**13,400**		**686**		**73,782**		**5,900**		**0**		**94,482**
Water Supply Source — **Groundwater**	GW Supply (AFY)		GW Supply (AFY)		GW Supply (AFY)		GW Supply (AFY)		GW Supply (AFY)		GW Supply (AFY)		GW Supply (AFY)		GW Supply (AFY)
Paso Robles	524	*2*	190		3,400	*4*	147		51,647		4,130				60,038
Salinas River Underflow					4,600	*5*			14,756	*7*	1,180				20,536
Other GW Supply Sources									3,689		295				3,984
Total GW	**524**		**190**		**8,000**		**147**		**70,093**		**5,605**		**0**		**84,559**
Surface Water	SW Supply (AFY)		SW Supply (AFY)		SW Supply (AFY)		SW Supply (AFY)		SW Supply (AFY)		SW Supply (AFY)		SW Supply (AFY)		SW Supply (AFY)
Nacimiento Project					5,400										5,400
SWP - WPA 14							66	*6*							66
SWRCB - WPA 14									3,689	*8*	295	*8*			3,984
Total SW	**0**		**0**		**5,400**		**66**		**3,689**		**295**		**0**		**9,450**
Total Supplies	**524**		**190**		**13,400**		**213**		**73,782**		**5,900**		**0**		**94,009**
Balance (Supplies - Demand)	**0**		**0**		**0**		**-473**		**0**		**0**		**0**		**-473**
Environmental Water													0	*9*	
Unimpaired Mean Annual Inflow													0	*9*	

Notes:

1. 2012 MWR
2. The local Paso Basin yield underlying San Miguel is assumed to be sufficient for meeting future demands. Future groundwater management and governance of the Paso Basin will need to provide proof of sufficiency.
3. The 20x2020 target water use was calculated using DWR Method 1, which is 80% of the Base Daily per Capita Water Use.
4. The deeper formations of the Paso Robles Groundwater Basin contribute approximately 2856 AFY to the City of Paso Robles supply. The City plans to maintain this extraction rate in the future.
5. The City of Paso Robles is permitted to extract up to 8 cfs (3590 gpm) with a maximum extraction of 4600 AFY (January 1 to December 31).
6. CSA 16 has an allocation of 100 AFY of State Water Project (but no drought buffer) but has not developed this supply due to high cost. State Water Project average allocation assumed 66 percent of contract water service amount which equate to 66 AFY.
7. SWRCB records indicate that 738 AFY could be diverted from the Salinas River (direct diversion or underflow). It is assumed that the entire amount is used for agriculture.
8. Diversions do not distinguish type of use. Potentially 4884 AFY could be diverted for use to either agriculture or rural residential.
9. The eastern portion of the County (i.e., WPAs 9, 10, 11, 14, and 15) was ultimately excluded from the environmental water demand analysis due to the lack of data and regional physiographic differences.

D.4.3.6 WPA 15 – Cholame Valley

Water Demand

There are no large population centers in WPA 15.

The estimated rural demand for the Cholame Valley area, WPA 15, is 10 AFY and has a future demand of 170 AFY. However, it is unlikely that the number of residential units that are zoned as potential residential will be developed due to limited water availability and other factors. The existing annual applied water for WPA 15 is approximately 108 AFY shown to be solely from citrus crops. The projected future annual applied water for WPA 15 is estimated to decrease slightly to 73 AFY. The projected future agricultural demand is slightly lower than existing due to a decrease in the citrus (olive) crops.

The eastern portion of the County (i.e., WPAs 9, 10, 11, 14, and 15) was ultimately excluded from the environmental water demand analysis due to the lack of data and regional physiographic differences.

Demand Supply Balance

The primary source of water supply for this WPA is the Cholame Valley Groundwater Basin, and to a limited extent, other groundwater supplies and State Board water diversions. Given the current land use, the projection for WPA 15 in particular could be refined significantly by taking ranching operations water use and conservation easement provisions into account. There is no information for basin yields.

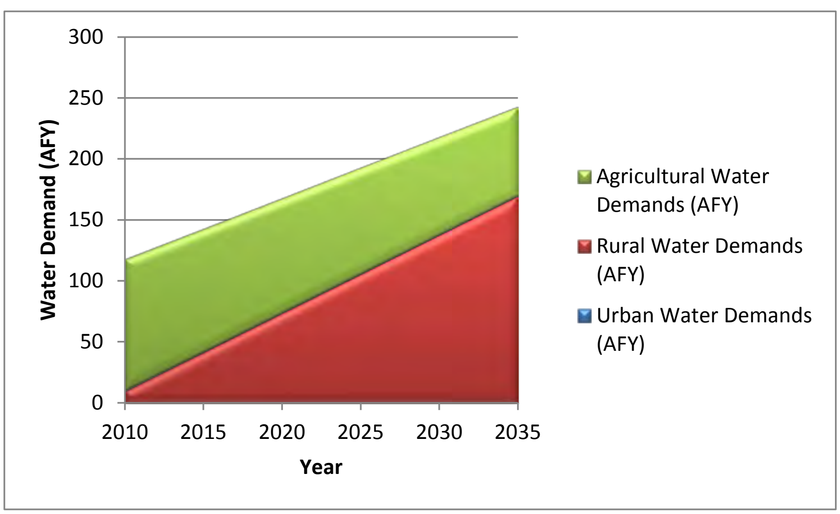


Figure D-28. WPA-15 Cholame Water Demands

Table D-43. WPA No. 15 - Cholame

		2010	2015	2020	2025	2030	2035	Notes
Urban Water Demands (AFY)								
	Urban Water District	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	**Notes**
Rural Water Demands (AFY)								
	Rural Areas/Districts	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	**Notes**
	Cholame - Rural	10	42	74	106	138	170	1
	Total	**10**	**42**	**74**	**106**	**138**	**170**	
Agricultural Water Demands (AFY)								
	Crop Types	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	**Notes**
	Alfalfa	0	0	0	0	0	0	
	Citrus	108	101	94	87	80	73	
	Deciduous	0	0	0	0	0	0	
	Nursery	0	0	0	0	0	0	
	Pasture	0	0	0	0	0	0	
	Vegetable	0	0	0	0	0	0	
	Vineyard	0	0	0	0	0	0	
	Total	**108**	**101**	**94**	**87**	**80**	**73**	
Total Water Demands (AFY)								
	Sum Urban, Rural, Ag	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	
	Total Water Demand	**118**	**143**	**168**	**193**	**218**	**243**	
Environmental Water Demands (AFY)								
	Environmental Category	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	
	Estimated Unimpaired Mean Annual Discharge	0	0	0	0	0	0	2
	Estimated Environmental Water Demand	0	0	0	0	0	0	2

Notes:

1 Straightline Interpolation 2010 to 2049

2 The eastern portion of the County (i.e., WPAs 9, 10, 11, 14, and 15) was ultimately excluded from the environmental water demand analysis due to the lack of data and regional physiographic differences.

Table D-44. WPA No. 15 – Cholame Demand Supply Balance

WPA No. 15 - Cholame

		Cholame - Agriculture		Cholame - Rural		Environmental & UMAD		Total	
	Water Districts/Use Sectors/Environmental/Unimpaired Summary								
		Demand (AFY)	***Notes***	**Demand (AFY)**	***Notes***	**Demand (AFY)**	***Notes***	**Demand (AFY)**	***Notes***
Urban/Ag/ Rural Water Demands	**Existing Demands**	108		10				118	
	Forecasted Demands (2035)	**73**		**170**		**0**		**243**	
Water Supply Source	**Groundwater**	**GW Supply (AFY)**		**GW Supply (AFY)**		**GW Supply (AFY)**		**GW Supply (AFY)**	
	Cholame Valley	80	*1*					80	
	Other GW Supply Sources	0		170				170	
	Total GW	**80**		**170**		**0**		**250**	
	Surface Water	**SW Supply (AFY)**		**SW Supply (AFY)**		**SW Supply (AFY)**		**SW Supply (AFY)**	
	SWRCB - WPA 15	41						41	
	Total SW	**41**		**0**		**0**		**41**	
	Total Supplies	**121**		**170**		**0**		**291**	
	Balance (Supplies - Demand)	**48**		**0**		**0**		**48**	
Environmental Water						0	*2*		
Unimpaired Mean Annual Inflow						0	*2*		

Notes:

1 The perennial yield was estimated to be 977,00 AFY (includes 16,400 AFY from the Atascadero Groundwater Sub-basin). Previous studies estimated that the total groundwater pumping in the basin during 2006 including Monterey County demands was 88154 acre-feet

2 The eastern portion of the County (i.e., WPAs 9, 10, 11, 14, and 15) was ultimately excluded from the environmental water demand analysis due to the lack of data and regional physiographic differences.

D.4.3.7 WPA 16 – Nacimiento

Water Demand

There are two urban water suppliers and users in WPA 16: Heritage Ranch Community Services District and Nacimiento Water Company. Information on these water districts and water users is in **Section C – Region Description**.

The estimated rural demand for the Nacimiento area, WPA 16, is 280 AFY and has a future demand of 805 AFY. However, it is unlikely that the number of residential units that are zoned as potential residential will be developed due to limited drought year water availability. The existing annual applied water for WPA 16 is approximately 1770 AFY shown to be from citrus, deciduous, pasture, and vineyard crops. The projected future annual applied water for WPA 16 is estimated to increase to 5,928 AFY. The projected future agricultural demand is higher than existing due to an increase in all existing crop types.

The UMAD for WPA 16 inclusive of the water management areas is approximately 251,124 AFY and environmental water demand of 108,390 AFY.

Demand Supply Balance

The primary source of water supply for this WPA is Lake Nacimiento, and to a limited extent, other groundwater supplies and State Board water diversions. The 1,100 AFY of allocation of Nacimiento Reservoir water designated for use in Heritage Ranch's service area is part of the 1,750 AFY reserved for County residents in the Lake Nacimiento area. It is sufficient to provide water for build-out demand, but the configuration of the delivery system leaves the Heritage Ranch CSD vulnerable to a termination in water supply in an extreme drought. Alternative sources are under consideration, including taking water directly from the lake and connecting to the Nacimiento Pipeline.

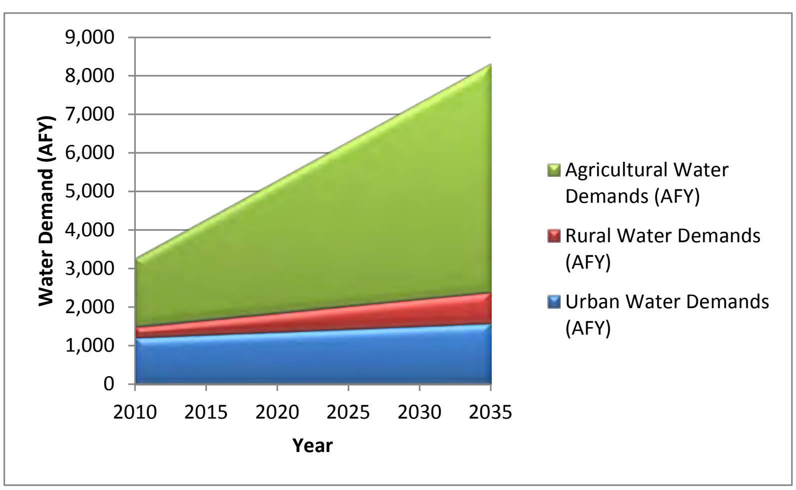


Figure D-29. WPA-16 Nacimiento Water Demands

Table D-45. WPA No. 16 - Nacimiento

Urban Water Demands (AFY)								
	Urban Water District	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	**Notes**
	Nacimiento Water Company	600	600	600	600	600	600	1
	Heritage Ranch CSD	619	693	766	840	913	987	2
	Total	**1,219**	**1,293**	**1,366**	**1,440**	**1,513**	**1,587**	
Rural Water Demands (AFY)								
	Rural Areas/Districts	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	**Notes**
	Nacimiento - Rural	280	385	490	595	700	805	3
	Total	**280**	**385**	**490**	**595**	**700**	**805**	
Agricultural Water Demands (AFY)								
	Crop Types	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	**Notes**
	Alfalfa	0	0	0	0	0	0	
	Citrus	27	40	52	65	78	90	
	Deciduous	8	12	15	19	23	26	
	Nursery	0	0	0	0	0	0	
	Pasture	0	0	0	0	0	0	
	Vegetable	0	0	0	0	0	0	
	Vineyard	1,735	2,550	3,365	4,181	4,996	5,812	
	Total	**1,770**	**2,602**	**3,432**	**4,265**	**5,097**	**5,928**	
Total Water Demands (AFY)								
	Sum Urban, Rural, Ag	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	
	Total Water Demand	**3,269**	**4,280**	**5,288**	**6,300**	**7,310**	**8,320**	
Environmental Water Demands (AFY)								
	Environmental Category	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	
	Estimated Unimpaired Mean Annual Discharge	108,390	108,390	108,390	108,390	108,390	108,390	
	Estimated Environmental Water Demand	251,120	251,120	251,120	251,120	251,120	251,120	

Notes:

1 Current (2010) and Future (Build-out/2035) demands not available; calculations not performed.

2 2012 MWR Future demand given as a range, 935-1039 AFY. Average of range used for 2035. Straight line interpolation between 2010 demand and the average of the 2035 demand range.

3 Straightline Interpolation 2010 to 2050

Table D-46. WPA No. 16 - Nacimiento Demand Supply Balance

WPA No. 16 - Nacimiento

Water Districts/Use Sectors/Environmental/Unimpaired Summary	Nacimiento Water Company		Heritage Ranch CSD		Nacimiento - Agriculture		Nacimiento - Rural		Environmental & UMAD		Total	
Urban/Ag/ Rural Water Demands	**Demand (AFY)**	***Notes***	**Demand (AFY)**	***Notes***	**Demand (AFY)**	***Notes***	**Demand (AFY)**	***Notes***	**Demand (AFY)**	***Notes***	**Demand (AFY)**	***Notes***
Existing Demands	600		619		1,770		280				3,269	
Forecasted Demands (2035)	**600**		**987**		**5,928**		**805**		**0**		**8,320**	
Water Supply Source												
Groundwater	**GW Supply (AFY)**		**GW Supply (AFY)**		**GW Supply (AFY)**		**GW Supply (AFY)**		**GW Supply (AFY)**		**GW Supply (AFY)**	
Other GW Supply Sources					5,928	*2*	805	*2*			6,733	
Total GW	**0**		**0**		**5,928**		**805**		**0**		**6,733**	
Surface Water	**SW Supply (AFY)**		**SW Supply (AFY)**		**SW Supply (AFY)**		**SW Supply (AFY)**		**SW Supply (AFY)**		**SW Supply (AFY)**	
Nacimiento Lake	600	*1*	1,100	*1*							1,700	
SWRCB - WPA 15					0						0	
Total SW	**600**		**1,100**		**0**		**0**		**0**		**1,700**	
Total Supplies	**600**		**1,100**		**5,928**		**805**		**0**		**8,433**	
Balance (Supplies - Demand)	**0**		**113**		**0**		**0**		**0**		**113**	
Environmental Water									108,390			
Unimpaired Mean Annual Inflow									251,120			

Notes:

1 The 600 AFY water supply allocation for Oak Shores is part of the 1750 AFY reserved for San Luis Obispo County residents in the Lake Nacimiento area. Heritage Ranch CSD's allocation of Lake Nacimiento is 1100 AFY.

2 Groundwater supply sources around Lake Nacimiento are the typical sources of supply for wells that serve agricultural and rural users. There is no information on yield of groundwater supplies.

D.4.4 *Need for Per Capita Water Demand*

An IRWM Plan's use of per capita demands in place of aggregated land use-based demands is often preferred where the correlation in daily indoor water use and population work well and are useful in showing progress in meeting given levels of water conservation over time.

The California Water Conservation Plan calls for a 20 percent per capita water use reduction statewide by the year 2020. As part of the Urban Water Management Plan Act, urban water suppliers are required to complete a plan and set an interim (2015) 10 percent reduction goal as per the DWR guidance manual to meet the goals of the California Water Conservation Plan as briefly summarized in the excerpts below:

> *#1. An urban retail water supplier shall include in its urban water management plan…due in 2010 the baseline daily per capita water use, urban water use target, interim urban water use target, and compliance daily per capita water use, along with the bases for determining those estimates, including references to supporting data.*
>
> *#2. Urban wholesale water suppliers shall include in the urban water management plans . . . an assessment of their present and proposed future measures, programs, and policies to help achieve the water use reductions required by this part (10608.36). Urban retail water suppliers are to prepare a plan for implementing the Water Conservation Bill of 2009 requirements and conduct a public meeting, which includes consideration of economic impacts (CWC §10608.26).*
>
> *#25. Quantify, to the extent records are available, past and current water use, and projected water use (over the same five-year increments described in subdivision (a)), identifying the uses among water use sectors, including, but not necessarily limited to, all of the following uses: (A) Single family residential; (B) Multifamily; (C) Commercial; (D) Industrial; (E) Institutional and governmental; (F) Landscape; (G) Sales to other agencies; (H) Saline water intrusion barriers, groundwater recharge, or conjunctive use, or any combination thereof; (I) Agricultural (10631(e)(1) and (2)).*

The table below presents the baseline and target per capita water demands for the urban water suppliers required by the Urban Water Management Plan Act.

Table D-47. Per Capita 20X2020 Goals for Large Urban Water Suppliers

	Per Capita Water Use (GPCD)		
Urban Water Supplier	**Baseline**	**2015 Interim**	**2020 Target**
City of Arroyo Grande	186	167	149
Cambria CSD	112.4	109	105
City of Grover Beach	140.7	127	113
City of Morro Bay	125	119	113
City of Paso Robles	241	217	193
City of Pismo Beach	236	214	192
City of San Luis Obispo	124	120	117
Nipomo CSD	240	222	204

Source: 2010 UWMPs

D.5 Demand Review Summary Discussion

As noted earlier in this section, no “unpublished” conclusions are made by the IRWM Plan. The reasoning behind this decision is to maintain local agency control over reporting of water demands and water supply use and management practices, including agricultural and rural users. From the UWMPs and various planning documents, it appears that, in some WPAs, the current and projected water supply cannot keep up with the growing water demands where planned growth is already approved.

An additional concern is the inherent uncertainty of water demands where supplies for rural and agricultural water use are estimated based on current land use and crop demand coefficients. In some parts of the region, the water supply for rural and agricultural water uses is currently in deficit and/or the basin safe basin yield in unknown. It should be noted that the main source of supply for rural and agricultural applications is groundwater, and 16 out of the 37 groundwater basins supplying the San Luis Obispo Region do not have reported safe basin yields. This leaves uncertainty when estimating water balances. Moreover, many of the DWR groundwater basin studies are out of date, such as the study for the Santa Maria Valley Basin in 2002, which was prior to the formal establishment of both the Nipomo Mesa Management Area, Northern Cities Management Area and Santa Maria Valley Management Area. Without an assessment on the safe basin yields for all of the groundwater sources in the San Luis Obispo Region, the total future supply sustainability is unknown.

Urban water supply appears more balanced due to the use of multiple water supply sources. In addition to groundwater, urban water demand is met by surface water, State Water Project Water, and alternative sources such as recycled water. However, as with the rural and agricultural water applications, not knowing the current state of the groundwater basins in the San Luis Obispo Region makes any true and meaningful comparison difficult to impossible.

While uncertainty exists around groundwater supplies and sustainability, the region has made a concerted effort to increase water reliability by diversifying communities' water portfolios. Communities and unincorporated areas of the region are considering the potential for various surface water sources, recycled water and desalination facilities to improve sustainability. As is described in **Section G – Project Solicitation, Selection and Prioritization**, stakeholders are considering a number of projects to help adapt water supplies to the changing situations this region faces (e.g. climate change, extended droughts, etc.).

Section E.
IRWM Goals and Objectives

Section E. IRWM Goals and Objectives

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Section E. IRWM Goals and Objectives

This section identifies San Luis Obispo County (SLO) IRWM Region (Region) IRWM Plan Goals and Objectives. The Goals and Objectives provide a basis for decision making and are used to evaluate project benefits in terms of implementing the Region's IRWM Plan. The Goals and Objectives respond to input on what the Regional Water Management Group (RWMG) and Interested Stakeholders perceive to be the Region's major water resources issues. The Goals and Objectives:

- Focus the IRWM Plan
- Provide a basis for determining the most appropriate resource management strategies for the Region
- Are used to evaluate project benefits
- Guide IRWM project/program prioritization, development, and implementation

E.1 Process and Determination of IRWM Plan Goals and Objectives

E.1.1 Stakeholder Input: Identifying Critical Water Issues

A consensus-based approach was used to develop the IRWM Plan 2013/14 Update Goals and Objectives. As a first step to revising the Goals and Objectives, stakeholder participation was solicited to identify the critical water resources issues and review the 2007 IRWM Plan Goals and Objectives. Consistent with the IRWM Plan 2013/14 Update approach, consideration was given to the Region as a whole, as well as its three Sub-Regions (North Coast, North County, and South County shown in **Figure E-1**). This was facilitated through six Stakeholder/Community Outreach meetings held throughout the county (March 20-22, 2013) and three Sub-Region workshops (March 25- 26, 2013). Attendees included stakeholders with diverse water resource management interests and geographical bases:

- Cities/Municipalities/Community Services Districts (CSDs) representatives
- Mutual Water Companies (MWCs)/Private Water Purveyors representatives
- Agricultural representatives
- Environmental representatives
- Rural and urban residents
- Various advisory committee representatives
- Local media representatives

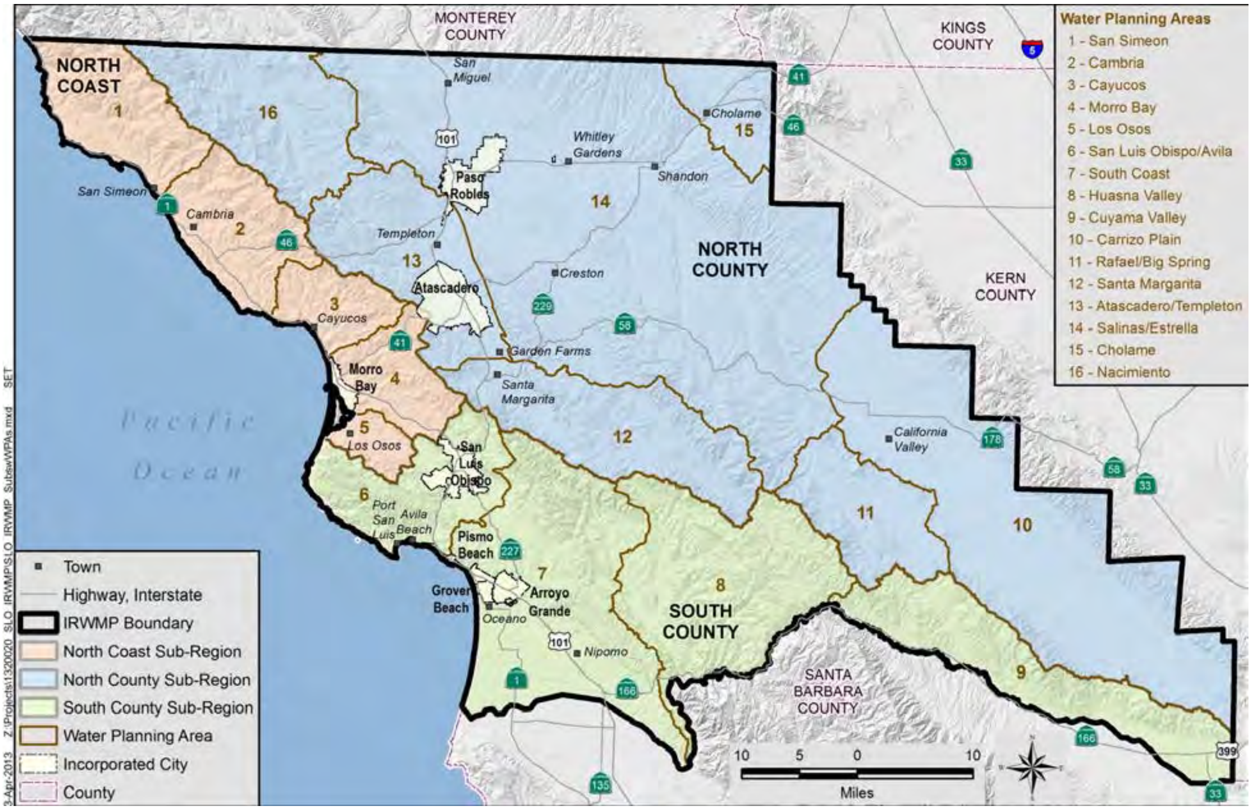

Figure E-1. San Luis Obispo IRWM Region and Sub-Regions

A list of the attendees and original comments on issues are provided in **Appendix D Notice of Public Meetings, Comments, and Outreach Material (see Appendix D-3 – List of Attendees and Public Meeting Comments)** of the IRWM Plan.

Stakeholders were asked to provide input on their Sub-Region's three most critical water resources issues. Answers varied, but the results show that many of the 2007 IRWM Plan Goals and Objectives remain as important issues facing the Region. **Table E-1** groups the primary issues (noted more frequently) under five major water management categories,[1] and then introduces secondary issues (noted less frequently) to capture the full range of input provided. These primary and secondary issues become the beginning of a Sub-Region priority list, explained later. The count for each issue reflects the number of times the issue was raised by the stakeholders.

[1] These categories closely reflect the 2007 IRWM Plan water management categories, with the exception of two that have changed. (1) The 2007 IRWM Plan had a Water Quality category. For this update, Water Quality issues have been folded into each category as applicable (e.g., water supply, groundwater). (2) The addition of a Water Resources Management and Communication category has been added to address management and public awareness issues.

Table E-1. List of Stakeholder Issues from Sub-Region Workshops

<table>
<tr><th>Issues Related to Water Management Categories</th><th>Primary Issues</th><th>Count</th><th>Secondary Issues</th><th>Count</th></tr>
<tr><td rowspan="4">Water Supply</td><td>Water Supply/Water Scarcity</td><td>26</td><td>Drought Planning/Reliability</td><td>2</td></tr>
<tr><td>Water Reclamation and Reuse</td><td>18</td><td>Desalinization</td><td>2</td></tr>
<tr><td>Water Conservation</td><td>7</td><td rowspan="2">Infrastructure/Water Delivery</td><td rowspan="2">2</td></tr>
<tr><td>Climate Change</td><td>8</td></tr>
<tr><td>Flood Management</td><td>Flood Protection/Storm Water Management</td><td>13</td><td>Low-Impact Development</td><td>1</td></tr>
<tr><td rowspan="3">Groundwater Monitoring and Management</td><td>Overall Groundwater Management</td><td>23</td><td>Well Destruction</td><td>2</td></tr>
<tr><td>Groundwater Quality/Seawater Intrusion</td><td>23</td><td>Salt/Nutrient Management</td><td>2</td></tr>
<tr><td>Well Metering</td><td>4</td><td>Understand Hydraulic Fracturing</td><td>3</td></tr>
<tr><td rowspan="3">Ecosystem and Watershed</td><td rowspan="3">Ecosystem Enhancement</td><td rowspan="3">4</td><td>Ocean Water Quality</td><td>1</td></tr>
<tr><td>Watersheds</td><td>2</td></tr>
<tr><td>Protecting Native Plans</td><td>1</td></tr>
<tr><td rowspan="5">Water Resources Management and Communication</td><td>Project Costs and Implementation</td><td>4</td><td>Energy/Water Nexus</td><td>1</td></tr>
<tr><td>Property Rights and Water Rights</td><td>5</td><td>Consolidation of Information</td><td>2</td></tr>
<tr><td>Maintain Local Control</td><td>4</td><td rowspan="3">Governance/Water Mastering</td><td rowspan="3">1</td></tr>
<tr><td>Competing Water Uses: Agricultural/Urban/Rural Residential Water Uses</td><td>5</td></tr>
<tr><td>Coordination, Public Outreach, and Input</td><td>6</td></tr>
</table>

The four figures described below depict the level of interest in each water resources issue by Sub-Region and then by SLO County Region as a whole. The figures show the issues along the bottom axis and the number of occurrences each issue was raised by stakeholders along the vertical axis. Water Quality is shown as a reminder that water quality is an issue inherently embedded in the other water resources issues.

These Sub-Regional water resources issues help revise the IRWM Plan Goals and Objectives to ensure the IRWM Plan considers critical issues. This IRWM Plan update also incorporates a new concept of "Sub-Region Priorities" (see **Section Table E-6**). The Sub-Region Priorities are organized and updated using the Region's IRWM Goals and Objectives for guidance.

Figure E-2 indicates water reclamation as the issue of greatest concern for the North Coast Sub-Region due to the small coastal communities not having sufficient groundwater supplies or sea water intrusion (the third most important issue) limiting groundwater basins' safe yield.

Figure E-3 indicates water supply and groundwater management as the issues of greatest concern for the North County Sub-Region due to the on-going water resources management challenges of the Paso Robles Groundwater Basin; the need for supplemental/other water supply sources; and increased treatment costs to deal with degrading water quality (another important issue identified) as groundwater elevations decline.

Figure E-4 indicates groundwater management as the issue of greatest concern for the South County Sub-Region due to the challenges of managing the adjudicated Santa Maria Groundwater Basin and water shortage problems, though additional issues of concern relate to flood control (second issue of concern).

Figure E-5 shows the collective water resources issues of concern throughout the IRWM Region and the level of interest in these issues. Groundwater management, water supply, and water reclamation rank highest in the issues brought forth by the Interested Stakeholders.[2]

[2] Unlike the Sub-Region Figures E-2 through E-4, the SLO Region Figure E-5 should not be viewed as a prioritization of regional issues, but rather, simply as a means of visualizing the outcome of the Sub-Region workshops collectively.

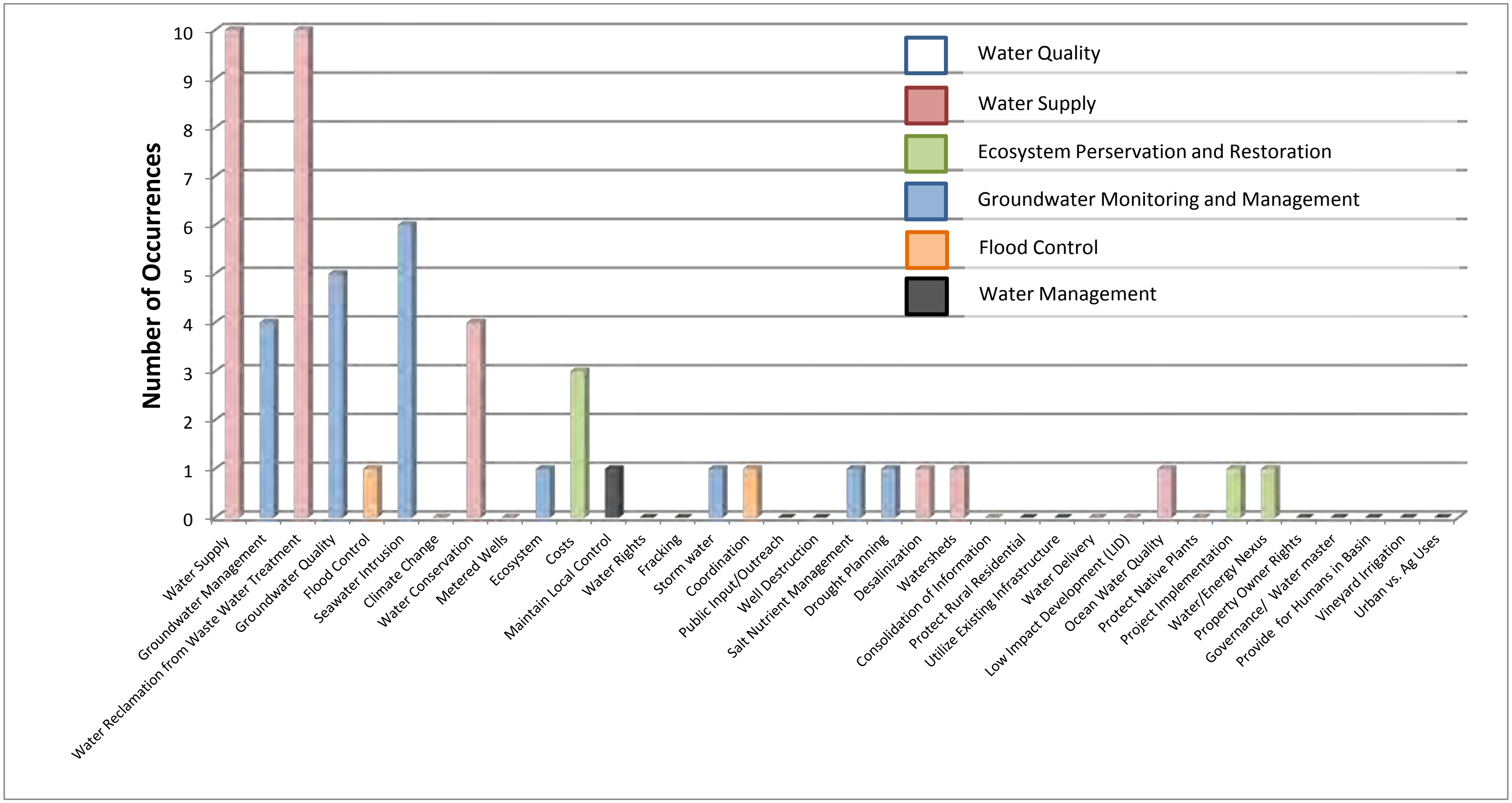

Figure E-2. North Coast Sub-Region – Summary of Stakeholder-Raised Water Resources Issues

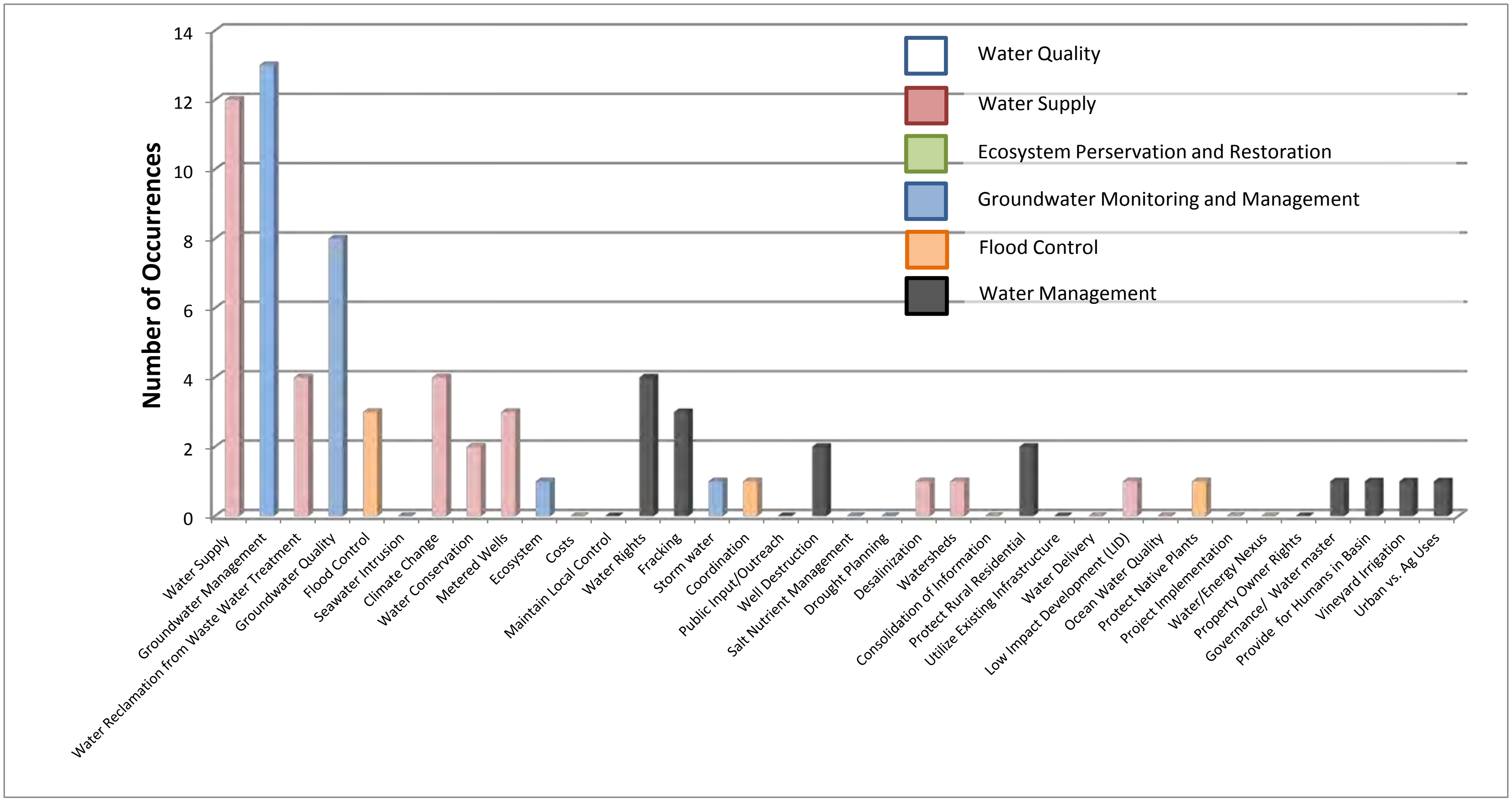

Figure E-3. North County Sub-Region – Summary of Stakeholder-Raised Water Resources Issues

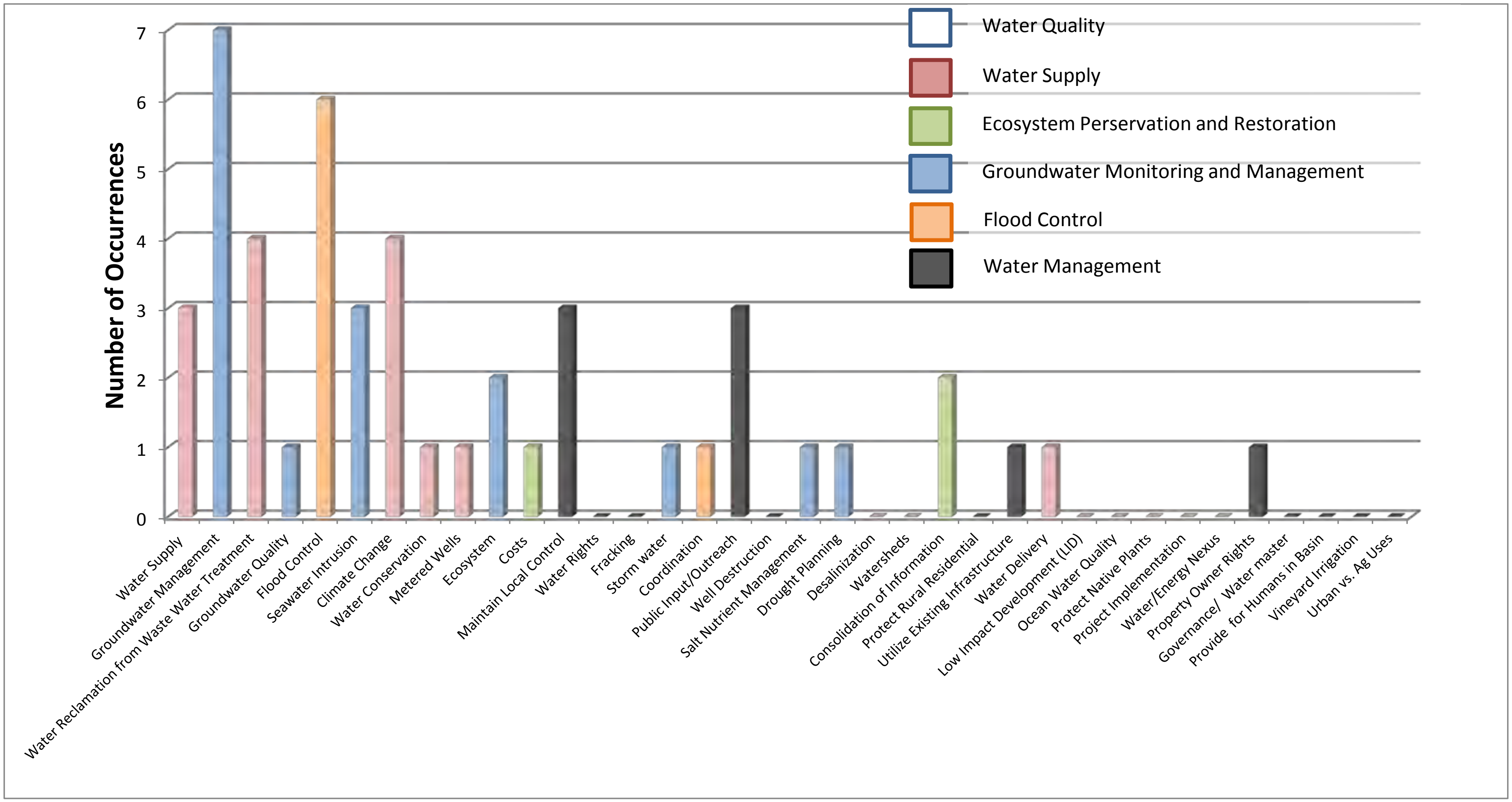

Figure E-4. South County Sub-Region – Summary of Stakeholder-Raised Water Resources Issues

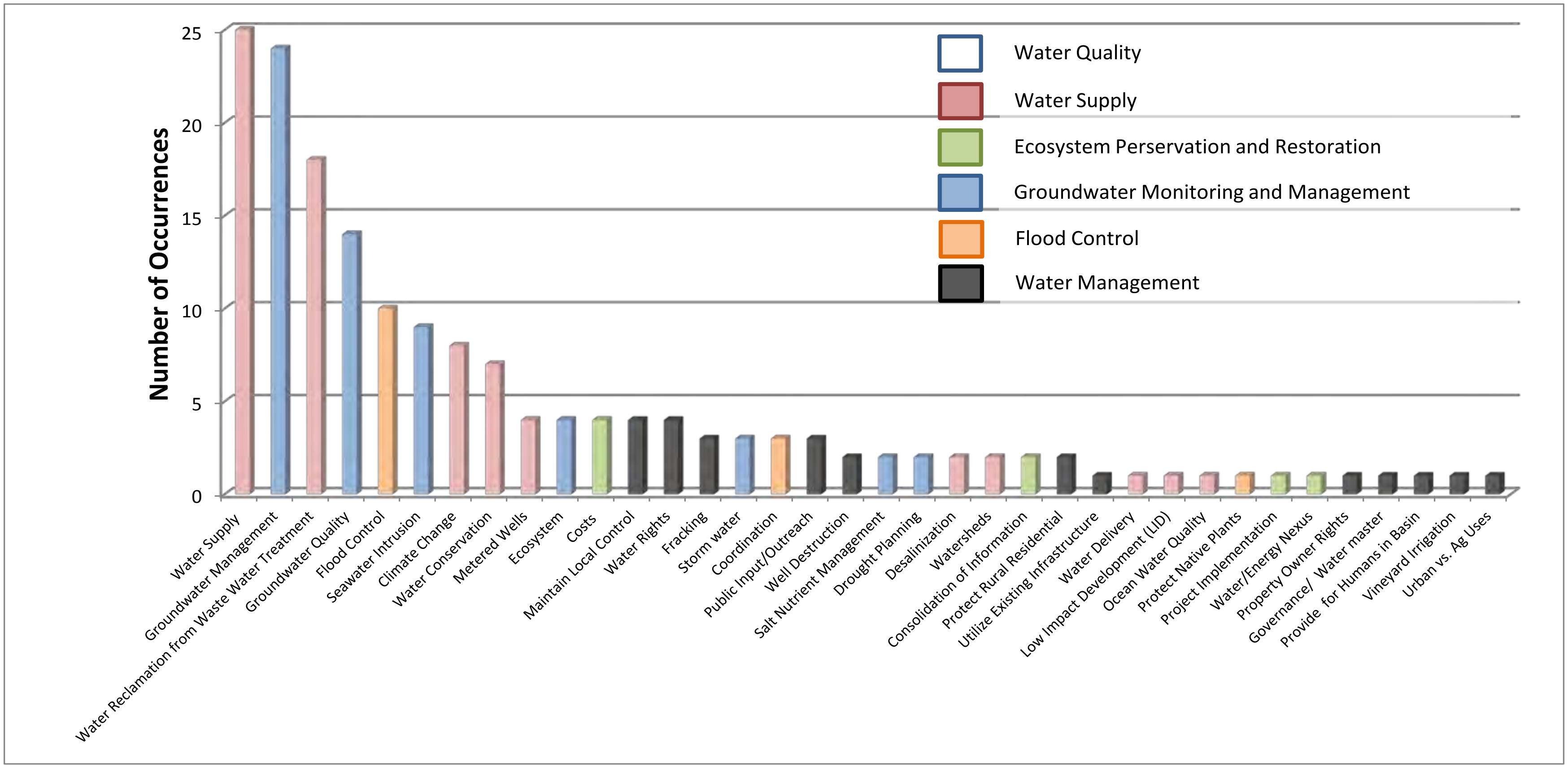

Figure E-5. San Luis Obispo IRWM Region – Summary of Stakeholder-Raised Water Resources Issues

E.1.2 Vision and Approach to Developing IRWM Goals and Objectives

The Goals and Objectives are intended to guide regional efforts toward solving the water resources issues of greatest concern listed in **Table E-1**. The Vision statement portrays the Region's overarching aim for the IRWM program and water resources, while the Mission statement describes what the IRWM Plan will do to get there.

IRWM Plan Vision:

Create a united framework among SLO County Stakeholders for sustainable water resource management

IRWM Mission:

Facilitate regional Plans, programs, and projects to further sustainable water resource management

Goals are comprehensive statements of what the RWMG and other IRWM Program Participants wish to accomplish under the broader IRWM Plan Vision and Mission statements. Objectives are more specific, tangible, and measurable activities that will help carry out the goals. The goals of this IRWM Plan encompass five categories of water resources management that define the focus of this Region's IRWM Planning effort. These categories are illustrated in **Figure E-6** as a collection of goals that will bring synergy to address important issues related to Water Quality, Disadvantaged Communities (DACs), and Climate Change. These goals are listed as follows:

1. Water Supply
2. Ecosystem and Watersheds
3. Groundwater Monitoring and Management (Groundwater)
4. Flood Management
5. Water Resources Management and Communications (Water Management)

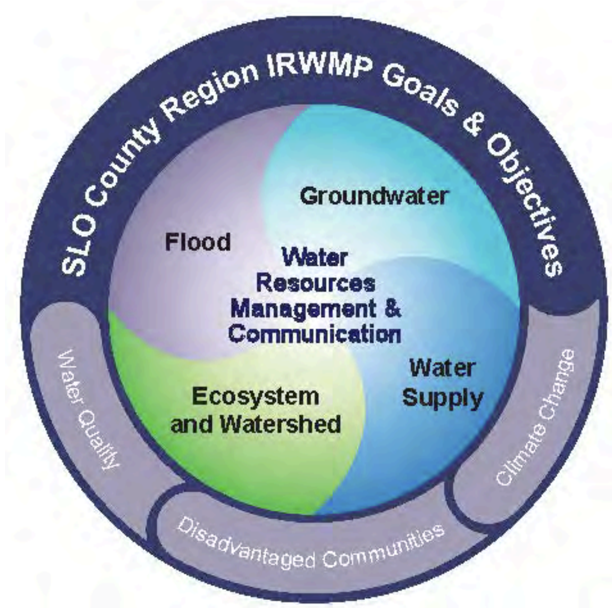

Figure E-6. Relationships and Synergies between IRWM Plan Goals

With the stakeholder-identified critical water resources issues in mind, the IRWM Plan 2013/14 Update then draws on a number of resource and guidance documents to develop the Goals and Objectives. Foremost of these is the 2007 IRWM Plan, which included Goals and Objectives in the following five areas of water resources management: Water Quality, Water Supply, Ecosystem Preservation and Restoration, Groundwater Monitoring and Management, and Flood Management. The IRWM Plan 2013/14 Update expands and reorganizes these prior Goals and Objectives by considering the current critical water resources issues. Additionally, the IRWM Plan update considers and/or seeks consistency with the following:

- DWR IRWM Guidelines (November 2012)
- Water Quality Control Plan for the Central Coast Basin (June 2011)
- 20x2020 Water Conservation Plan (February 2010; water efficiency goals)
- California Water Code (i.e., changes affected by SBx7-7)

The 2012 DWR IRWM Guidelines specifically require that all IRWM Plans consider overarching goals of the Central Coast Basin Plan, 20x2020 Water Conservation Plan, and California Water Code (CWC). All of these state-led documents are briefly described below.

E.1.2.1 DWR 2012 Proposition 84 and 1E IRWM Program Guidelines

Release of the 2012 Proposition 84 and 1E IRWM Program Guidelines (Guidelines) provided the lead document for the approach and content required for the Region's IRWM Plan update. The Guidelines served to update prior IRWM Guidelines and to reflect current legislation impacting what should be included in, and funded under, IRWM Plans throughout the state of California. The Guidelines' IRWM Plan Standards discuss specific elements that must be part of an IRWM Plan (see **Table E-2**).

Table E-2. Specific State Guideline Requirements and Consistency with IRWM Plan

2012 DWR IRWM Guidelines Requirements for Objectives	How the IRWM Plan Addresses Requirement
1. IRWM Plan must clearly present Plan Objectives and describe the process used to develop the Objectives.	**Section E.1** reviews how the objectives were determined. **Section E.2** delineates the Region's IRWM Plan Goals and Objectives determined by stakeholders.
2. Plan objectives must address major water-related issues and conflicts of the Region.	**Section E.1** describes the process for identifying critical water resources issues by Sub-Region, as well as regionally.
3. Objectives must be measurable by some practical means so achievement can be monitored.	**Section E.4** provides the intended qualitative and quantitative metrics, as appropriate and practical, for each objective.
4. Objectives may be prioritized for the Region and must contain an explanation of the prioritization or reason why objectives are not prioritized.	**Section Table E-6** describes the Region's decision to utilize Sub-Regional priorities, and delineates what those are.
5. RWMGs must consider overarching state goals that apply to their area: • Basin Plan Objectives • 20x2020 water efficiency goals • Requirements of CWC §10540(c) RWMGs must also consider the objectives in the appropriate basin Plan or Plans and strategies to meet applicable water quality standards, CWC §10541.(e)(2). California set a goal of a 20% reduction in per capita water use by the year 2020 (20x2020). CWC §10608 *et seq.* presents the provisions to improve agricultural water use efficiency.	The remainder of this section (**Section E.1.2**) describes how the Region's Objectives are consistent with overarching state goals.

E.1.2.2 Central Coast Basin Plan

The Central Coast Basin Plan (Basin Plan) is the water quality control plan formulated and adopted by the Regional Water Quality Control Board (RWQCB) for the Central Coast region. The objective of the Basin Plan is to show how the quality of the surface and groundwaters in the Central Coast Region should be managed to provide the highest water quality reasonably possible. The Basin Plan lists various water uses (Beneficial Uses), describes the water quality that must be maintained to allow those uses (Water Quality Objectives), and outlines an implementation Plan for achieving those standards. In addition, the Central Coast RWQCB has established the Planning goals for water quality in the Central Coast Region (RWQCB 2011), as compiled and addressed in **Table E-3**.

Table E-3. Specific Central Coast Basin Plan Objectives and Consistency with IRWM Plan

Central Coast Basin Plan	How the IRWM Addresses Requirement
1. Protect and enhance all basin waters, surface and underground, fresh and saline, for present and anticipated beneficial uses, including aquatic environmental values.	The Water Supply, Ecosystem, Flood Management and Groundwater goals include provisions for the protection of groundwater and surface water.
2. The quality of all surface waters shall allow unrestricted recreational use.	The Ecosystem goal seeks to maintain or improve ecosystems and natural resources, and includes public access on preserved lands.
3. Manage municipal and industrial wastewater disposal as part of an integrated system of fresh water supplies to achieve maximum benefit of fresh water resources for present and future beneficial uses and to achieve harmony with the natural environment.	The Water Supply and Groundwater goals seek to improve water quality to achieve maximum benefit of fresh water supplies, including consideration of recycled water/reuse.
4. Achieve maximum effective use of fresh waters through reclamation and recycling.	The Water Supply goal includes a specific objective to increase diversification of water supply sources, including use of recycled water.
5. Continually improve waste treatment systems and processes to assure consistent high quality effluent based on best economically achievable technology.	The Water Supply goal includes a specific objective to increase diversification of water supply sources, including use of recycled water.
6. Reduce and prevent accelerated (man-caused) erosion to the level necessary to restore and protect beneficial uses of receiving waters now significantly impaired or threatened with impairment by sediment.	The Ecosystem goal seeks watershed management activities that reduce point and non-point source discharges that might impact downstream surface or groundwater users.

E.1.2.3 California Water Code

In February 2008, Governor Schwarzenegger set a goal of a 20 percent reduction in per capita urban water use by the year 2020 (20x2020). Actions toward the 20x2020 goal were furthered by the passage of Senate Bill SBx7-7, which amended the CWC to contain provisions not only to improve urban water use efficiency, but to improve agricultural water use efficiency as well. Requirements of §10540(c): CWC §10540(c) states that, at a minimum, all IRWM Plans shall address the CWC requirements listed in **Table E-4**.

Table E-4. Specific California Water Code Requirements and Consistency with IRWM Plan

California Water Code Requirements	How the IRWM Addresses Requirement
1. Protection and improvement of water supply reliability, including identification of feasible agricultural and urban water use efficiency strategies.	The Water Supply goal seeks to maintain or improve water supply quantity for all water use sectors, as well as specifically promotes communities and water users from creating and adopting water management plans which would identify such efficiency strategies.
2. Identification and consideration of the drinking water quality of communities within the area of the IRWM Plan.	The Water Supply, Groundwater, and Flood Management goals all include objectives aimed at improving water quality for communities within the area of the IRWM Plan.
3. Protection and improvement of water quality within the area of the IRWM Plan consistent with relevant basin Plan.	See discussion in **Section E.1.2.2** for discussion on consistency with Central Coast Basin Plan. The Groundwater goal seeks to identifying issues and implementing strategies addressed in local basin Plans.
4. Identification of any significant threats to groundwater resources from overdraft.	The Groundwater goal seeks collaborative and cooperative local groundwater management to identify issues (such as overdraft) in groundwater basins.
5. Protection, restoration, and improvement of stewardship of aquatic, riparian, and watershed resources within the Region.	The Ecosystem goal encapsulates this requirement in its overarching title, and is reflected in the objectives.
6. Protection of groundwater resources from contamination.	The Groundwater and Ecosystem goals include objectives for the protection of groundwater quality from natural or manmade contaminants.
7. Identification and consideration of water-related needs of disadvantaged communities in the area within the boundaries of the IRWM Plan.	All goals include special consideration to identifying DACs and issues specific to all five goals within each of the three Sub-Regions.

E.1.3 Adopting the IRWM Goals and Objectives

The progression of steps in adopting the updated IRWM Plan Goals and Objectives was deliberate in ensuring consistency requirements were met and providing IRWM Program Participants the opportunity to review, comment, and edit the Goals and Objectives prior to being finalized. The steps taken were as follows:

1. List stakeholder-identified water resources issues by Sub-Region
2. Look to issues identified in 2012 County Master Water Report
3. Compare the 2007 IRWM Plan Goals and Objectives to various requirements listed above and recognize deficiencies based on identified issues
4. Bridge deficiencies by updating the IRWM Plan Goals and Objectives. Develop approach to measurement and reporting in meeting goals
5. Confirmation of no objective prioritization and introduce, in its place, Sub-Region Priorities to address specific watershed issues
6. Submit draft IRWM Goals and Objectives to IRWM Program Participants for comment
7. Revise draft IRWM Goals and Objectives after consideration of comments received

8. Submit final draft IRWM Goals and Objectives to RWMG for review and approval

At the June 5th 2013 RWMG meeting, the RWMG members reviewed the above list of water resources issues and the updated IRWM Plan Goals and Objectives and approved them for inclusion in the IRWM Plan 2013/14 Update. An initial Sub-Region Priorities list was also developed to speak specifically to Sub-Regional issues and what Sub-Regional objectives are going to be committed to by the stakeholders. The approved IRWM Goals and Objectives were considered by each Sub-Region to finalize a Sub-Region Priorities List. The Water Resources Advisory Committee (WRAC) supported the IRWM Plan Goals and Objectives at the June 5, 2013 WRAC meeting.

E.2 IRWM Goals and Objectives

Based on the list of stakeholder issues and the 2012 State Guideline requirements, five Goals and associated Objectives were formed. This is illustrated below in **Figure E-7**, using Goals and abbreviated Objectives followed by the count of Sub-Region Priorities relating to the Goals. The content of Figure E-7 is described in some detail in the following sections.

E.2.1 Water Supply Goal

The intent of the Water Supply Goal is to maintain or improve water supply quantity and quality for potable water, fire protection, ecosystem health, and agricultural production needs; as well as to cooperatively address limitations, vulnerabilities, conjunctive-use, and water-use efficiency.

Objectives:

1. Maximize the accessibility to existing and supplemental water supplies in the Region through the utilization of existing infrastructure and development of new infrastructure and agreements
2. Provide adequate and sustainable water supplies and infrastructure to address water deficiencies in all communities, including disadvantaged communities and designated low income census blocks
3. Support sustainable potable water supply programs for rural residents
4. Support sustainable water quality and supply programs for agriculture
5. Support projects aimed to improve existing public water systems to meet state and federal Drinking Water Quality Standards

6. Develop and implement water management plans in communities of all sizes and water uses consistent with CWC requirements and accounting for environmental water needs
7. Develop and implement conservation programs, measures, and practices to increase water use efficiency in all water use sectors in order to maximize water supplies
8. Plan for potential regional impacts of greenhouse gas emissions, climate change, and droughts on water quantity and quality
9. Diversify water supply sources, including the use of recycled and desalinized water
10. Support watershed enhancement projects and programs to increase available water supplies to the Region

E.2.2 Ecosystem and Watershed 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.

Objectives:

1. Develop watershed plans or other methods to determine the existing conditions and critical issues of each watershed or water planning area
2. Preserve, enhance, restore, and conserve riparian corridors and natural creek and river systems through wetland restoration, natural floodplains, riparian buffers, conservation easements, and other mechanisms
3. Increase watershed management activities (e.g., education, BMPs, monitoring, etc.) to reduce or prevent point and non-point source discharges of contaminants to surface water and groundwater resources to reduce the potential for developing additional Total Maximum Daily Loads (TMDLs)
4. Develop public involvement and stewardship programs for public lands and ecosystems
5. Protect and recover threatened, endangered, and sensitive species through habitat restoration, stream flow management, and fish passage restoration
6. Reduce impacts of invasive species by removal and/or other management/control methods to promote healthy ecosystems
7. Increase monitoring and promote research programs to obtain a greater understanding of the long-term effects of climate change and greenhouse gas emissions on the Region's watersheds and ecosystems

E.2.3 Groundwater Monitoring and Management (Groundwater) Goal

Achieve sustainable use of the Region's water supply within groundwater basins through collaborative and cooperative actions.

Objectives:

- Develop groundwater management plans, including salt and nutrient management Plans, or other methods to help understand groundwater issues and conditions
- Improve groundwater management with direct support of locally driven processes, including potential formation of groundwater management structures/ organizations for the purpose of implementing water supply and conservation plans, programs, and projects
- Develop and implement projects and programs to further basin management objectives of local basin Groundwater Management Plans or other objectives established under other methods used to define groundwater issues and conditions
- Work with local groundwater governance bodies in the development of the California Statewide Groundwater Elevation Monitoring (CASGEM) Program for groundwater basins in the Region where plausible
- Evaluate and implement groundwater recharge and/or banking programs or efforts to increase the conjunctive-use opportunities within the Region, where technically feasible and cost-effective.
- Protect and improve groundwater quality from point and non-point source pollution, including geothermal contamination and seawater intrusion

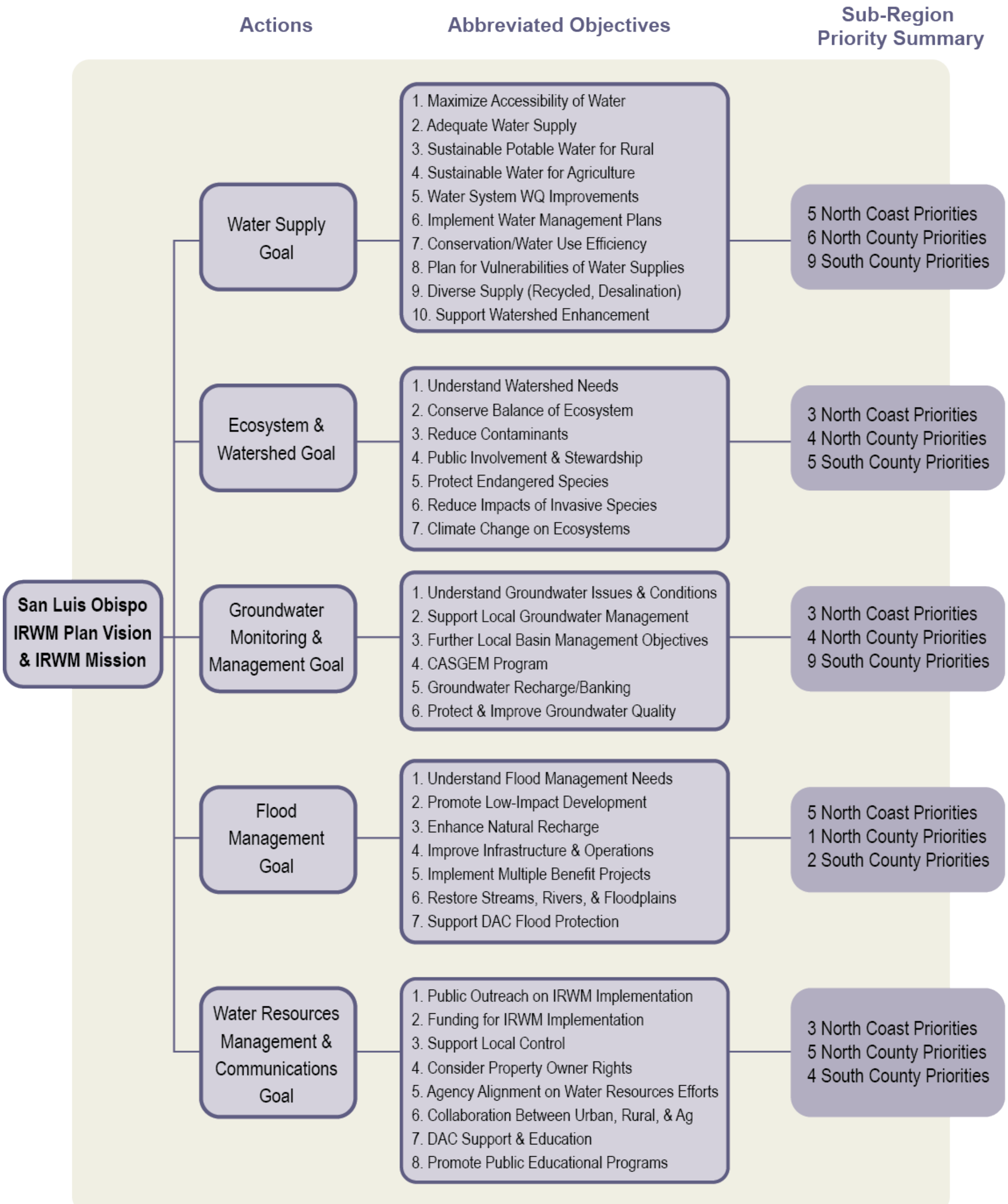

Figure E-7. Summary of IRWM Goals, Objectives, and Sub-Region Priorities

E.2.4 Flood Management Goal

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.

Objectives:

- Understand flood management needs per watershed or water planning area
- Promote the implementation of Low Impact Development projects and practices to reduce storm runoff to protect infrastructure and property from flood damage
- Integrate storm water controls, drainage, and flood control structures into development projects and/or floodplain restoration to enhance natural groundwater recharge
- Improve flood control infrastructure and operations and flood management strategies to reduce frequency of downstream flooding; improve water quality, and reduce upstream erosion and downstream sediment accumulation
- Develop and implement flood management and water storage projects that provide multiple benefits such as public safety, water supply, habitat protection, recreation, agriculture, and economic development
- Develop and implement flood control projects that ensure health and safety and simultaneously protect, restore, and enhance the functions of rivers, creeks, streams, and their floodplains
- Support the adequate protection of DACs from flooding without unfairly burdening communities, neighborhoods, or individuals

E.2.5 Water Resources Management and Communications (Water Management) 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.

Objectives:

- Provide consistent, consolidated, and informative public outreach on the coordination of IRWM implementation projects and water resources programs
- Seek funding for IRWM implementation without unfairly burdening communities, neighborhoods, or individuals
- Actively support and promote local control in addressing water resource issues through establishing stakeholder groups, working with local groundwater governance bodies, and partnering with governance bodies, and with cities, community services districts, and other water purveyors when possible
- Consider property owner rights, existing water supplies, and cultural values in the Planning and implementation of IRWM projects and programs
- Support efforts by the state, local agencies, water purveyors, and local groundwater governance bodies to align efforts to protect and manage water resources
- Seek opportunities for water management collaboration between urban, rural, and agricultural interests
- Provide support and promote education for the participation of DACs in the development, implementation, monitoring, and long-term maintenance of water resource management projects
- Promote public education programs for water resources management (e.g., groundwater management, watershed protection, conservation, flood management, and water quality)

E.3 IRWM GOALS AND OBJECTIVES INTEGRATION

After the initial step of committing to any single IRWM Objective, the Objective's relevance to addressing the issues that were raised in Sub-Region workshops and in state and local resource documents was evaluated to ensure compliance. The role of each Objective is to shape and support projects and programs with measurable (quantitative and/or qualitative) physical benefits, and can demonstrate synergies with other stated IRWM Plan Objectives. Synergies occurring across goals are considered "integration of objectives." Much like building blocks that form the structure, in this case, the Objectives form and support the projects that address the issues.

This concept is explained further in **Section F – Resource Management Strategies**, **Section G – Project Solicitation, Selection, and Prioritization**, and in **Section H – Project Integration and**

Project Alternatives. The "integration of objectives" concept weaves itself into each step of the IRWM Plan's implementation, and is measured for integration at the Project Element and Water Management Strategy level, both of which strive to meet the state of California's Objectives and Resource Management Strategies. **Figure E-8** illustrates how the IRWM Objectives are used to begin the first steps towards meeting the state's Objectives. The double arrow implies integration in both directions as IRWM Projects are formulated and measured based on how well they meet both IRWM Objectives and state Objectives.

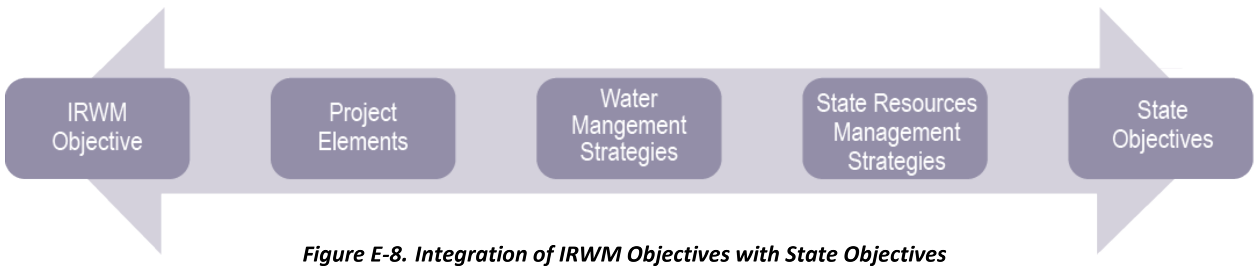

Figure E-8. Integration of IRWM Objectives with State Objectives

Table E-5 lists the initial validation of the integration of objectives by listing the Objectives from each Goal along the left side, and the distinct elements of each Goal along the top. The bullets to the right of each Objective and below the distinct Goal elements emphasize where the Objectives span across all multiple Goals, and therefore the other Goals' Objectives intent. For example, actions taken to satisfy the Water Supply Goal of providing an adequate water supply in all communities, can involve aspects of ensuring sustainable use of groundwater supplies (Groundwater Goal), open communication with stakeholders, and the protection and management of existing water supplies (Water Resources Management Goal). Several of the Water Resources Management Objectives span all Goals. For instance, DAC support and education is embedded in every action of the IRWM Plan's implementation to ensure the highest level of support to DACs over time.

Table E-5. Integration of and Synergies Between IRWM Plan Objectives and Goals

Objectives[2] \ Goals[1]		Water Supply				Ecosystem and Watersheds		Ground -water	Flood Management			Water Resources Management		
		Maintain or improve water supply quantity and quality	Address limitations and vulnerabilities	Conjunctive use	Water use efficiency	Maintain or improve health of watersheds, ecosystems, and resources	Assess, protect, and restore ecosystem and resource needs and vulnerabilities	Achieve sustainable use of water supply in basins	Integrate watershed approach to flood management	Improve storm water quality	Ensure health and safety and enhance quality of life for community	Promote open communication and resource cooperation	Protect and manage water resources	Education and outreach
Water Supply	Maximize accessibility of water	●						●				●	●	
	Adequate water supply	●	●	●	●			●				●	●	
	Sustainable potable water for rural	●		●	●			●					●	
	Sustainable water for agriculture	●		●	●			●					●	
	Water system WQ improvements	●	●										●	
	Implement water management Plans	●	●	●	●			●					●	
	Conservation/water use efficiency	●			●								●	●
	Plan for vulnerabilities of water supply	●	●				●	●					●	
	Diverse supply (recycled, desalination)	●	●		●			●					●	
	Support Watershed Enhancement	●	●	●		●	●	●					●	
Ecosystem and Watersheds	Understand watershed needs		●			●	●	●	●			●	●	
	Conserve balance of ecosystem		●			●	●	●	●	●	●		●	
	Reduce contaminants	●	●			●	●	●		●	●		●	
	Public involvement and stewardship					●	●				●	●	●	●
	Protect endangered species					●	●					●	●	
	Reduce impacts of invasive species	●	●			●	●						●	●
	Climate change in ecosystems	●	●			●	●	●	●			●	●	
Groundwater	Understand GW issues and conditions		●					●				●	●	
	Support local GW management	●		●				●				●	●	
	Further local basin management objectives	●						●				●	●	
	CASGEM Program	●	●		●			●				●	●	
	Groundwater recharge/banking	●		●				●	●	●		●	●	
	Protect and improve GW quality	●	●			●	●	●					●	

Table E-5. Integration of and Synergies Between IRWM Plan Objectives, Continued

Objectives[2] \ Goals[1]		Water Supply				Ecosystem and Watersheds		Ground-water	Flood Management			Water Resources Management		
		Maintain or improve water supply quantity and quality	Address limitations and vulnerabilities	Conjunctive use	Water use efficiency	Maintain or improve health of watersheds, ecosystems, and resources	Assess, protect, and restore ecosystem and resource needs and vulnerabilities	Achieve sustainable use of water supply in basins	Integrate watershed approach to flood management	Improve storm water quality	Ensure health and safety and enhance quality of life for community	Promote open communication and resource cooperation	Protect and manage water resources	Education and outreach
Flood Management	Understand flood management needs						●		●	●	●		●	
	Promote low impact development	●			●	●	●		●	●				
	Enhance natural recharge					●		●	●	●	●	●	●	
	Improve infrastructure and operations	●	●			●			●	●	●		●	
	Implement multiple-benefit projects	●		●		●		●	●	●	●	●	●	
	Restore streams, rivers and floodplains					●	●	●	●		●		●	
	Support DAC flood protection								●	●	●	●	●	
Water Resources Management	Public outreach on IRWM implementation	●	●	●	●	●	●	●	●	●	●	●	●	●
	Funding for IRWM implementation	●	●	●	●	●	●	●	●	●	●	●	●	●
	Support local control			●				●	●			●	●	
	Consider property owner rights	●						●			●	●	●	
	Agency alignment on water resource efforts	●		●		●		●	●			●	●	
	Collaboration between urban, rural, and ag	●		●				●	●		●	●	●	
	DAC support and education	●	●	●	●	●	●	●	●	●	●	●	●	●
	Promote public education programs	●			●	●		●	●		●	●	●	●

Notes:
1. Sub-Headings under each Goal along the top are the distinct elements extracted from Goal statement.
2. Each row represents an abbreviated Objective.

E.4 GOALS AND OBJECTIVES METRICS

The Objectives Standard in the 2012 DWR IRWM Guidelines requires that objectives be measurable with the most appropriate metric. Each IRWM Plan objective must include some metric(s) that the RWMG will use to determine if IRWM Plan implementation is meeting the IRWM Plan goals over time. The objectives' metrics apply to the projects and programs and resource management strategies as the IRWM Plan is implemented through these strategies, projects, and programs.

As one step in the objectives development process, a short analysis is performed to develop measurements of physical benefits. The measure for an objective is qualitative, quantitative, or both, depending on the Region's available resources, existing monitoring processes in place, and the nature of the objective.

Throughout IRWM Plan implementation, projects and programs will be implemented and data generated. A Plan Performance Matrix will be developed that lists the projects and programs and shows how (and the extent to which) each project carries out IRWM Plan objectives, using the quantitative and/or qualitative measures listed in the following the tables below (**Table E-6** through **Table E-10**, by overarching Goal). Please see **Section J – Plan Performance and Monitoring**, for a more detailed description of this process.

Table E-6. Water Supply Goal

OBJECTIVES	QUALITATIVE MEASUREMENT	QUANTITATIVE MEASUREMENT
1. Maximize the accessibility to existing and supplemental water supplies in the Region through the utilization of existing infrastructure and development of new infrastructure and agreements.		Increasing amounts of total available surface water supply stored for subsequent years or provided to customers as an offset to groundwater pumping, creating in-lieu recharge.
2. Provide adequate and sustainable water supplies and infrastructure to address water deficiencies in all communities, including disadvantaged communities and designated low income census blocks.		Decreasing number of communities with deficiencies (objective = 0 communities).
3. Support sustainable potable water supply programs for rural residents.	Decreasing number of comments or complaints from the rural community regarding loss, or potential loss, of quality or quantity of their water supplies.	
4. Support sustainable water quality and supply programs for agriculture.	Decreasing number of comments or complaints from the agricultural community regarding loss, or potential loss, of quality or quantity of their water supplies.	
5. Support projects aimed to improve existing public water systems to meet State and Federal Drinking Water Quality Standards.		Decreasing number of community water systems that do not currently meet state or federal drinking water quality standards (objective = 0 community water systems).

Table E-6. Water Supply Goal, Continued

OBJECTIVES	QUALITATIVE MEASUREMENT	QUANTITATIVE MEASUREMENT
6. Develop and implement water management Plans in communities of all sizes and water uses consistent with CWC requirements and accounting for environmental water needs.		Number of communities without water management Plans (objective = 0).
7. Develop and implement conservation programs, measures and practices to increase water use efficiency in all water use sectors in order to maximize water supplies.	Every five years, review extent to which all water use sectors have developed and implemented conservation programs.	Increasing number of acre-feet per year of urban, agriculture, and rural water saved through formal water use efficiency projects and programs.
8. Plan for potential regional impacts of greenhouse gas emissions, climate change and droughts on water quantity and quality.		Existence of County-wide planning studies that identify greenhouse gas emission sources, regional vulnerabilities, and forecast the needed changes in water supplies and water supply infrastructure as a result of climate change.
9. Diversify water supply sources, including the use of recycled and desalinized water.		Decreasing number of communities without a secondary water supply source (objective = 0 communities).
10. Support watershed enhancement projects and programs to increase available water supplies to the Region.	Decreasing number of comments or complaints from the agricultural community regarding loss, or potential loss, of quality or quantity of their water supplies.	

Table E-7. Ecosystem and Watershed (Ecosystem) Goal

OBJECTIVES	QUALITATIVE MEASUREMENT	QUANTITATIVE MEASUREMENT
1. Develop watershed Plans or other methods to determine the existing conditions and critical issues of each watershed or water Planning area.		Decreasing number of watersheds without plans or similar methods developed to understand the needs in watershed or water planning area (objective = 0 watersheds).
2. Preserve, enhance, restore and conserve riparian corridors and natural creek and river systems through wetland restoration, natural floodplains, riparian buffers, conservation easements, and other mechanisms to protect water supplies.		Increasing number of acres preserved for ecosystem restoration and/or preservation. Increasing number of acres of healthy or improved natural recharge areas associated with riparian corridors.
3. Increase watershed management activities (e.g., education, BMPs, monitoring, etc.) to reduce or prevent point and non-point source discharges of contaminants to surface water and groundwater resources to reduce the potential for developing additional TMDLs.	Increasing number of programs with the intent to protect surface water and groundwater recharge areas and improve surface water and/or groundwater quality.	Increasing number of creeks that have a water quality measuring program in place.
4. Develop public involvement and stewardship programs for public lands and ecosystems.	Increasing public involvement and stewardship programs that cover all public lands and ecosystems.	

Table E-7. Ecosystem and Watershed (Ecosystem) Goal, Continued

OBJECTIVES	QUALITATIVE MEASUREMENT	QUANTITATIVE MEASUREMENT
5. Protect and recover threatened, endangered and sensitive species through habitat restoration, stream flow management, and fish passage restoration.	Increasing number of management programs and projects with the primary benefit to improve threatened, endangered, and sensitive species corridors.	
6. Reduce impacts of invasive species by removal and/or other management/control methods to promote healthy ecosystems.	Increasing number of studies and management and/or prevention programs and projects established to reduce invasive species or re-establish native species populations.	Decreasing number of invasive species problems (objective = 0 invasive species).
7. Increase monitoring and promote research programs to obtain a greater understanding of the long-term effects of climate change and greenhouse gas emissions on the region's watersheds and ecosystems.	Existence of monitoring and research programs that identify the long-term effects of climate change and greenhouse gas emissions on the Region's watersheds and ecosystems.	

Table E-8. Groundwater Monitoring and Management (Groundwater) Goal

OBJECTIVES	QUALITATIVE MEASUREMENT	QUANTITATIVE MEASUREMENT
1. Develop groundwater management Plans, including salt and nutrient management Plans, or other methods to help understand groundwater issues and conditions.		Increasing percentage of the Region's groundwater basins that have adopted Groundwater Management Plans and governance structures (only in basins where required).
2. Improve groundwater management with direct support of locally driven processes, including potential formation of groundwater management structures/ organizations for the purpose of implementing water supply and conservation Plans, programs, and projects.		Increasing percentage of the Region's groundwater basins that have groundwater management structures for the purpose of implementing plans, programs, and projects.
3. Develop and implement projects and programs to further basin management objectives of local basin Groundwater Management Plans or other objectives established under other methods used to define groundwater issues and conditions.	Increase in the overall level of management and governance through adopted Groundwater Management Plans..	Increasing number of projects consistent with adopted Groundwater Management Plan Basin Management Objectives (BMOs) for the improvement of the health of a groundwater basin.
4. Work with local groundwater governance bodies in the development of the California Statewide Groundwater Elevation Monitoring (CASGEM) Program for groundwater basins in the region where plausible.		Increasing number of basins meeting CASGEM standards (objective = all basins).

Table E-8. Groundwater Monitoring and Management (Groundwater) Goal, Continued

OBJECTIVES	QUALITATIVE MEASUREMENT	QUANTITATIVE MEASUREMENT
5. Evaluate and implement groundwater recharge and/or banking programs or efforts to increase the conjunctive use opportunities within the region, where technically feasible and cost-effective.	Increasing percentage of acreage or groundwater basins within the Region that have been studied or looked at for viability of groundwater banking.	Increasing number of groundwater banking projects implemented where technically feasible and cost-effective.
6. Protect and improve groundwater quality from point and non-point source pollution, including geothermal contamination and seawater intrusion.		Increasing number of projects/programs implemented for the improvement and protection of groundwater basin water quality.

Table E-9. Flood Management Goal

OBJECTIVES	QUALITATIVE MEASUREMENT	QUANTITATIVE MEASUREMENT
1. Understand flood management needs per watershed or water Planning area.	Increasing number of development projects where specific development conditions have been applied for the incorporation of storm water runoff reduction elements.	
2. Promote the implementation of Low Impact Development projects and practices to reduce storm runoff to protect infrastructure and property from flood damage.	Increasing number of development projects where specific development conditions have been applied for the incorporation of storm water runoff reduction elements.	
3. Integrate storm water controls, drainage and flood control structures into development projects and/or floodplain restoration to enhance natural groundwater recharge.	Increasing number of projects where specific development conditions apply directly to actions benefitting groundwater recharge.	
4. Improve flood control infrastructure and operations and flood management strategies to reduce frequency of downstream flooding, improve water quality, and reduce upstream erosion and downstream sediment accumulation.	Increasing number of improvements to flood control infrastructure and operations and flood management strategies for the purposes of reducing frequency of downstream flooding, improving water quality, and reducing upstream erosion and downstream sediment accumulation in watersheds where those issues are identified.	

Table E-9. Flood Management Goal, Continued

OBJECTIVES	QUALITATIVE MEASUREMENT	QUANTITATIVE MEASUREMENT
5. Develop and implement flood management and water storage	Increasing number of flood management projects where multiple human and habitat-related benefits can be	
6. Develop and implement flood control projects that ensure health and safely and simultaneously protect, restore, and enhance the functions of rivers, creeks, streams, and their floodplains.		Increasing number of miles of waterways where deliberate measures have taken place to improve riparian floodplains. Increasing number of acres of floodplain acquired.
7. Support the adequate protection of disadvantaged communities from flooding without unfairly burdening communities, neighborhoods, or individuals.	Demonstrated efforts to work with flood agencies to bring the flood management needs of DACs to the forefront for consideration of flood management actions.	

Table E-10. Water Management and Communications (Water Management) Goal

OBJECTIVES	QUALITATIVE MEASUREMENT	QUANTITATIVE MEASUREMENT
1. Provide consistent, consolidated and informative public outreach on the coordination of IRWM implementation projects and water resources programs.	Implementation of the reporting plan contained within the IRWM Plan.	
2. Seek funding for IRWM implementation without unfairly burdening communities, neighborhoods or individuals.	Continuous effort to pursue grants and loans without unfairly burdening communities, neighborhoods or individuals.	
3. Actively support and promote local control in addressing water resource issues through establishing stakeholder groups, working with local groundwater governance bodies, and partnering with governance bodies, and partnering with cities, community services districts and other water purveyors when possible.	Development of a communication network for the purpose of reaching out in the most cost effective and timely manner.	Total number of communication events making use of documented structured network and the estimated total number of people informed.
4. Consider property owner rights, existing water supplies and cultural values in the Planning and implementation of IRWM projects and programs.	Demonstrated efforts to work with planning and water agencies to protect existing water rights and private lands of those possible affected by their actions.	
5. Support efforts by the State, local agencies, water purveyors and local groundwater governance bodies to align efforts to protect and manage water resources.	Demonstrated water resource management and protection efforts that integrate the state's, local governments', and water purveyors' policies.	

Table E-10. Water Management and Communications (Water Management) Goal, Continued

OBJECTIVES	QUALITATIVE MEASUREMENT	QUANTITATIVE MEASUREMENT
6. Seek opportunities for water management collaboration between urban, rural, and agricultural interests.	Demonstrated efforts to work with urban, rural and agricultural interest groups to bring them together on water issues.	Number of meetings convened specifically to resolve issues and conflicts regarding urban, rural and agricultural differences in water supply.
7. Provide support and promote education for the participation of disadvantaged communities in the development, implementation, monitoring, and long-term maintenance of water resource management projects.	Demonstrated efforts to reach out to DACs and provide assistance and services through local and State funded programs for purposes of improving their water resource management projects.	Number of grant/loan applications submitted and projects constructed as a result of this effort.
8. Promote public education programs for groundwater management, watershed protection, conservation, flood management, and water quality.	Existence of public education programs for groundwater management, watershed protection, conservation, flood management, and water quality and efforts to promote them.	

E.5 Prioritization of IRWM Goals and Objectives

The RWMG has made a deliberate decision not to prioritize the IRWM Plan Objectives on a regional level, but to prioritize them separately for each Sub-Region. The rationale for this decision is because the Region is a broad and complex geographic area made up of a diverse group of stakeholders having varying water resources issues depending on location. The RWMG has aimed to be as inclusive as possible of all stakeholders in the Region, encouraging their active participation in the IRWM Planning process and considering their concerns and needs. The IRWM Plan Objectives are based on the water resources issues perceived to exist in the Region, as identified by the three Sub-Region stakeholder groups (**Section E.1.1** above). The RWMG therefore recognizes that each Objective carries some level of importance for one or more groups of stakeholders. By prioritizing some Objectives over others, the needs of certain stakeholders may be undervalued, despite the original intent to capture and retain stakeholder interests. In order to maintain inclusivity, and to avoid the possibility of minimizing certain groups of stakeholders, or discouraging their participation in the IRWM Planning process, the RWMG has therefore decided not to prioritize the IRWM Plan's Objectives.

The purpose of introducing the Sub-Region Priorities is to allow for a ranking to take place within each of the unique Sub-Regions. The Sub-Region Priorities will stem from the regional Objectives, but speak specifically to local issues and what local objectives are going to be committed to in the implementation of IRWM Projects within each of the Sub-Regions. This approach provides for a discussion of relevant importance and prioritization to the regional Objectives based on the geographic location of the projects.

E.5.1 Sub-Region Priorities Lists

As discussed in **Section Table E-6**, Sub-Region Priorities are locally driven objectives that are tied to the IRWM Plan's Objectives at the regional level, but hold the emphasis and priority of the Sub-Region stakeholders. In this way, local projects can be formed around tangible objectives that are meaningful to the Sub-Region, and will inherently result in physical benefits and synergies with the regional Goals and Objectives.

The method for determining the Sub-Region Priorities began with the Sub-Region workshop list of issues and concerns (see **Appendix D-4 – Sub-Region Workshop Materials**). It is through the outreach efforts and public participation where the concerns were heard and documented, but were not fully addressed by the self-imposed constraint on the number and specificity of the regional Objectives.

A Sub-Region Priority is defined as an issue or conflict that is taking place in the Sub-Region, which can be resolved through local (or regional) actions within the control and jurisdiction of local agencies with support from state and federal regulatory agencies, and that is not a project or single action. Additionally the Sub-Region Priority shall meet one or more of the IRWM Plan Objectives and result in measurable physical benefits.

Based on this definition, the following Sub-Region Priorities in **Table E-11** have been approved by the Sub-Region representatives and have the support of the local stakeholders. It is the intent that each Sub-Region takes ownership of these priorities and updates the list and continues to prioritize to reflect changes occurring within their Sub-Region over the life of the IRWM Plan. The priorities are imbedded in the IRWM Plan's objectives, and the results of monitoring the Plan's performance in meeting the objectives will be shared with the Sub-Regions so they are able to monitor how well their priorities are being met.

Table E-11. Sub-Region Priorities

Regional Goal/Objectives	North Coast	North County	South County
Water Supply Goal 1. Maximize Accessibility of Water 2. Adequate Water Supply 3. Sustainable Potable Water for Rural 4. Sustainable Water for Agriculture 5. Water System WQ Improvements 6. Implement Water Management Plans 7. Conservation/ Water Use Efficiency 8. Plan for Vulnerabilities of Water Supplies 9. Diverse supply (Recycled, Desalinized) 10. Support Watershed Enhancement	• Update Water Supply Capital Programs for small coastal communities with alternatives analysis and financial requirements. • Conduct Sub-Region study on maximum use of recycled water. • Study the impacts of climate change on coastal community water supplies. • Seek agency cooperation in regionalizing drinking water, recycled water for irrigation and wastewater. • Implement water conservation programs and measures.	• Update Water Supply Capital Programs for small inland water systems with alternatives analysis and financial requirements. • Seek agricultural, rural, and urban opportunities, working with other agencies and regional partners, to develop conjunctive use and drought year water supplies, including private groundwater pumpers. • Pursue water conservation efforts in all use sectors and supplemental supply projects (non-groundwater) to reduce dependence on groundwater. • Pursue cost- effective and technically feasible conjunctive use projects to increase water supplies for agricultural, rural, and urban water users. • Ensure potable water is available for rural residents. • Seek funding for supplemental water supply.	• Seek agricultural and urban supplemental water supplies. • Study the impacts of sea level rise on coastal community water supplies. • Develop supplemental water supplies. • Evaluate potential for groundwater banking/conjunctive use programs and policies (locally or within State Water Project system). • Investigate options for optimizing use of local surface water storage. • Maximize production and delivery capacity of the local water supply infrastructure (e.g., capacity improvements to Lopez WTP, pipeline pigging, etc.). • Evaluate potential for enhanced rainfall. • Improved diversification of water supply resources for the South County agencies. • Implementation of coordinated regional conservation programs.

Table E-11. Sub-Region Priorities, Continued

Regional Goal/Objectives	North Coast	North County	South County
Ecosystem and Watershed Goal 1. Understand Watershed Needs 2. Conserve Balance of Ecosystem 3. Reduce Contaminants 4. Public Involvement and Stewardship 5. Protect Endangered Species 6. Reduce Impacts of Invasive Species 7. Climate Change on Ecosystems	• Conduct a study on cost-effective methods of improving wastewater discharge quality including improving source quality (i.e., reduced natural contaminants in groundwater) of potable water. • Understand flow needs and watershed functionality and identify priority areas for water supply enhancement and conservation projects to ensure watershed health. • Conserve the balance of ecosystem functions/services.	• Develop quantifiable control studies on manmade actions to improve groundwater quality and/or increase groundwater elevations using currently adopted best management practices. • Understand watershed functionality and identify specific priorities for ensuring watershed health. • Protect the Salinas River corridor. • Pursue land conservation projects that protect watersheds.	• Finalize/Implement AG Creek Habitat Conservation Plan. • Develop an inventory of diversions from surface water bodies. • Install stream gauges on key regional creeks. • Develop groundwater facilities or projects that increase operational and management flexibility. • Avoid Seawater Intrusion (identify risk measures and management thresholds and develop coordinated response).
Groundwater Monitoring and Management Goal 1. Understand GW Issues and Conditions 2. Support Local GW Management 3. Further Local Basin Management Objectives 4. CASGEM Program 5. Groundwater Recharge/Banking 6. Protect and Improve GW Quality	• Develop Groundwater Management Plan for all groundwater basins used as drinking water supply. • Create a state-approved groundwater monitoring program at community or Sub-Region level. • Determine the safe yield of coastal aquifers.	• Improve groundwater monitoring programs with participation from urban and agricultural pumpers to track changes in groundwater levels and groundwater quality. • Establish safe sustainable yields with an emphasis of improving the larger regional basin. • Seek funding for supplemental water, conjunctive use and/or groundwater banking programs to provide greater operational flexibility. • Work to balance groundwater basin through demand management and supply options.	• Develop management tools (conceptual and groundwater flow models). • Uniform groundwater monitoring program for the South County groundwater basins. • Uniform metering and reporting for all groundwater pumping in the South County. • Increased groundwater monitoring (focused on storage). • Install additional dedicated monitoring wells including down hole transducers in high priority areas.

Table E-11. Sub-Region Priorities, Continued

Regional Goal/Objectives	North Coast	North County	South County
			• Investigate and quantify subsurface flows between the SMGB management areas. • Investigate and quantify available storage and reliable yield. • Policies to maintain health of the South County's groundwater basins. • Prepare Salt and Nutrient Management Plan(s) to cover the Sub-Region.
Flood Management Goal 1. Understand Flood Management Needs 2. Promote Low Impact Development 3. Enhance Natural Recharge 4. Improve Infrastructure and Operations 5. Implement Multiple Benefit Projects 6. Restore Streams, Rivers and Floodplains 7. Support DAC Flood Protection	• Identify, protect, and enhance aquifer recharge areas. • Distinguish the root cause of flooding problems. • Restore floodplains, streams, and rivers. • Promote low impact development projects. • Develop financial programs for drainage and flood management projects.	• Identify, protect, and enhance aquifer recharge areas.	• Develop projects to improve the levels of flood protection in urbanized areas. • Increase storm water retention and percolation.

Table E-11. Sub-Region Priorities, Continued

Regional Goal/Objectives	North Coast	North County	South County
<u>Water Resources Management and Communications Goal</u> 1. Public Outreach on IRWM Implementation 2. Fund for IRWM Implementation 3. Support Local Control 4. Consider Property Owner Rights 5. Agency Alignment on Water Resources Efforts 6. Collaboration Between Agriculture, Rural, and Urban 7. DAC Support and Education 8. Promote Public Education Programs	• Develop methods to reach out to community on local water-related information and dates for Sub-Region meetings and workshops. • Develop an IRWM Plan Project for Round 3. • Initiate inner- and inter-watershed discussions on conservation and reuse options.	• Perform an assessment study on current water rights within the Paso Robles Basin and Salinas River. • Develop an IRWM Plan Project for Round 3. • Develop methods to reach out to community on local water-related information and dates for Sub-Region meetings and workshops. • Maintain collaborative efforts with groundwater basin and watershed stakeholders. • Evaluate zones of benefit and other groundwater governance structures.	• Develop methods to reach out to community on local water-related information and dates for Sub-Region meetings and workshops. • Develop an IRWM Plan Project for Round 3. • Improve collaboration and data sharing between urban, agricultural, and rural pumpers. • Maintain collaborative efforts between basin and watershed management groups.

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**.

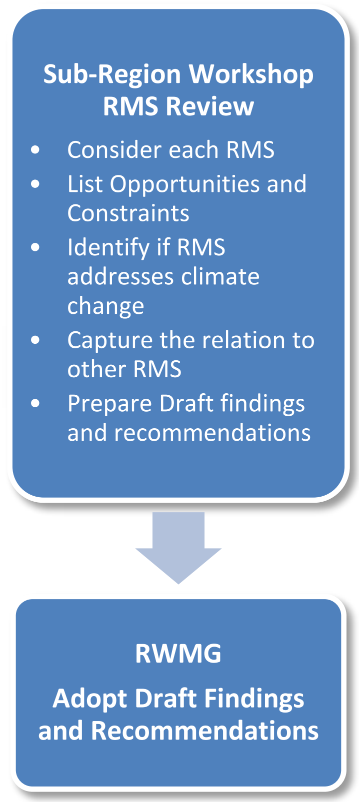

Figure F-1. RMS Review Process

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 Wetlands Enhancement and Creation	• 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)
	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 Environmental and Habitat Protection & Improvements	• Understand Watershed Needs (Obj 1 of Ecosystem Goal) • Support Watershed Enhancement (Obj 10 of Water Supply Goal)
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 Urban Water Use Efficiency	Water Conservation	• Conservation/Water Use Efficienc (Obj 7 of Water Supply Goal)
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

State Resource Management Strategies

San Luis Obispo IRWM Plan GOALS	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

Section G.
Project Solicitation, Selection, and Prioritization

Section G. Project Solicitation, Selection, and Prioritization

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Section G. Project[1] Solicitation, Selection and Prioritization

This section documents the project review process and contains the following three components taken from the November 12, 2012 DWR Guidelines (State Guidelines):

1. Procedures for submitting a project to be included in the IRWM Plan
2. Procedures for review of projects to implement the IRWM Plan
3. Procedure for communicating the list(s) of selected projects

Furthermore, the section will specifically answer the following four questions:

1. Who will be responsible for approving the project list?
2. Will each of the projects be reviewed individually for accuracy if they are sorted automatically in a database?
3. Through what mechanism will stakeholders provide input during the submittal, review, selection process to develop the project list?
4. How and when is the list updated and does it require re-adoption of the Plan?

The activities and steps taken in this section are a consolidation of the previous sections and makes use of their intended purposes. The description of a project and how the project elements are viewed from the perspective of the IRWM Plan differs from simply stating the project description. A deliberate breaking apart of the projects (into Project Elements) is outlined in this section to assess individual strengths and weaknesses of projects through with respect to Water Management Strategies, Resource Management Strategies, and satisfying the IRWM Goals and Objectives. The methodology to achieve the IRWM Plan's Project List is explained in the following sections summarized below. The region understands that opportunities and circumstances may require adaptive management of the specific steps included within each of these Tasks.

Project Solicitation, Selection, and Prioritization Methodology – provides a project example and how the IRWM Plan applies an updated approach by breaking the project down into its Project Elements for evaluation.

Task 1 - Concept and Project/Program Solicitation and Scoring – explains the phased process followed in reaching out to the region for initial project concepts, projects underway, and programs under development.

[1] Please note that the term "project," on its own, is used to infer concepts and projects/programs.

Task 2 - Final Evaluation, Notification, and Project Selection of IRWM Projects – incorporates an impartial technical evaluation with stakeholder notification to ensure an open process that stresses accuracy in the project description and a full understanding of the project impacts and benefits.

Appeals Process – explains the appeals process if project sponsors disagree with the findings and project ranking in the Phase 1 process.

Implementation Approach Categories – provides two methods of funding projects within the context of the IRWM Plan making sure all projects have an opportunity for future funding either through local or State/federal grants.

Task 3 - Biennial Project List Update – addresses the issue of keeping the project list current and relevant to the concerns of the region over time.

Future IRWM Implementation Grant Opportunities – explains the process of project selection if a State grant opportunity is provided after IRWM Plan adoption.

G.1 Project Characterization Methodology

This section describes the updated approach to characterizing projects, and the solicitation and prioritization methodology adopted for purposes of collecting and ranking projects for the Integrated Regional Water Management (IRWM) Plan. The 2013 IRWM Plan differs from the existing 2007 IRWM Plan by moving the focus of its content to Project Elements rather than simply the projects themselves. Project Elements are "building blocks" of region-specific activities derived from a thorough evaluation of the State's Resource Management Strategies (RMS) (**Section F – Resource Management Strategies**), and applied local Water Management Strategies (WMS), which consist of activities to promote the Goals and Objectives (**Section E – IRWM Goals and Objectives)** of the 2013 IRWM Plan.

G.1.1 Updated Approach to Project Characterization

An example of the "building blocks" concept can be applied to a water conservation project; for example, Reduce Water Demand through Irrigation Efficiency. **Figure G-1** illustrates this concept by showing the "building blocks" of the Irrigation Efficiency project definition starting with how the project elements tie back to the DWR Statewide Objective of Reducing Water Demand. DWR has provided Statewide Objectives and the RMS to further assist the regions in defining their region-specific objectives by providing clear (and preferred) strategies. In the case of reducing water demand, RMS includes agricultural or urban water-use efficiency. The

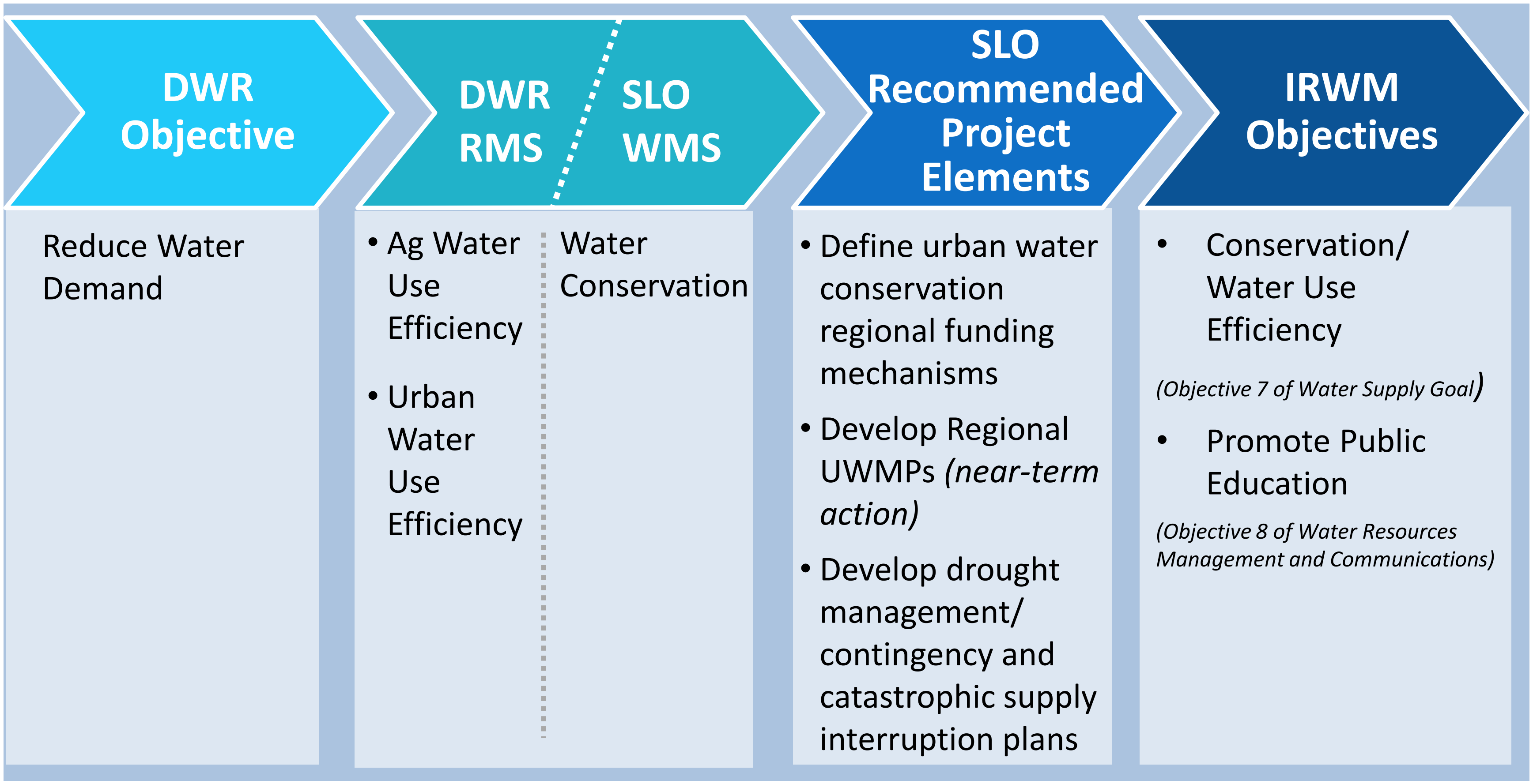

Figure G-1. Project Element (Irrigation Efficiency) Building Blocks

IRWM Plan has taken both the DWR Statewide Objectives and the RMS, and combined them into a single IRWM Plan WMS of Water Conservation (defined as applying across all water-use sectors). Project Elements then become the means to achieving the WMS of water conservation by:

1. Finding a funding mechanism for the project
2. Including the project in a regional IRWM Plan for region-wide implementation
3. Ensuring that any water conservation project is written into drought management and supply interruption plans

In the manner described, the Irrigation Efficiency project is now fully defined by the Project Elements and the project meets the minimum requirement of satisfying two or more of the local IRWM Objectives (i.e., Conservation/Water use Efficiency and Promote Public Education). This change in approach to how projects and programs are characterized and incorporated into the 2013 IRWM Plan ensures that the 2013 IRWM Plan does not become stale as projects are implemented or fall off the list over time from lack of progress or reduced priority.

G.1.2 Project Solicitation Process Outline

The 2013 IRWM Plan provides an easily updated and adaptively managed list of concepts and projects/programs. The Project Solicitation Process includes two phases of solicitation (Phase 1a and Phase 1b), followed by Final Evaluation and Selection and updating of the project list. This general process includes:

Task 1. Regional Project Solicitation and Review Process
- a. Phase 1a: Abstract forms (for concepts and projects/programs)
- b. Phase 1b: Project Objectives Worksheet (for concepts and projects/programs only)
- c. Phase 2: Project Descriptions (for top ranking projects/programs only)

Task 2. Final Evaluation, Notification, and Selection of IRWM Projects

Task 3. Biennial Project List Update (or more often as needed)

Abstract forms, Project Objectives Worksheets, and Phase 2 Long Forms are included in **Appendix G-2 – Abstract forms, Project Objectives Worksheets, and Phase 2 Long Forms**. An overall flowchart of the process is provided in **Figure G-2.** Certain information from the Project Solicitation submittals is used to populate summary discussions in IRWM Plan **Sections J, L, M,** and **O**. All project abstract forms are included in **Appendix G-3 – Project Abstract Forms**, to ensure that even concepts or low ranking projects/programs are

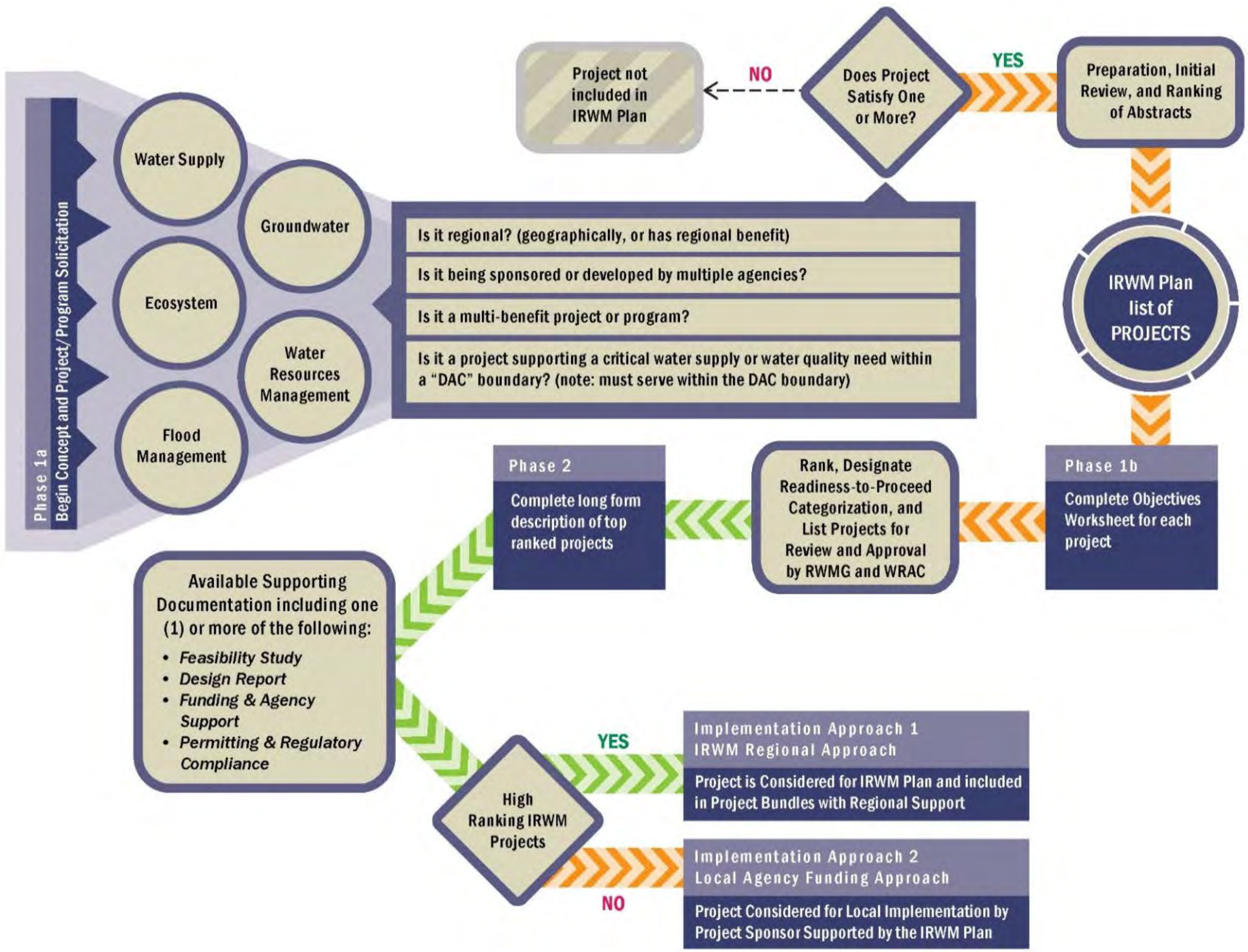

Figure G-2. Project Scoring and Ranking Process (Flowchart 1) memorialized in the IRWM Plan for consideration by stakeholders at a later date or with a specific funding opportunity.

The detailed process described below is for the five-year interval IRWM Plan updates. Interim updates are described at the end of the section.

G.2 Task 1 - Concept and Project/Program Solicitation and Scoring

The first step in updating the IRWM Plan Project List (which can occur at any time, but at least once every two years) is conducting an IRWM region-wide project solicitation. This entails sending out a notification of intent to update the IRWM Project List and subsequently collecting information on local concepts and projects/programs relevant to IRWM. When this solicitation is specific to a funding opportunity, the process may be narrowed to collect projects/ programs relevant to that opportunity. There are two primary phases to collecting information: project abstract (Phase 1a) and objectives worksheets (Phase 1b); and full project description forms (Phase 2).

The following text describes the phased solicitation process, the review and ranking methodology, the final evaluation and selection process, and the project list update process specific to the five-year IRWM Plan update.

G.2.1 Phase 1a: Abstract Forms (for concepts and projects/programs)

First, the RWMG opens a project solicitation for stakeholders throughout the IRWM region and accepts submittal of Phase 1a Abstract Forms. The Phase 1a Abstract Form, Attachment 1 of **Appendix G-2 – Abstract forms, Project Objectives Worksheets, and Phase 2 Long Forms**, is intended to solicit sponsors for all relevant concepts and projects/programs currently being considered throughout the SLO County IRWM region. Phase 1a Abstract Forms collect basic information on concepts and projects/programs, and open up the opportunity for all project types regardless of their current status towards implementation. The forms provide a pass or fail screening to capture only those concepts and projects/programs in the 2013 IRWM Plan that satisfy the following two sets of conditions:

Condition #1. **Is it IRWM Related?** Does it satisfy one or more of the questions below?

1. **Is it regional? (geographically, or has regional benefit) –** does the abstract show a wider project purpose and benefit that crosses land use and local political boundaries?
2. **Is it being sponsored or developed by multiple agencies? –** does the abstract provide evidence of the project having multiple-agency support or funding?

3. **Is it a multi-benefit project or program? –** does the abstract describe the project's complementary benefits with other projects, programs, or activities taking place (or planned), and/or does the project result in meeting multiple goals of the IRWM program?
4. **Is it a project supporting a critical water supply or water quality need within a Disadvantaged Community (DAC) boundary? (note: must serve within the DAC boundary) –** does the abstract describe the nexus between the project benefits, State-identified DAC, and how the project helps to address critical water supply/quality needs of the DAC? [2]

Condition #2. Does it Include Related Goals and Objectives? Does the project meet one or more IRWM Goals (i.e., Water Supply, Ecosystem/ Watershed, Groundwater, Flood Management and Water Management) and can it be used to satisfy multiple Objectives?

An automated spreadsheet is used to make the above determination and provide a distilled summary of the projects and where they satisfy the above conditions. The Project Management Team (PMT), comprised of District Staff and RWMG Working Group representatives, also performs a preliminary review to determine if the project is categorized correctly and to become familiar with the projects and their stated benefits. The Abstract Form information is also used to initiate contact with project sponsors to complete Phase 1b of the solicitation process.

G.2.2 Phase 1b Objectives Worksheet Used in Review of Concepts

As discussed in above section, concepts are initially reviewed based upon the submittal of a Phase 1a Abstract Form. Note: "Concepts" include high level ideas for improving local water resources, and/or projects/programs that are in the initial phases of planning and therefore have minimal documentation and study material associated with them. The PMT performs an initial pass/fail scoring of the concepts using an automated formal review scoring sheet, Attachment 4 of **Appendix G-2 – Abstract forms, Project Objectives Worksheets, and Phase 2 Long Forms**. The scoring sheet also assesses the concept's alignment with the IRWM Plan's Goals to provide a means of organizing the concepts for further review in Phase 1b.

Phase 1b Project Objectives Worksheets are used for scoring and ranking the concepts (optional for concepts, only if sponsor wants concept ranked). The scoring methodology at this level is based on how well the concept aligns with the IRWM Goals and Objectives. The automated review uses the sponsor's description of how the concept meets the Objectives in order to determine level of benefit to each IRWM Goal by the Objectives identified as being

[2] The Proposition 84 State Grant Guidelines provide reference to a single map for the determination of what communities are defined as DAC: <http://www.water.ca.gov/irwm/grants/resourceslinks.cfm>.

relevant to the Project. After the Phase 1b scoring (described under **Section G.2.4**), Concept List review and ranking is complete at this point, as Concepts by their very nature do not have sufficient information available to score their full relevance to the Plan Update and its readiness to proceed. The ranked Concept List is included in **Appendix G-4 – Ranked Project List**.

Concepts in their earliest stages may not be able to adequately complete a Phase 1b worksheet, but are left on the list unranked in order to maintain potential future concepts to pursue.

G.2.3 Phase 1b Objective Worksheet Used in the Review of Projects/ Programs

Projects/programs are initially reviewed and ranked based upon the Phase 1a Abstract Form submitted. The PMT performs an initial automated ranking to score projects/programs that pass the Phase 1a screening test. The scoring sheet assesses the project/program's alignment with the IRWM Plan's Goals to organize the initial project information for completion of Phase 1b. Phase 1b Project Objectives Worksheets are used for the overall scoring and ranking of the projects. The Phase 1b scoring methodology (see **Section G.2.4**) at this level is based on how many Objectives a project/program meets and how well it aligns with the IRWM Goals.

G.2.4 Phase 1b Goal and Objectives Scoring Methodology

To the extent possible, the scoring and ranking is an automated process. The automated scoring process takes place in the Excel spreadsheet environment using a VBA macro to read responses and score non-subjective categories where the response is clearly defined (e.g., yes or no). In some cases, the length and content of the response is scored and then adjusted based on an actual read by the PMT reviewers.

Scoring of the concepts and programs/projects for purposes of ranking is accomplished by how many of the Project Objectives Worksheet questions are fully populated by the sponsor and the related subject matter of the response. In an effort to keep the scoring simple and equitable across all five IRWM goals, each goal is given a total score of 20 points. Each Objective in the Goal is given the fraction of points assigned to each objective to equal the score of 20 points. For example, the Water Supply Goal has ten (10) Objectives, so each Objective has a point value of 20 divided by 10 or 2 points per Objective.

Concepts or projects/programs that respond to a specific Goal's Objective are also immediately given a Goal point of 5 as a means of tracking how the project offers cross-goal benefits. The sum of Goal Points (maximum of 25 points for 5 Goals) is added to the sum of Objective Points to achieve the total Goal and Objectives score for the project (see Attachment 5 of **Appendix G-2 – Abstract forms, Project Objectives Worksheets, and Phase 2 Long Forms,** Phase 1b Project Objectives Scoring Sheet).

The final step before selecting the Phase 2 Project List is readiness-to-proceed (RTP) based on five subjective questions. The questions used to conduct this manual scoring portion of the solicitation are related to the project activities listed in **Table G-1** with each having a possible maximum score of 5 points. Each project or program is compared to the questions based on the responses to the Phase 1b Objectives Worksheet. The RTP points are used to help guide the PMT during review; however, the results are simply reported as "high", "medium", and "low" categorizations.

G.2.5 Phase 2 Project Descriptions

Upon receiving and scoring the Project Objectives Worksheet, the resulting Phase 1 Project List is created to form the list of sponsors who are invited to participate in Phase 2 of the Project Solicitation Process.

G.2.5.1 Phase 2 Long Forms Used in the Review of Projects/Programs

Projects/programs identified in Phase 1b are reviewed and ranked, considering the Phase 1b scoring as well as the RTP categorization, as described in **Section G.2.4**. The resulting top-ranked projects/programs are requested to submit Phase 2 Project Descriptions, or "Long Forms," included as Attachment 3 of **Appendix G-2 – Abstract forms, Project Objectives Worksheets, and Phase 2 Long Forms**. The Long Form is a detailed description of the project/program, its benefits, the economic analyses performed, how the project aligns with State RMSs and requirements, local IRWM Plan Objectives, etc. For that reason, only the top-ranked projects, which are more likely to implemented within the 5 year period between updates due to their high RTP status, are asked to develop this information to be included in the IRWM Plan Update.

Table G-1. Readiness to Proceed Scoring

Readiness to Proceed Factor Considered	Question Considered	Basic Scoring	Overall Characterization by Score
Timeliness	Do project partners have the ability to act quickly to implement the project or program without the need for new agreements or additional funding?	5 – Immediate, < 1 year 3 – Near Term, 1-3 years to develop 1 – Mid Term, 3-6 years to develop 0 – Long Term, > 6 years to develop	**High (18-25)** **Medium (10-17)** **Low (0-9)**
Technical Feasibility	Does the project have technical documentation to evaluate the technical feasibility of the project?	5 – Provides detailed documentation, including reconnaissance, and feasibility studies and completed engineering designs 3 – Shows to be partially documented, and has reconnaissance, and/or feasibility studies, but incomplete or partial designs 0 – The project is not well documented, does not have reconnaissance, and/or feasibility studies and has not been designed.	
Environmental Compliance	Does the project have environmental documentation and clearance?	5 – Existing studies and completed environmental documents. 3 – Some studies or plans to complete studies; A clear plan to complete environmental documentation. 0 – The project is not well-documented, does not have reconnaissance and/or feasibility studies and has not been designed.	
Permitting	Does the project have permits or a plan to obtain permits?	5 – Permits are obtained or are in the process 3 – Permit requirements are known and there is a plan and schedule in place. 0 – Permit requirements are not known and there is no plan or schedule.	
Funding	Are the project funding sources well defined?	5 – Financial plan and commitments are well defined; clear resource commitments to maintenance and operations 3 – Financial plan under development; required rate payer and/or funding agency approval; no defined resource commitments to maintenance and operations. 0 – No financial plan and commitments established; no resources defined for maintenance and operations.	

The PMT works with the top-ranked projects to support their completion of the long form. Given the expected level of effort and budget for PMT support in the Phase 2 project submittals, the number of projects included in the Phase 2 Project List is approximately 20 percent of the total projects submitted or approximately 10 to 15 projects, whichever is smaller. The portfolio of selected projects must meet the highest standards in addressing the IRWM Plan's Goals and Objectives, and the State RMS. Direction from the RWMG will help to guide the number of projects/programs ultimately collected at Phase 2.

Other project sponsors not among the top-ranked list are encouraged to submit Project Descriptions, but are not required and the Long Forms may not be reviewed as part of the Updated IRWM Plan. All Project Description Long Forms are to be kept on file; however, and reviewed when the RWMG decides to develop a future grant proposal.

G.2.5.2 Overall Scoring for Both Concepts and Projects/Programs

One last step in scoring the concept and project/program is the response to the following three questions:

1. Does the Concept and project/program have multi-agency support or sponsorship? (If yes, score of 5)
2. Is the Concept Regional or Inter-Regional (i.e., includes adjacent IRWM Areas)? (If yes, score of 5)
3. Does the Concept support a DAC? (If yes, score of 5)

Because the answers to these questions are important in the November 2012 DWR IRWM Guidelines, all three questions are weighted heavily to place projects in the affirmative higher on the list supplementing the Goals and Objectives scoring described above. At this stage, the concepts and projects are ranked for purposes of a combined Project List, including all concepts and projects/programs, and submitted to the Region's Stakeholders for public comment. The Project List will be reviewed and adopted by the RWMG prior to progressing to Phase 2.

G.3 Task 2 - Final Evaluation, Notification, and Selection of IRWM Projects

The final evaluation process and notification of selected projects is completed in several ways.

Level 1 – The first level of notification is for technical accuracy in the project understanding as summarized by the PMT in their evaluation of IRWM Plan suitability.

Level 2 – The second level of notification provides a comment period and stakeholder review of the Final Project List, providing justification for their selection and permitting comments and further input to the extent they provide further project clarification.

Level 3 – The third level of notification is public documentation and RWMG approval[3] of the Final Project List. These levels are explained further below.

G.3.1 Level 1 – Technical Accuracy

After completing the steps above and successfully reaching out to the region's stakeholders, gathering their ideas, and collecting information for on-going and future projects or programs, the process results in the Full Project List provided as **Appendix G-4 – Ranked Project List**. This list is to be updated over time, as needed. The projects are listed by order of their ranking for each Sub-Region or Multi-Region category. As explained above, the Full Project List is scored and ranked almost entirely through automated algorithms with the exception of the determination of readiness-to-proceed. Those projects satisfying the multiple criteria for suitability as an IRWM project for purposes of plan implementation are asked to submit the Phase 2 Long Form. Project sponsors for other projects are not denied if they want to submit a Long Form as it is kept on file for future calls for projects.

G.3.1.1 Use of Phase 2 Long Form as Technical Resource

The Long Form, included in **Appendix G-2 – Abstract forms, Project Objectives Worksheets, and Phase 2 Long Forms**, is designed to have the project sponsor think about the requirements necessary to elevate a project to the level of an IRWM Plan Implementation Project (PIP). A PIP requires a much higher level of specificity in the project understanding, benefits, impacts, climate change, finances, and relevance to the overall strategy of the plan implementation. Many questions are difficult to respond to unless some form of planning or feasibility study is available to address the questions directly.

The list of 23 projects with a Long Form is provided in **Table G-2**. Each Project is assigned a unique identifier to allow for sorting and calling out (i.e., project titles often change over time). The sort order of the projects is based solely on an alphabetic sort of the Project ID and not on any ranking criteria. This creates a structure where projects of similar location and type are grouped together. The Project ID identifies the Sub-Region and the Project Goal Category as follows:

[3] Approval in this case is a consensus from the RWMG members to proceed with the selected projects in the development of IRWM Plan.

NCST_WSP5_ProjectName

Sub-Region Goal Category

Project Sub-Region Abbreviations:

- MLTP – Multiple Sub-Regions
- NCST – North Coast
- SCNT – South County
- NCNT – North County

Project Goal Categories[4]

- WSP – Water Supply
- ECO – Ecosystem and Watershed
- GWM – Groundwater Monitoring and Management
- FLD – Flood Management
- WMT – Water Resources Management and Communications

To make the best use of the Long Forms, a Project Form Review (PFR) paper is developed by the PMT to compile all of the solicited project information in a single document and to focus in on the specific subject areas required of the IRWM Plan. This process and in-depth documentation is intended for the five-year interval IRWM Plan updates, but not for interim Project List updates. The following provides a brief description of what is expected under each of the subject areas or questions being asked of the projects in the PFR paper. To the extent possible, and with the information provided, the goal is to respond to each of the DWR November 2012 Guideline requirements. Essentially, the information provided herein is needed in the IRWM Plan for each of the selected projects.

Contribute to Plan Objectives

Response is a brief description of how IRWM Objectives with a score of three (3) meet the Objective. Given the cross over and integration of IRWM Objectives, projects will meet various Goals and Objectives with varying levels of precision as explained above. The highest scoring Objectives are what make the project strategically viable to the Plan's success. A Secondary Objectives discussion is also included for each project to highlight some of the less prominent integration opportunities that are not likely to be the reason for the project's selection for IRWM Plan implementation.

[4] Goal Categories are typically based on the highest scoring goal in the Objectives Filter process (i.e., only one category is applied). The number following the Goal Category is sequential and is used as a unique identifier and for sorting purposes only.

Table G-2. Long Form Project List

No.	Project Code	Project Title	Sub-Region	Project Category	Project Cost	Prioritization Category	Total Point Score
1	MLTP_ECO1	Livestock & Land Program	Multi-Regional	Ecosystem	$250K-$500K	High	From Round 2
2	MLTP_FLD1	Water Conservation Corps	Multi-Regional	Flood Management	$1M-$5M	Low	108.43
3	MLTP_WMT1	County-Wide Watershed Awareness Campaign	Multi-Regional	Water Management	<$250K	Medium	83.93
4	MLTP_WMT2	LID Pilot Program	Multi-Regional	Water Management	<$250K	High	102.55
5	NCNT_ECO1	North County Fertilizer Regions_ Precision Agriculture	North County	Ecosystem	<$250K	High	105.81
6	NCNT_ECO2	Attiyeh Ranch Conservation Easement	North County	Ecosystem	>$5M	High	From Round 2
7	NCNT_FLD1	Upper Salinas watershed plans	North County	Flood Management	4M	Medium	100.76
8	NCNT_GWM1	Atascadero Groundwater Basin Augmentation Expansion Project	North County	Groundwater	>$5M	High	116.79
9	NCNT_WMT1	Community Based Social Marketing	North County	Water Management	<$250K	High	69.38
10	NCNT_WMT2	North County Precision Irrigation Research Program_ Precision Agriculture	North County	Water Management	<$250K	High	96.50
11	NCNT_WMT3	Tracking and Conserving Vineyard Irrigation Water in the Paso Robles Groundwater Basin	North County	Water Management	$250K-$500K	High	55.50
12	NCNT_WSP1	City of Paso Robles Lake Nacimiento Water Treatment Plant Construction	North County	Water Supply	>$5M	High	From Round 2
13	NCNT_WSP2	San Miguel Critical Water System Improvements	North County	Water Supply	$500K-$1M	High	From Round 2
14	NCST_ECO1	Water Conservation Partnerships in Chorro Valley	North Coast	Water Supply	$1M-$5M	Low	74.48
15	NCST_GWM1	8th Street Upper Aquifer Well and Nitrate Removal Facility	North Coast	Groundwater	$500K-$1M	Medium	78.07
16	NCST_FLD1	Los Padres CCC Center - Stormwater LID Treatment Project	North Coast	Water Management	$500K-$1M	Medium	91.40
17	SCNT_FLD1	Mid-Higuera Bypass	South County	Flood Management	$1M-$5M	Medium	34.29
18	SCNT_FLD2	Oceano Drainage Improvement Project - Hwy 1 & 13th Street	South County	Flood Management	$1M-$5M	High	63.31
19	SCNT_WMT1	Lopez Water Treatment Plant Membrane Rack Addition	South County	Water Management	$500K-$1M	High	42.50
20	SCNT_WSP1	Lopez Lake Spillway Raise Project	South County	Water Supply	>$5M	Low	100.98
21	SCNT_WSP2	Recycle Water Distribution System Expansion	South County	Water Supply	$250K-$500K	High	22.00
22	SCNT_WSP3	NCMA_NMMA Salt and Nutrient Management Plan (SNMP)	South County	Water Supply	$250K-$500K	Medium	103.83
23	SCNT_WSP4	Pismo Beach Recycled Water Project	South County	Water Management	>$5M	High	79.69

Relate to WMS, RMS and Objectives

The blank table below is adapted from **Figure G-1.** The purpose of completing this table for each project is to provide the linkage between how DWR State Objectives translate into Resource Management Strategies (RMS) that equate in their implementation to the SLO Water Management Strategies (WMS). Recommended SLO Project Elements are the action building blocks of the IRWM to implement the WMS and result in achieving the Goals and Objectives listed and described in **Section E – IRWM Goals and Objectives**.

Example Table Headings

DWR State Objectives	DWR RMS	SLO WMS	SLO Recommended Project Elements	IRWM Objectives

<u>Technical Feasibility and Justification</u>

Technical Feasibility and Justification uses the Long Form responses, to the extent possible, which give factual data and references to the project's purpose and stated (or claimed) physical benefits. In cases where projects are more of a program nature, the stated processes and specific actions are listed along with intended benefits and cost.

<u>Benefit DACs</u>

Responds to whether the project provides direct DAC benefits through the implementation of the stated Project Elements. Secondary benefits to a DAC may be included in this discussion if it is not directly apparent in the Contribute to Plan Objectives or Technical Feasibility and Justification heading.

<u>Environment Justice</u>

Environmental Justice addresses issues of impact to low income areas that occur either as a result of project construction or project implementation. Benefits of project implementation to low income areas may be included if directly targeted to this purpose.

<u>Cost and Financing</u>

Provides estimated costs of the project and need for financing through grant programs. Costs are typically broken out into capital and labor costs, and O&M costs. Labor costs can often be met through in-kind services by the sponsoring agency to meet any necessary local cost-share for grant funding.

<u>Feasibility through Economic Analysis</u>

The economic analysis of most projects needs should adhere to State methods of deriving benefits and monetizing the benefits, if possible. The response is based on the State's method of analysis to be used and what factors are proposed for assessing the total cost and benefit of project implementation. Benefits typically include some form of monetary value assignment. There are four primary methods of deriving an economic benefits analysis for a project as follows (taken from DWR November 2012 Guidelines):

Section D1 – Cost Effectiveness Analysis. *For relatively small non-DAC projects (total project cost is less than $300,000) or projects that benefit a DAC (up to a total project cost of $1 million), applicants have the option of completing a Cost Effectiveness Analysis. This option evaluates whether the physical benefits provided by the project are provided at the least possible cost, or not.*

Applicants may not split a single project into multiple smaller components or phases in order to be eligible for the cost effectiveness analysis option.

Section D2 – Non-Monetized Benefit Analysis*. For projects where benefits cannot be monetized, a Non-Monetized Benefit Analysis should be completed. This analysis requires a description (where possible) of applicable social, environmental stewardship, and sustainability benefits that may result from the implementation of a project.*

Section D3 – Monetized Benefits Analysis. *For projects which do not fall in Section D1 option and benefits can be quantified in dollar terms (excluding flood damage reduction (FDR) benefits), a Monetized Benefits Evaluation should be completed.*

Section D4 – Flood Damage Reduction Benefit Analysis. *For projects with FDR benefits, determination of the expected annual damages with and without the project should be completed.*

Lastly, if the RWMG recommends their own method, the following is applied:

Section D5 – Proposal Costs and Benefits Summary. *Annual costs must be provided for each individual project; and a benefit-cost summary must be presented for the entire proposal, regardless of benefit analysis method or options used.*

Project Readiness to Proceed

Readiness of a project to move forward to implementation in a short amount of time is a critical criterion to the IRWM Plan's success. If funding sources do present themselves as part of IRWM Plan implementation, the projects included in the IRWM Plan should be ready to proceed, if selected for implementation. The timeframe for beginning and ending the project is typically provided as a response to this criterion.

Strategic Implementation of the Plan and Project Merit

This includes a discussion of how the project adds value to the IRWM Plan by being multi-objective, multi-regional, and/or addresses issues that are not included in other projects and have a high likelihood of implementation success. Project sponsors' level of effort in following through with what is stated in the Long Form and bringing their project to a high readiness to proceed is critical to the IRWM Plan merit and success.

Climate Change Effects

This states whether the project has an effect on climate change conditions, or, conversely, if the project includes climate change adaptation. In all cases, projects typically have no appreciable GHG production to impact climate change negatively.

Reducing GHG compared to Project Alternatives

The study of GHG reduction for purposes of minimizing climate change impacts is not typically done under mitigated negative declaration CEQA review unless a full EIR is required. In addition, projects with older EIRs, may not include this analysis, so a discussion is included in this section of when, or if, a GHG alternative analysis will be performed. This is addressed further in **Section P – Climate Change**.

Project Sponsor to adopt IRWM Plan

This involves a simple response of either yes or no on whether or not the sponsoring agency plans to adopt the IRWM Plan upon its final completion.

Reduce Dependence on Delta Supplies

If the project is reliant on SWP water, projects affecting the need for the SWP are evaluated and qualitatively described based on the anticipated level of benefit to reduced SWP reliance.

Potential Impacts and Benefits of Project Implementation

This provides a summary of impacts and benefits listed in the Long Form with the level of specificity based on how far along the project is in the planning and design phases of implementation.

When a more Detailed Project-Specific Impact and Benefit Analysis will Occur

Project-specific impact benefit analyses are not typically done in accordance with State standards. In most cases, this level of analysis will not be completed until required to do so for purposes of grant funding or loans. Most project sponsors have the analysis spread through many documents and in their minds, but not compiled and on paper.

What is Proposed Methods of Monitoring Project Performance

Monitoring of specific metrics is required for each project based on the benefits and IRWM Objectives being met. In most cases, the metrics are physical in nature and can be monitored through standard practices applying the latest technology. In cases where benefits are difficult to capture, other, more qualitative metrics are used as an indicator of the potential benefits;

especially, if implemented on a larger scale. For example, the number of times the implementation of a best management practice is practiced could be an indicator of the improvement to water quality, since the water quality benefits themselves are difficult to capture in smaller scale or pilot-level projects.

Known and Possible Funding Sources

This lists the known and possible funding sources based on the Long Form responses and what is provided in **Section L – Financing Strategies**.

Funding Mechanisms, Including Water Rates, etc.

This describes how the proposed funds are collected, providing assurance that monies will be available to see that implementation, monitoring, and O&M are secured prior to project approval.

How O&M Costs for Projects will be Covered

This describes which funding source(s) is to be used for specifically O&M.

Process that Considers GHG Emissions when Choosing between Project Alternatives

This responds to whether a process was used in the selection of the project that considered GHG emissions. In most cases the project did not go through a rigorous project alternatives analysis including GHG emissions. The IRWM Plan will provide a discussion of the GHG emission concerns in **Section P – Climate Change.**

The PFR paper is a living document available on the IRWM website and is updated over time as new information becomes available for the selected projects. The DWR Guidelines recognize that not all of the project information is available at this stage in the process, and as projects mature, new information should be added as part of the IRWM monitoring and data management activities.

G.3.1.2 Projects Selected for the Project Forms Review Paper

To reduce the list and ensure the highest priority projects, the Long Form projects listed in **Table G-2** are filtered by an initial review of the previous Phase 1 scoring result, readiness-to-proceed, level of satisfying IRWM Goals and Objectives, gauged level of meeting State RMS based on applicable Objectives, and a rough equivalence of Sub-Region representation. All criteria are treated equally along with the understanding that the total project count remains below 20 percent of the total number of projects submitted under Phase 1, or approximately 10 to 15 projects, whichever is smaller.

With 15 projects being the smaller of two numbers, the PMT's filter process results in 15 PIPs total with the possibility of combining projects of similar nature and geographic area. See for location of selected projects. The selected projects and the reason for selection are identified in the **Table G-3** below (bolder text project names are selected for final project list). Likewise, projects not selected are given a primary reason why they were not selected. Projects not selected are still included in the Full Project List.

Table G-3. Final Project Selection

PIP No.	Project Code	Project Title	Primary Reason for In or Out of IRWM Plan
1	**MLTP_ECO1**	Livestock & Land Program	Included for its multi-objective regional benefits and water quality enhancement while gaining private property owner volunteer participation for purposes of environmental stewardship.
	MLTP_FLD1	Water Conservation Corps	Not included due to low RTP.
	MLTP_WMT1	County-Wide Watershed Awareness Campaign	Not included due to medium RTP and lower total Objectives-based point score.
2	**MLTP_WMT2**	LID Pilot Program	Included for its public education and outreach, as well as targets private property owners to volunteer and pay for LID projects with monetary rebate incentives.
3	**NCNT_ECO1**	North County Fertilizer Regions_ Precision Agriculture	Included for its wide public educational value and regional water quality benefits through volunteer participation by private property owners with reduced fertilizer cost incentives.
4	**NCNT_ECO2**	Attiyeh Ranch Conservation Easement	Included for public and environmental stewardship values; both resulting in the protection of the watershed and endangered flora and fauna species in the region.
	NCNT_FLD1	Upper Salinas watershed plans	Not included due to medium RTP.
5	**NCNT_GWM1**	Atascadero Groundwater Basin Augmentation Expansion Project	Included because of the multi-objective elements of improving recycled wastewater for higher beneficial use as a source for groundwater recharge and potable supplies in the Salinas Underflow.
6	**NCNT_WMT1**	Community Based Social Marketing	Included due to its low cost high education value over a broad region, enlisting support of private property owners to take ownership of their environment, and improving sustainable farming and business practices.
7	**NCNT_WMT2**	North County Precision Irrigation Research Program_ Precision Agriculture **and**	Both projects are included for their wide public educational value and regional water demand reduction benefits over a critically impacted groundwater basin, and both offer change in irrigation practices through volunteer participation by private property owners with reduced pumping cost incentives.
	NCNT_WMT3	Tracking and Conserving Vineyard Irrigation Water in the Paso Robles Groundwater Basin	
8	**NCNT_WSP1**	City of Paso Robles Lake Nacimiento Water Treatment Plant Construction	Included due to its maximizing existing supplemental water supplies in a critically impacted groundwater basin, and use as a conjunctive supply for drought protection and effects of climate change in the region.
9	**NCNT_WSP2**	San Miguel Critical Water System Improvements	Included due to the DAC need for critical water system improvements.
	NCST_ECO1	Water Conservation Partnerships in Chorro Valley	Not include due to low RTP and low total Objectives-based point score.

Table G-3. Final Project Selection, Continued

PIP No.	Project Code	Project Title	Primary Reason for In or Out of IRWM Plan
10	**NCST_GWM1**	8th Street Upper Aquifer Well and Nitrate Removal Facility	Included for its multi-Objective values of managing a critical groundwater basin subjected to continuous degradation of water quality from septic systems (nitrates) and sea water intrusion, and the local collaboration between the agencies and public using a vetted management plan.
11	**NCST_FLD1**	Los Padres CCC Center - Stormwater LID Treatment Project	Included for its multi-Objective benefits of environmental stewardship, LID educational opportunities, and the conversion of private lands to restore a rich ecosystem of flora and fauna.
	SCNT_FLD1	Mid-Higuera Bypass	Not included due to its medium RTP and low Objectives point score.
12	**SCNT_FLD2**	Oceano Drainage Improvement Project - Hwy 1 & 13th Street	Included due to multi-Objective elements of providing a DAC with health and safety along with water quality, groundwater recharge, and flood attenuation.
13	**SCNT_WMT1**	Lopez Water Treatment Plant Membrane Rack Addition	Included due to increased use of existing surface water supplies and reduction in groundwater use in a constrained groundwater basin shared by multiple agencies and private well owners.
	SCNT_WSP1	Lopez Lake Spillway Raise Project	Not included due to low RTP.
14	**SCNT_WSP2**	Recycle Water Distribution System Expansion	Included due to increased recycled water use in a DAC with the benefit of reducing groundwater pumping in a constrained groundwater basin.
	SCNT_WSP3	NCMA_NMMA Salt and Nutrient Management Plan (SNMP)	Not included due to medium RTP.
15	**SCNT_WSP3**	Pismo Beach Recycled Water Project	Included for its increased recycled water use in a constrained groundwater basin, and its high level of RTP with regional cooperation and financial commitments already in place.

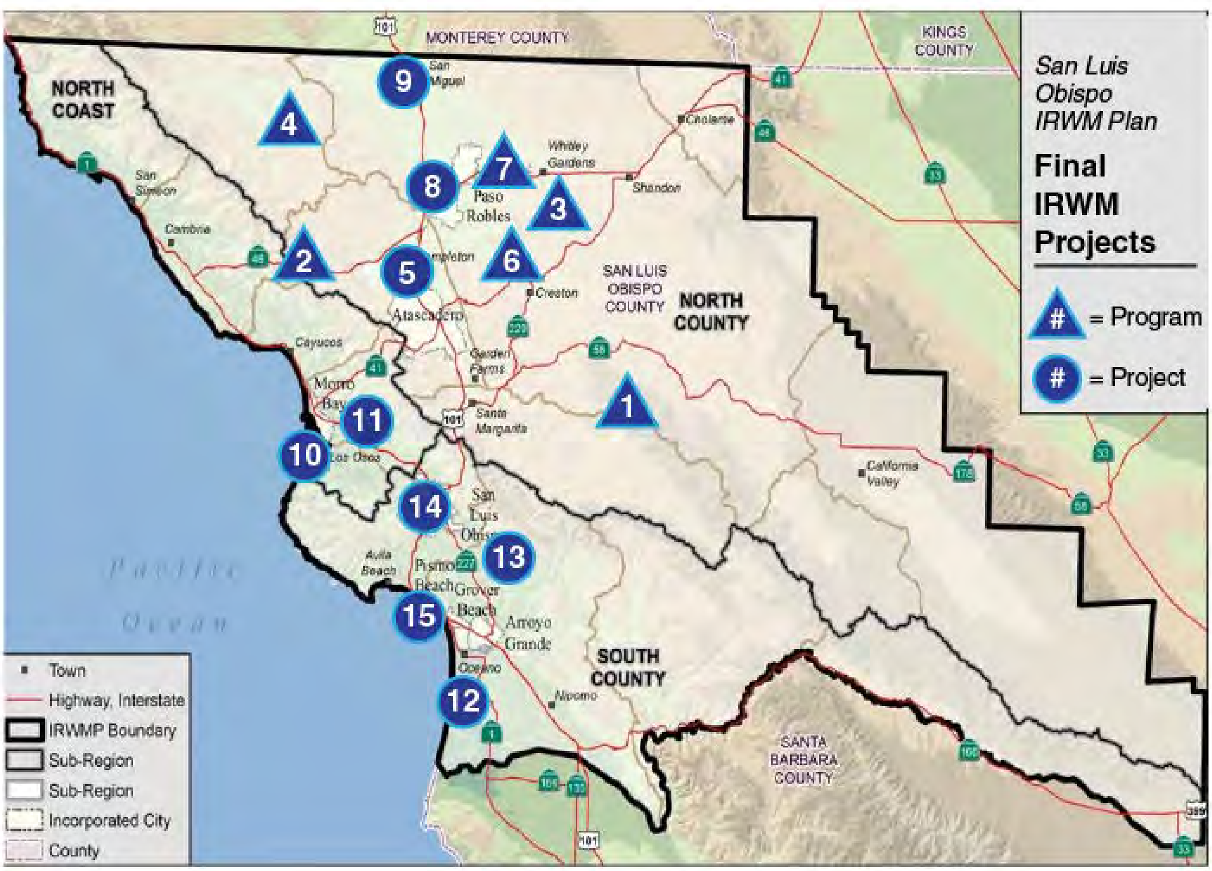

Figure G-3. High Priority List of 15 IRWM Plan Implementation Projects

Project Form Review (PFR) Paper Technical Review

Upon draft completion of the PFR paper (**Appendix G-5 – Project Form Review Paper**), the PMT requires review by the project sponsors for technical accuracy, and to respond to specific questions arising during PFR paper development. Contact is made through the District reaching out to project sponsors requesting their review of the draft PFR paper and to comment on any technical inaccuracies in the document. With this initial review, the first level of notification is complete.

G.3.2 Level 2 – Stakeholder Notification and Comment Period

Since the PFR paper is lengthy in size and content, an abbreviated document (Briefing Paper included as **Appendix G-6 – Project Selection Briefing Paper**) is prepared to fully inform all interested parties of the project selection findings. The outline of the document below considers projects from the previous IRWM Plan, projects added during the interim period, projects included in the Full Project List, how certain projects can be integrated, and projects included in the Final Project List. The level of information provided is limited to listings of the projects and descriptions for the PIPs.

1. Introduction
2. Purpose
3. Project Integration
4. Prior IRWM Plan Project List (2007)
5. Full Project List
6. Short Project List
7. Selected Project Technical Descriptions
8. Strategic Considerations
9. What's Next

Ideally the public comment period is limited to two weeks with comments submitted to the PMT for consideration in the IRWM Plan, but circumstances will guide the public comment duration.

G.3.3 Level 3 – Public Notice and RWMG Approval

As a DWR requirement of the project selection process, notification of the list of projects contained within the IRWM Plan is necessary. The PMT publishes some form of public documentation (**Appendix G-1 – Project Selection Brochure**) summarizing the project selection process. This is written to increase the understanding of why the projects are selected and what they will mean to the region upon implementation.

G.4 APPEALS PROCESS

If, upon receipt of the Level 2 or Level 3 notification, a project sponsor disagrees with the findings of the PMT, a formal and informal appeals process is provided to fully vet project sponsor concerns.

G.4.1 Informal Appeals Process

During the RWMG review, the group will make sure to confirm that consensus is developed or that disagreements are properly identified, discussed, and resolved. In the event of disagreements, if unresolved, they will be stated in writing so that disagreements are clearly defined and to ensure decision makers are properly informed during final plan approvals or in the event of a need for a formal hearing to resolve the disagreement (see formal appeals).

G.4.2 Formal Appeals Process

Please refer to the RWMG Memorandum of Understanding Article 4.5 "Decision Making," which establishes a formal appeals process.

G.5 IMPLEMENTATION APPROACH CATEGORIES

Once the Final Project List is created, as noted in **Figure G-2**, project sponsors have various possible implementation approaches available in order to move forward with project/program implementation. Some of these approaches are IRWM Plan-supported, while others are Local Agency-supported. This is done to account for the reality of limited direct project funding through the IRWM Plan implementation.

All projects meeting the criteria for acceptance in the plan are considered to be no more or less important. However, if funding for a local project exists outside of the IRWM Plan implementation grant process, the project sponsor is encouraged to pursue those funding alternatives, to the maximum extent of financial feasibility. Two approach categories are available to every project.

G.5.1 Implementation Approach Category 1 – IRWM Regional Approach

IRWM-supported projects/programs likely to be included in a regional IRWM grant application are high-ranking projects/programs with the needed documentation and multi-agency support, but may be lacking adequate funding in-place to implement the project or would benefit from IRWM grant funding. This implementation approach category seeks projects/programs with a high RTP and generally requires the RWMG to group the project with other projects into a cohesive, competitive IRWM grant funding implementation proposal where synergies can be shown through construction of the suite of projects/programs. This category of project requires the highest level of scrutiny to ensure the project adds a high degree of value to a grant proposal and creates synergies amongst other high-ranking projects. Selection of these projects is based on how well the projects can be combined to create a winning grant proposal.[5]

G.5.2 Implementation Approach Category 2 – Local Agency Funding Approach

The second implementation approach encourages local agencies or organizations to champion an effort to seek local funding and/or other grant funding sources outside of the IRWM program, in order to ensure project/program implementation. This might be well-suited for lower ranking projects/programs or single agency projects with limited regional benefits. These projects/programs have a high level of sponsorship from the IRWM Plan (being included on the Project List) that supports the agency in seeking other funding mechanisms such as non-IRWM State grant programs or loans, or increasing local rates and fees.

G.6 Task 3 - Biennial Project List Update

As part of the Plan implementation, the project list will be updated on a biennial basis (or more often if needed) to keep the list of included projects current. The project solicitation process described above will be used to update the Full Project List. Project solicitations will be conducted biennially, or more frequently when new opportunities arise in order to ensure that the Region's Project List is current, comprehensive and reflects existing project statuses. The updated Full Project List will be published as an addendum to the IRWM Plan, not requiring re-adoption of the plan. Future IRWM implementation grant opportunities will be offered to the best suited projects/ programs.

The region seeks to create an online database where concepts, projects, and programs can be submitted, and/or existing concepts, projects, and programs can be updated, between solicitation periods. These submittals would not be scored and ranked until the next Biennial Project List Update.

[5] This process is intended to offer the maximum amount of flexibility to allow the RWMG leeway to determine the best suite of projects for a given grant source.

Section H.

Project Integration and Alternatives

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Section H. Project Integration and Alternatives

The IRWM Plan includes a framework for project integration as recommended in 2012 CDWR IRWM Guidelines. Given the inherent nature of the integrated planning process at the forefront of this document's purpose, much of the integration at policy levels is already taking place and is described in various sections of the Plan Update (refer to Appendix Q for a list of those locations). The primary focus of this section is to touch on the meaning of integration for the IRWM region and how, at the project implementation level, integration is being addressed.

> *An IRWM Plan must contain structures and processes that provide opportunities to develop and foster integration. The intent of the Integration Standard is to ensure that RWMGs intentionally create a system where integration [at many levels] can occur…integration is combining separate pieces into an efficiently functioning unit. (DWR, 2012)*

H.1 Advantages of the Regional Plan as Opposed to Individual Local Efforts

As an integrated regional plan, the word "integrated" describes the IRWM Region Stakeholder's efficient use of local resources through collaborative and coordinated efforts and shared resources. As a "regional integrated" plan, as opposed to individual local efforts, many more strategic options become available to solve water resource management issues. Multi-agency regional projects can serve multiple communities more efficiently, at a lower cost (i.e. economies of scale), and can achieve broader public support than can be achieved through smaller, localized efforts. Access to technical support and sources of funding from federal and state agencies is more effective using a regional plan supported by a regional partnership of local agencies. Additionally, implementing specific programs that integrate projects to collectively achieve the IRWMP Goals and Objectives will ultimately be more beneficial to the watershed as a whole.

The IRWMP process provides a forum for sharing experience, insights, and knowledge among agencies and for developing solutions that can be effectively implemented at a regional and inter-regional scale. Regional integrated planning is advantageous for issues that span the region and cross jurisdictional boundaries within and outside the IRWM planning region.

There are many issues in the watershed that can only be effectively addressed through a coordinated regional planning approach. For example, an effective flood management solution requires consideration of activities by multiple agencies in both the upper and lower portions of the river. Addressing water quality issues such as TMDLs involves concerted efforts to control point source and non-point source pollution by agencies, cities, and counties. Surface water reservoirs can be operated to achieve maximum benefit only by understanding the needs and considerations of all downstream users.

There are also many water management related contrasts that exist between different areas of the region. This presents opportunities for regional planning to integrate efforts and utilize the attributes of one area to address deficiencies existing in another. Finally, an integrated regional planning process allows agencies planning single purpose projects to work together and combine efforts to develop multi-objective solutions, or to examine projects for potential enhancements that can address additional issues simultaneously within one project.

Examples include tying two similar projects or programs together making larger, more robust projects or programs for the region, and gaining the needed recognition by county, state and federal agencies.

Thus far, the IRWMP process has identified high priority projects, considered them in the context of regional objectives, and assembled them into Project Elements that are representative of a synergistic approach. Relationships and connections between stakeholders that were not apparent previously, are enabled through the regional planning process by aligning the Project Elements and looking for similarities. From a coordination standpoint, the IRWMP process builds relationships and understandings that will be invaluable for working out future issues.

H.2 Project Integration and Alternatives Discussion

When discussing the similarities between projects, and bundling of projects with common Project Elements, project alternatives are formed around the benefits to sponsoring agencies that are willing to consolidate and work together. Project scheduling and financial commitments are the two primary drivers for project implementation, both requiring a high level of commitment from the sponsoring agencies. In most cases, multi-agency agreements (e.g., memorandum of understanding) need to be considered in the project alternatives development.

Figure G-1 of **Section G – Project Solicitation, Selection and Prioritization**, of the IRWM Plan summarizes the process of delivering a project which satisfies both the state and regional goals and objectives. Project Elements become the catalyst (or activity) between recognizing the needs of a Resource or Water Management Strategy, and turning that strategy into one or more project activities which satisfy the IRWM Goals and Objectives. The top 15 projects listed in Table G-3 were individually evaluated, each with a separate table in **Appendix G-5 – Project Form Review Paper**, to qualitatively describe the Project Elements needed to bridge the state and IRWM Plan's Goals and Objectives. These tables provide the best means of showing commonalities in project activities for use in creating project alternatives.

H.2.1 Integration Already Occurring

As an outcome of the project ranking and prioritization, two project sponsors recognized the benefits of combining programs with similar Project Elements, identified as Project 7 in Table G-3. The Vineyard Team and Upper Salinas Las Tablas Resource Conservation District joined together in sponsoring what is now referred to as, *Improving On-Farm Water Management Through Demonstration, Research & Outreach of Precision Agricultural Best Management Practices.* **Figure H-1** illustrates the process of integration by starting with the State Objective and Resource Management Strategy, and following a project development process to arrive at a single integrated project meeting state and IRWM Goals and Objectives.

The following twelve (12) Project Elements, developed through the project selection and review process in **Section G – Project Solicitation, Selection, and Prioritization**, are used to describe the types of activities needed for successful implementation of the IRWM Plan:

1. Provide public education and demonstration projects which illustrate the value of habitat restoration and protection of water quality and quantity in natural streams and groundwater.
2. Provide public education and demonstration projects illustrating water conservation for purposes of achieving sustainable surface water and groundwater drinking water supplies.
3. Provide public incentives to gain volunteer change in on-site water use and handling practices.
4. Provide cost-effective alternatives to private property owners in managing on-site sources of contamination.
5. Create and preserve natural ecosystems and protect endangered flora and fauna through Land Stewardship and Conservation Easement programs.
6. Develop and improve water and wastewater treatment facilities to reduce point source discharges of contaminants to natural streams and comply with Waste Discharge permits.
7. Develop and improve methods of water reuse within a community.

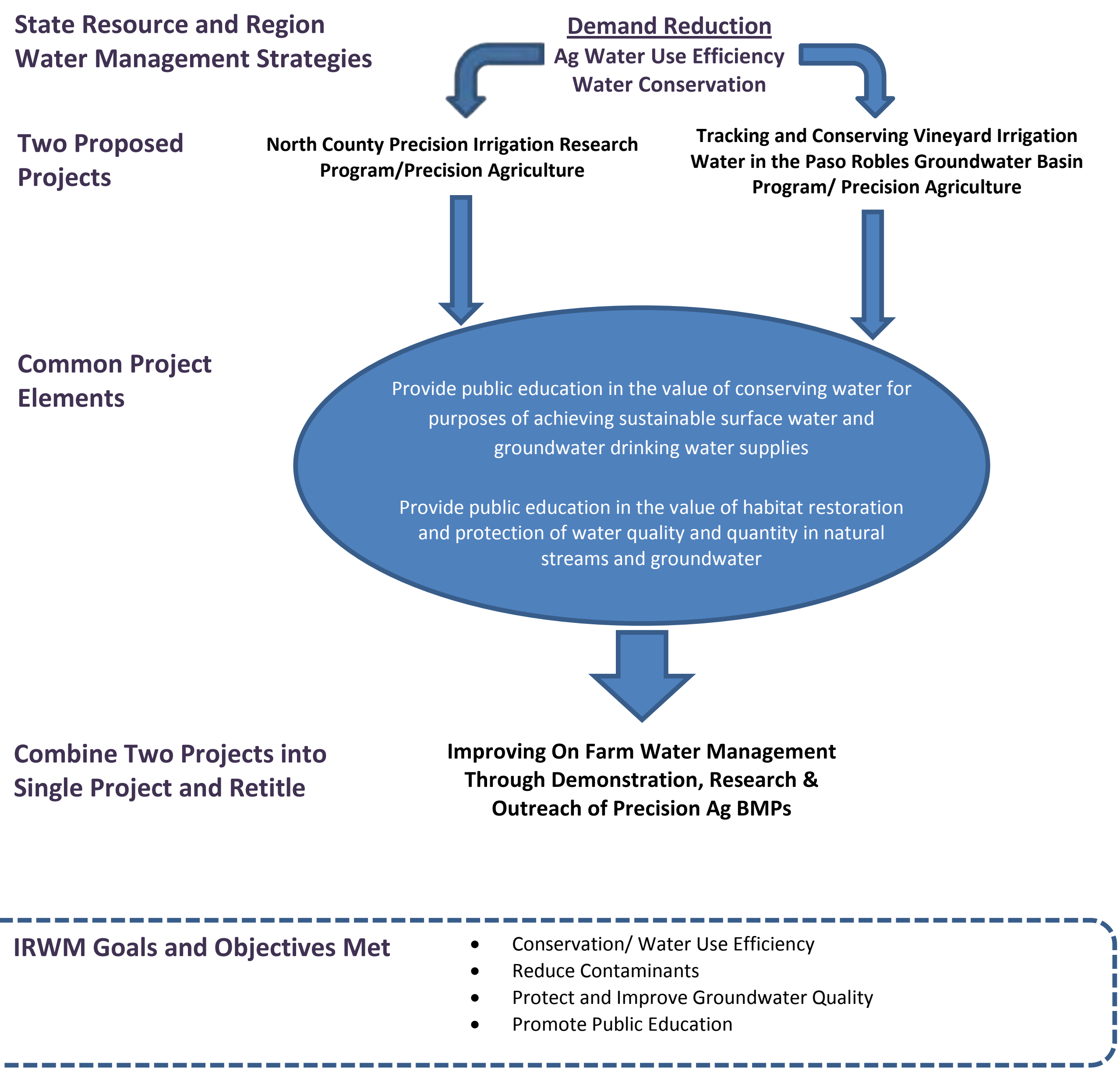

Figure H-1. Example of Project Integration Process

8. Develop new treatment and conveyance facilities to increase and protect the availability of existing water supplies.
9. Develop new groundwater management projects to improve the quality and quantity of groundwater in accordance with a regional stakeholder-based groundwater basin plan.
10. Develop methods of adapting to Climate Change and other vulnerabilities to the region's water resources.
11. Attenuate storm flows and improve stormwater quality by increasing on-site retention and detention controls.
12. Seek outside funding for water and flood control projects in low income areas.

The above list of Project Elements is described as the specific set of activities needed to implement the high priority projects in the IRWM Region. An IRWM Project needs one or more of the listed Project Element activities for successful completion.

H.3 MAPPING PROJECTS BY PROJECT ELEMENTS

A mapping of the Project Element methods[1] and their association with State Resource and San Luis Obispo County IRWM Water Management Strategies is provided in **Table H-1**. (note: Project Elements are abbreviated for purposes of presentation.) The last column of **Table H-1** associates the Project Element methods with the IRWM Objectives. Throughout the Plan, every proposed action is required to satisfy one or more of the IRWM Objectives. As a result, projects described by their Project Elements (i.e., specific activities) must benefit the overall goals and objectives of the IRWM Plan.

Table H-2 includes the same listed Project Elements mapped against the projects to highlight where commonalities between projects exist. For purposes of describing opportunities for project integration, IRWM Projects shown to have five or more Project Elements in common are considered for further integration and bundling to enhance project success. Projects within the same IRWM Sub-Region are further considered as having potential synergistic compatibility and are viewed as a viable project alternative.

[1] Project Elements define the methods of implementing projects and programs to satisfy one or more IRWM Objectives.

Table H-1. Project Water Supply Element Strategy Relationships

	Project Element Methods, Abbreviated	Resource Management Strategies	Water Management Strategies	IRWM Objectives
1	**Public education and implementation projects illustrating or pertaining to habitat restoration**	• Pollution Prevention • Watershed Management • Flood Management	• Environmental and Habitat Protection • Agricultural Water Use Efficiency • NPS Pollution Control • Flood Management, • Water Conservation	• Conservation and Water Use Efficiency • Reduce Contaminants • Promote Low Impact Development • Funding for Water Resources Management
2	**Public education and implementation projects illustrating water conservation and the values therein**	• Agricultural Water Use Efficiency	• Water Conservation	• Conservation/ Water Use Efficiency • Reduce Contaminants • Protect and Improve Groundwater Quality, • Promote Public Education
3	**Incentives to gain volunteer change in on-site water use and handling practices**	• Urban Water Use Efficiency • Pollution Prevention • Watershed Management	• Environmental and Habitat Protection • NPS Pollution Control • Water Conservation • Economic Incentives	• Conservation and Water Use Efficiency • Reduce Contaminants • Funding for IRWM Implementation • Support Local Control • Promote Public Education
4	**Alternatives to property owner to improve on-site contamination handling practices**	• Pollution Prevention • Ecosystem Restoration	• Environmental and Habitat Protection • NPS Pollution Control • Water Quality Protection and Improvement • Economic Incentives	• Reduce Contaminants • Promote Public Education • Promote Low Impact Development • Funding for Water Resources Management • Support Local Control
5	**Preserve natural ecosystems and protect endangered flora and fauna**	• Ecosystem Restoration • Pollution Prevention	• Environmental and Habitat Protection, • NPS Pollution Control	• Conserve Balance of Ecosystem • Public Involvement and Stewardship • Protect Endangered Species • Promote Public Education
6	**Improve water and wastewater treatment facilities to reduce contaminants**	• Pollution Prevention	• Water and Wastewater Treatment, • Water Supply Reliability	• Maximize accessibility of Water • Adequate Water Supply • Diversify Supply • Reduce Contaminants
7	**Improve methods of water reuse within a community**	• Water Conservation • Conjunctive Management	• Water Supply Reliability, Groundwater Management	• Maximize accessibility of Water • Adequate Water Supply • Diversify Supply • Groundwater Recharge/ Banking
8	**Improve treatment and conveyance facilities to protect existing supplies**	• Drinking Water Treatment and Distribution	• Water and Wastewater Treatment • Water Supply Reliability, • Water Quality Protection and Improvement • Groundwater Management	• Maximize Accessibility of Water • Implement Water Management Plans • Support Local Groundwater Management • Further Local Basin Management Objectives
9	**Implement groundwater management projects to improve quality and quantity of groundwater**	• Conjunctive Management and Groundwater Storage • Pollution Prevention	• Water Quality Protection and Improvement • Groundwater Management • Conjunctive Use	• Maximize accessibility of Water • Water System Water Quality Improvements • Adequate Water Supply • Diversify Supply • Protect and Improve Groundwater Quality
10	**Develop methods of adapting to Climate Change**	• Conjunctive Management and Groundwater Storage	• Address Climate Change • Water Supply Reliability	• Plan for Vulnerabilities of Supply
11	**Attenuate storm flows and improve water quality through on-site retention/detention**	• Pollution Prevention • Watershed Management • Flood Management	• NPS Pollution Control • Flood Management	• Reduce Contaminants • Promote Low Impact Development • Support Local Control
12	**Seek outside funding for water and flood projects in low income areas**	• Land Use Planning and Management	• Land Use Planning	• Support Local Control • DAC Support and Education

Table H-3 provides a cross-reference to illustrate how many Project Elements are in common between the projects. The top three projects are highlighted and compared with the projects shown to have commonalities.

H.4 POTENTIAL PROJECT INTEGRATION ALTERNATIVES

Other grouping criteria include size of project, cost of project, size and type of sponsoring agencies, types of funding, level of project interest, number of dedicated administrative staff, willingness to work together. In all cases, the grouping of projects needs to reflect a high level of appeal when considering as part of a regional grant application. As examples of how projects can be bundled, projects considered for integration based on **Table H-2** include the following (numerical value after each project identifies the number of Project Elements each project has in common):

Project Integration Alternative 1. **Public Outreach and Education Programs for Watershed and Groundwater Quality Enhancement**

Incorporates:

- Livestock & Land Program, 7
- LID Pilot Program, 10
- North County Fertilizer Regions Precision Agriculture, 8
- Community Based Social Marketing, 4
- Los Padres CCC Center - Stormwater LID Treatment Project, 5

Strategic Value: Projects are of same order of magnitude, with large educational components and volunteer participation. Management of a single project offers economies of scale both in its implementation and long term monitoring and reporting. All projects have 4 or more Project Elements in common with other listed projects.

Table H-2. Project Elements Common to Project List

Abbreviated Final Project List	1	2	3	4	5	6	7	8	9	10	11	12
	Public education in the value of habitat restoration	Public education in the value of conserving water	Incentives to gain volunteer change in on-site water use and handling	Alternatives to property owner on-site contamination	Preserve natural ecosystems and protect endangered flora and fauna	Improve treatment facilities to reduce contaminants	Improve methods of water reuse within a community	Improve treatment and conveyance facilities to protect existing supplies	Groundwater management projects to improve quality and quantity of GW	Develop methods of adapting to Climate Change	Attenuate storm flows and improve water quality through on-site retention/ detention	Seek outside funding for water and flood projects in low income areas
1 Livestock & Land Program												
2 LID Pilot Program												
3 North County Fertilizer Agriculture												
4 Attiyeh Ranch Easement						1						
5 Upper Salinas River Basin Conjunctive Use												
6 Community Based Social Marketing												
7 Improving On Farm Water Management												
8 City of Paso Robles Water Treatment												
9 San Miguel Critical Water System												
10 8th Street Nitrate Removal Facility												
11 Los Padres CCC Center Treatment Project												
12 Oceano Drainage Improvement Project												
13 Lopez Membrane Rack Addition												
14 Recycle Water Distribution Expansion												
15 Pismo Beach Recycled Water Project												
Total Number of Projects Sharing Common Elements (sum of shaded cells)	**5**	**3**	**3**	**3**	**4**	**1**	**5**	**7**	**4**	**2**	**2**	**3**

Table H-3. Cross Reference of Project Elements in Common

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
		Livestock & Land Program	LID Pilot Program	North County Fertilizer Agriculture	Attiyeh Ranch Easement	Upper Salinas River Basin Conjunctive Use	Community Based Social Marketing	Improving On Farm Water Management	City of Paso Robles Water Treatment	San Miguel Critical Water System	8th Street Nitrate Removal Facility	Los Padres CCC Center Treatment Project	Oceano Drainage Improvement Project	Lopez Membrane Rack Addition	Recycle Water Distribution Expansion	Pismo Beach Recycled Water Project	**Project Elements in Common**
1	Livestock & Land Program		2	3	0	0	1	0	0	0	0	1	0	0	0	0	**7**
2	LID Pilot Program	2		3	1	1	2	1	0	0	0	3	1		1	1	**16**
3	North County Fertilizer Agriculture	3	3		1	0	1	1	0	0	0	1	1	0	0	0	**11**
4	Attiyeh Ranch Easement	0	1	1		0	0	0	0	0	0	0	0	0	0	1	**3**
5	Upper Salinas River Basin Conjunctive Use	0	1	0	0		0	0	1	1	1	1	0	1	2	2	**10**
6	Community Based Social Marketing	1	2	1	0	0		1	0	0	0	0	0	0	0	0	**5**
7	Improving On Farm Water Management	0	1	1	0	0	1		0	0	0	0	0	0	0	0	**3**
8	City of Paso Robles Water Treatment	0	0	0	0	1	0	0		1	2	0	0	2	1	2	**9**
9	San Miguel Critical Water System	0	0	0	0	1	0	0	1		1	0	0	1	1	2	**7**
10	8th Street Nitrate Removal Facility	0	0	0	0	1	0	0	2	1		0	0	2	1	2	**9**
11	Los Padres CCC Center Treatment Project	1	3	1	0	1	0	0	0	0	0		0	0	1	2	**9**
12	Oceano Drainage Improvement Project	0	1	1	0	0	0	0	0	0	0	0		0	0	1	**3**
13	Lopez Membrane Rack Addition	0	0	0	0	1	0	0	2	1	2	0	0		1	2	**9**
14	Recycle Water Distribution Expansion	0	1	0	0	2	0	0	1	1	1	1	0	1		2	**10**
15	Pismo Beach Recycled Water Project	0	1	0	1	2	0	0	2	2	2	2	1	2	2		**17**
Total Number of Project Elements in Common		**7**	**16**	**11**	**3**	**10**	**5**	**3**	**9**	**7**	**9**	**9**	**3**	**9**	**10**	**17**	

Project Integration Alternative 2. **San Luis Obispo County Water Reuse Program, Pilot Studies, and Projects**

Incorporates:

- LID Pilot Program, 5
- Upper Salinas River Basin Water Conservation/Conjunctive Use Project, 4
- Los Padres CCC Center - Stormwater LID Treatment Project, 5
- Recycle Water Distribution System Expansion, 4

Strategic Value: Projects are construction focused with objectives targeting water reuse and matching water quality to use. Smaller agencies stand to benefit from a single administrative lead in the implementation and long term reporting of project benefits. All projects have 4 or more Project Elements in common with other listed projects.

Project Integration Alternative 3. **Innovative and Critical Water and Wastewater Improvement Projects in the San Luis Obispo County Region**

Incorporates:

- Upper Salinas River Basin Water Conservation/Conjunctive Use Project, 5
- San Miguel Critical Water System Improvements, 4
- 8th Street Upper Aquifer Well and Nitrate Removal Facility, 5
- Lopez Water Treatment Plant Membrane Rack Addition, 5
- Recycle Water Distribution System Expansion, 5

Strategic Value: Project is focused on physical construction elements of similar size and cost, aimed at groundwater enhancement and clean drinking water. The geographic proximity and size of the shared water systems benefitting from the project promises full participation by the sponsoring agencies and is likely to include in-kind services. All projects have 4 or more Project Elements in common with other listed projects.

H.5 BENEFITS OF PROJECT/AGENCY INTEGRATION

As part of the IRWM Plan monitoring and performance reporting, or updating of the project list, integration strategies need to be reviewed and actions taken to assist agencies in combined cooperative implementation of projects to allow for economies of scale and shared resources. As the lead agency in the preparation of the reporting and Call-for-Projects, the District is in the best position to foster sponsoring agency cooperation to achieve the highest value and cost effectiveness in project selection and ranking.

In cases where sponsoring agencies share common goals, project and program similarities are formulated based on the decision tree shown in **Figure H-2**.

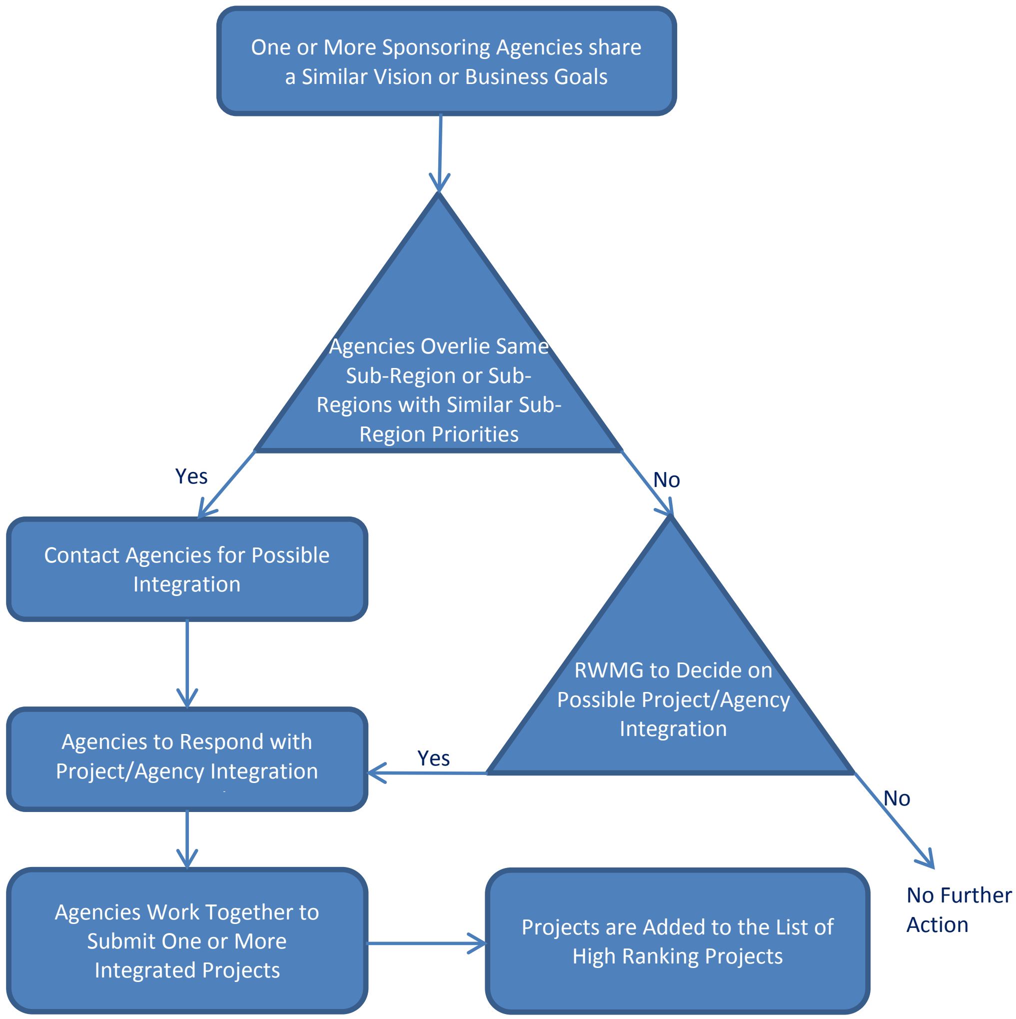

Figure H-2. Decision Tree for Project and Agency Integration

If sponsoring agencies are either located in the same Sub-Region, or lie in different Sub-Regions but share similar Sub-Region Priorities (see **Section E – Goals and Objectives**, Table E-11), multiple sponsoring agencies are contacted by the District on behalf of the RWMG prior to establishing the ranked project list. The District formulates and provides the positive aspects of creating project synergies in working together. The contacted agencies will have specified amount of time to explore the benefits of combining resources in terms of projects and financial aid to create new integrated projects. The RWMG may not include the projects on the project list if a combined project cannot be formulated. In most cases, however, integrated projects are added to the list of high ranking projects. If one or more agencies simply share a common vision or business goals, the RWMG discusses possible outreach to the agencies to bring awareness, and to create a higher level of project and agency integration for the region. Further incentives for integration will be reviewed on a case-by-case basis.

Section I.
Plan Benefits and Impacts

Section I. Plan Benefits and Impacts

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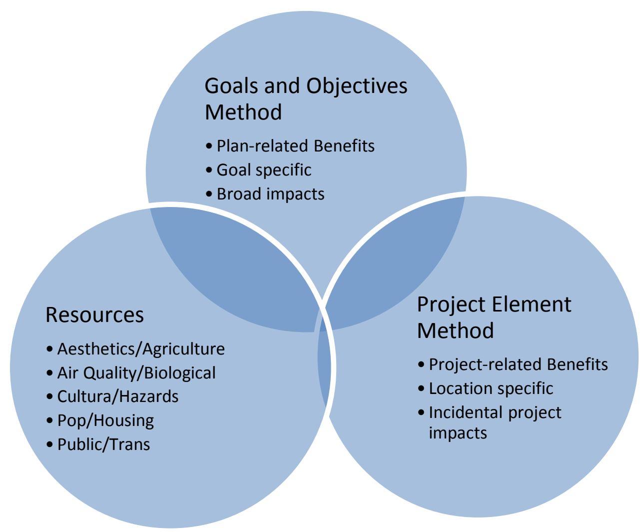
Section I. Plan Benefits and Impacts

This section contains a "high" level discussion of the plan implementation to help stakeholders to begin to understand the potential benefits and impacts of implementing the IRWM Plan within their respective Sub-Regions.[1] High level implies that the benefit/impact analysis is not extensive or exhaustive, but does provide sufficient detail to require updating as the plan matures, projects change, and plan performance is measured over time.

This section initially examines benefits and impacts using two methods. The first method considers the IRWM Plan's overall Vision, Goals and Objectives and associates primary benefits and impacts to each. The second method expands upon the beneficial activities associated with each Project Element and ties each benefit, and impact, to a project(s) activity and region(s).[2] IRWM Projects are tied to both methods by noting in ***bold-italic*** the projects which could potentially be affected by the listed benefits and impacts.



The last portion of this section provides a discussion of how the various natural and man-made resources will be affected by the IRWM Plan's implementation. Regulatory permitting and mitigation measures are also discussed.

I.1 Goals and Objectives Method

The ultimate purpose of plan implementation is to provide benefits that support and achieve the overall IRWM Plan vision, and Goals and Objectives of the San Luis Obispo Region. Benefits

[1] Also includes potential impacts and benefits of Plan Implementation between regions with DAC/EJ concerns and Native American Tribal communities (see **Section C – Region Description** and **Section B.4.8.3 Tribal Councils** for discussion).

[2] Project Elements are described in **Section G – Project Solicitation, Selection, and Prioritization** and are linked with IRWM Projects satisfying one or more IRWM Goals and Objectives as explained in **Section H – Project Integration and Alternative**.

are to be accomplished through watershed stewardship and comprehensive management of water resources in a practical, cost effective, and responsible manner. The following section describes the potential benefits and impacts associated with implementation of the five recommended IRWMP Goals.[3]

I.1.1 Water Supply Goal

The Water Supply goal is intended to be an integrated regional water supply program that combines a variety of water management and infrastructure plans and projects to provide flexibility in water supply, increase reliability of supply, and reduce dependence on imported supplies throughout the region. The goals focus is to improve water quantity and water quality for beneficial uses in the IRWM region. The types of plans and projects implemented for purposes of the Water Supply goal work together closely with other goals to protect the region's water resources. The primary benefits of the Water Supply Goal are:

- Protect and improve source water quantity and quality
- Meet all federal and state drinking water standards
- Implement inter-agency projects including emergency inter-ties between systems, jointly developed facilities, water exchanges, and other methods of enhancing reliability through cooperative efforts over the development of new supplies
- Maximize water conservation for both M&I and agricultural uses
- Expand desalination water opportunities by 2010
- Expand reclaimed water use to make up 10 percent of total water use by 2020
- Address Climate Change

The high priority projects implemented under the Water Supply Goal are:

- NCNT_WSP1 - City of Paso Robles Lake Nacimiento Water Treatment Plant Construction
- NCNT_WSP2 - San Miguel Critical Water System Improvements
- SCNT_WSP2 - Recycle Water Distribution System Expansion
- SCNT_WSP4 - Pismo Beach Recycled Water Project

The Water Supply goal provides numerous benefits to the region as a whole, with some impacts to the locally affected communities and adjacent areas. **Table I-1** identifies potential benefits and impacts of implementing this goal.

[3] Listed benefits are inherently associated with the Goal's Objectives. The difference is in the context of providing all benefits associated with the Goal from implementing IRWM projects.

Table I-1. Benefits and Impacts of the Water Supply Goal

Benefits and Impacts
Benefits • Improves water quality and brings low income communities in to compliance with drinking water standards. • Increases conservation and recycled water opportunities. • Improves water supplies and ensures their long term sustainability. • Reduces salts and nitrates in groundwater and drinking water supplies. • Improves effluent water quality and complies with new waste discharge requirements. • Facilitates actions to begin addressing Climate Change in the region. • Reduces point and non-point discharges to regional surface waters. • Develops strategies to share water resources regionally and implement inter-agency projects. • Facilitates inter-agency coordination on regional desalinization projects. • Increases local, reliable water supplies for the region available for transfer and banking. • Coordinated public education efforts regarding recycled water use. • Reduces demand for State Water Project water. • Optimizes the regional use of State Water Project water. • Improves conjunctive use of groundwater resources. • Improves local reservoir operation conditions. • Provides regional supply for future increased demands.
Impacts • Potential temporary impacts during construction. • Potentially significant financial impacts to benefit assessment region. • Potential environmental impacts from intake facilities and brine disposal.

I.1.2 Ecosystem and Watershed Restoration Goal

The Ecosystem and Watershed Restoration Goal is made up of plans and projects that protect, enhance, and restore the region's natural resources. The primary benefits of the Ecosystem Program are:

- Purchase and conserve through easements, preserve, enhance, and restore land in ecologically sensitive ecosystems
- Manage public land access to encourage public involvement and stewardship
- Manage and restore ecosystems and stream flows to fish bearing streams, support a region-wide fish passage barrier prevention, circumvention and removal program, and implement fish-friendly stream and river corridor restoration projects
- Reduce the effects of invasive plant species, manage public properties to re-establish rare and special status native plant populations, and promote native drought tolerant plantings in municipal and residential landscaping
- Implement the San Luis Obispo County Native Tree Management Guidelines and promote the voluntary guidelines in the San Luis Obispo County Native Tree Resolution for tree protection and restoration programs, urban forest management, and wild lands fire management
- Support the development and implementation of TMDLs
- Conserve natural resources
- Improve the understanding of Climate Change through research and monitoring

The high-ranking projects, programs, and plans integrated into the Ecosystem Preservation and Enhancement Program are:

- **MLTP_ECO1 - Livestock & Land Program**
- **NCNT_ECO1 - North County Fertilizer Regions_ Precision Agriculture**
- **NCNT_ECO2 - Attiyeh Ranch Conservation Easement**

The Ecosystem and Watershed Restoration Goal provides numerous benefits to the region as a whole, with some impacts to the locally affected communities and adjacent areas. **Table I-2** identifies potential benefits and impacts of implementing projects under this goal.

Table I-2. Benefits and Impacts of the Ecosystem and Watershed Restoration Goal

Benefits and Impacts
Benefits • Promotes public awareness and involvement in estuarine management issues by regional stakeholders and tourists. • Protects the long term stability and protection of agriculture and open space throughout the region. • Protects wetland and riparian corridor protection and restoration, open spaces such as development of pocket parks and green belts in urbanized areas throughout the region. • Establishes policies and guidelines for the retention of storm water on-site for percolation, and utilization of Low Impact Development principles to ensure that proposed development conforms to good design and flood management standards. • Protects Coastal Waters from pathogen contamination. • Protects sensitive Coastal habitats. • Protects recreational value of the Coastal areas.
Impacts • Potential conflicts with individual agency plans and policies. • Potential temporary impacts during construction.

I.1.3 Groundwater Monitoring and Management Goal

The Groundwater Monitoring and Management Goal is designed to monitor, protect, and improve the region's groundwater through a collaborative approach. The primary objectives of the Groundwater Program are:

- Develop monitoring and reporting programs for groundwater basins in the region
- Evaluate and consider Groundwater Banking Programs
- Protect and improve groundwater quality from point and non-point source pollution, including nitrate contamination; MTBE and other industrial, agricultural, and commercial sources of contamination; naturally occurring mineralization, boron, radionuclide, geothermal contamination; and seawater intrusion and salts
- Increase discharge of an improved quality of treated wastewater to maintain and protect existing groundwater supplies
- Conduct public education and outreach about groundwater protection
- Identify areas of known or expected conflicts and target stakeholders on specific actions that they should take to help protect groundwater basin quality and supply
- Recharge groundwater with high quality water

The high-ranking projects, programs, and plans integrated into the Groundwater Monitoring and Management Program are the:

- **NCNT_GWM1 - Upper Salinas River Basin Water Conservation/Conjunctive Use Project**
- **NCST_GWM1 - 8th Street Upper Aquifer Well and Nitrate Removal Facility**

The Groundwater Monitoring and Management Goal will provide numerous benefits to the region as a whole, with some impacts to the locally affected communities and adjacent areas. **Table I-3** identifies potential benefits and impacts of implementing projects under this goal.

Table I-3. Benefits and Impacts of the Groundwater Monitoring and Management Goal

Benefits and Impacts
Benefits • Develops a resource and groundwater management plan for the regionally significant groundwater basins. • Improves water supply reliability via greater flexibility to implement conjunctive use options between local groundwater supplies, desalination supply and imported State Water supply for the region. • Compiles regional information and identifies optimal recharge locations throughout the region. • Compiles region-wide information and identifies regional ordinance options for groundwater management. • Provides information necessary to cooperatively manage the groundwater basin to provide the maximum water supply benefits to the region.
Impacts • Potential conflicts with individual agency policies and ordinances.

I.1.4 Flood Management Goal

The Flood Management Goal is designed to implement an integrated, watershed approach to flood management throughout the region. The primary benefits of the Flood Management Goal are:

- Distinguish the root cause of flooding problems stemming from new development, existing development, and mandatory regulation
- Integrate ecosystem enhancement, drainage control, and natural groundwater recharge into development projects
- Develop financial programs for drainage and flood control projects
- Evaluate and minimize the risk of dam and levee failures, or other flood control structures
- Develop and implement public education, outreach, and advocacy on improved flood protection for low income areas

The high-ranking projects, programs and plans integrated into the Flood Management Goal are the:

- **NCST_FLD1 - Los Padres CCC Center - Stormwater LID Treatment Project**
- **SCNT_FLD2- Oceano Drainage Improvement Project - Hwy 1 & 13th Street**

The Flood Management Goal will provide numerous benefits to the region as a whole, with some impacts to the locally affected communities and adjacent areas. **Table I-4** identifies potential benefits and impacts of implementing this goal.

Table I-4. Benefits and Impacts of the Flood Management Goal

Benefits and Impacts
Benefits • Develops a regional model on how to approach flood management issues, including steps on how to integrate solutions for multiple benefits and community acceptance. • Cooperatively developed by the communities from Arroyo Grande to Oceano, the Coastal San Luis Resource Conservation District, and the San Luis Obispo County Flood Control and Water Conservation District for the benefit of those communities. • Eliminates redundancy of efforts by individual agencies allowing program cost reductions. • Cooperatively developed by the communities from San Luis Obispo to Avila Beach and the San Luis Obispo County Flood Control and Water Conservation District for the benefit of those communities. • Improves steelhead passage that benefits habitat value for the upper watershed.
Impacts • Potential temporary impacts during construction.

I.1.5 Water Resources Management and Communications Goal

The Water Resources Management and Communications Goal is designed to implement an integrated, watershed approach to Water Resources Management and Communications throughout the region. The primary benefits of the Water Resources Management and Communications Goal are:

- Develop financial programs for water, drainage and flood control projects
- Develop and implement public education, outreach, and advocacy for sustainable water resources management in low income areas

The high-ranking projects, programs and plans integrated into the Water Resources Management and Communications Goal are the:

- **MLTP_WMT2 - LID Pilot Program**
- **NCNT_WMT1 - Community Based Social Marketing**
- **NCNT_WMT2 - Improving On Farm Water Management Through Demonstration, Research & Outreach of Precision Agricultural Best Management Practices**
- **SCNT_WMT1 - Lopez Water Treatment Plant Membrane Rack Addition**

The Flood Management Goal will provide numerous benefits to the region as a whole, with some impacts to the locally affected communities and adjacent areas. **Table I-4** identifies potential benefits and impacts of implementing this goal.

Table I-5. Benefits and Impacts of the Water Resources Management and Communications Goal

Benefits and Impacts
Benefits • Provides reliable, consistent outreach in managing regional water supplies. • Brings those areas of the agricultural region to enable their long-term stability and productivity within the regional community along with urban and rural uses. • Reduces regional groundwater conflicts. • Eliminates redundancy of efforts by individual agencies allowing program cost reductions. • Provides policies and best management practices consistent with applicable IRWM goals and objectives. • Coordinates public education efforts with focused attention to low income areas. • Protects water resources for the beneficial use of regional stakeholders.
Impacts • Potential higher cost of water to maintain finance options and increased local funding.

I.2 PROJECT ELEMENT METHOD

The benefits from implementing the IRWM Plan are provided through the project activities grouped into the twelve (12) Project Elements listed in each table below. Each Project Element stems from the project-related objectives of the IRWM Plan's Final Project List of 15 projects. Benefits are closely tied to the generic project outcomes. Related impacts are generally associated with local incidental or secondary construction-related activities or local tax, rate, and fee increases due to a higher cost in water from implementation of new projects and programs where local financing is obtained.

For each Project Element, one or more "beneficial" outcome can be created through project implementation. Likewise, one or more incidental or secondary "impact" can also be created. **Figure I-3** uses the Pismo Beach Recycled Water Project as an example where the project is held against all associated Project Elements (i.e., those with red line) and the list of benefits and impacts is created by simply collecting the list of benefits and impacts.

The Project Element Method is used as a means to relate benefits and impacts to the actual IRWM project activities (i.e., what is the project actually doing to result in a benefit (or impact)) and to the region(s) most affected. What follows is a series of tables identifying the potential list of beneficial activities and incidental or secondary impacts to assess the best possible outcome of implementing the Project Elements, and where those outcomes will likely take place. This approach stops short of closely assessing each project (i.e., such as publishing a project benefit and impacts list) to maintain the high level of planning, and to ensure the effort to be done with the project's implementation and environmental compliance process is not affected. The Final Project List projects are identified in the tables, however, to assist in associating the specific benefits listed under each Project Element.

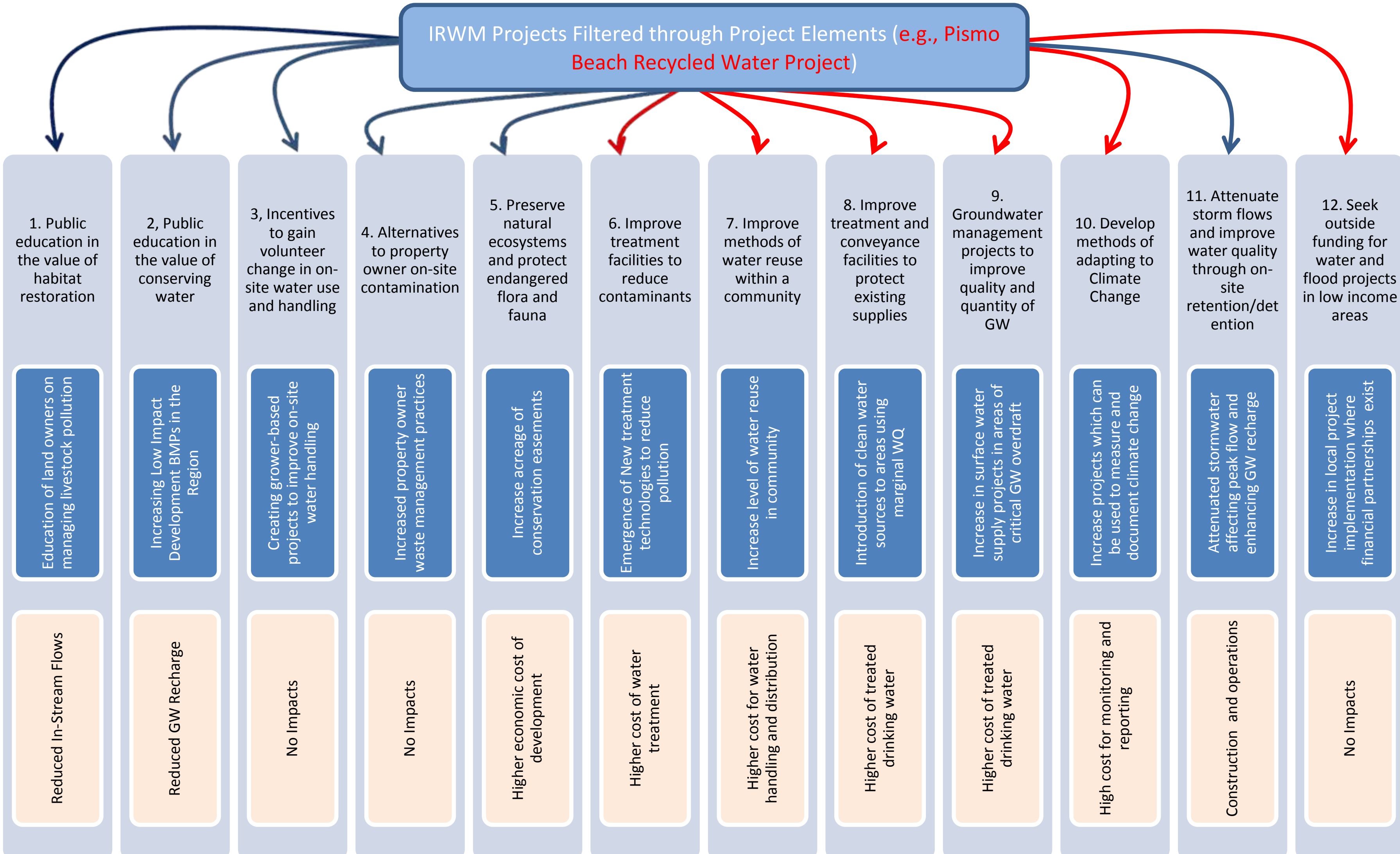
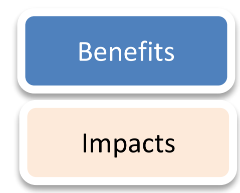


Figure I-3. Potential Benefits and Impacts Based on Project Elements



1. Provide public education in the value of habitat restoration and protection of water quality and quantity in natural streams and groundwater.

Project Types	Implementation Areas/IRWM Projects	Most Applicable Sub-Region(s)			
		North Coast	South Coast	North County	Adjacent Regions
Benefit Activities					
Implement a suite of educational best management practices to stem livestock pollution currently being introduced into native fresh water streams from rural land uses.	Local and regional benefits occur over rural residential areas. IRWM Projects include: • ***MLTP_ECO1 - Livestock & Land Program***				
Implement a suite of homeowner best management practices targeting stormwater quality for the protection and restoration of downstream natural habitats.	Local benefits occur to existing and new residential developments. IRWM Projects include: • ***MLTP_WMT2 - LID Pilot Program***				
Introduce education-based fertilizer optimization programs directed at growers to reduce degradation of downstream surface water quality and natural habitats.	Local benefits occur in agricultural areas where applied fertilization is occurring. IRWM Projects include: • ***NCNT_ECO1 - North County Fertilizer Regions Precision Agriculture***				
Implementation of a regional education program through public media based on simple and effective best management practices for the benefit of natural habitat restoration, and protecting sensitive ecosystems.	Regional benefits occur over IRWM region and adjoining IRWM regions who may be touched through local media, etc. IRWM Projects include: • ***NCNT_WMT1 - Community Based Social Marketing***				
Create new ecosystems (i.e. wetlands, sloughs, etc.) from existing barren lands achieving new habitat development with stormwater quality and groundwater recharge benefits without impacting water supplies.	Local to low lying and coastal areas where stormwater accumulation and ocean storm surge is heaviest and most prolonged. IRWM Projects include: • ***NCST_FLD1 - Los Padres CCC Center - Stormwater LID Treatment Project***				
Impacts Summary					
Impacts from projects using education as the primary tool of anthropomorphic change to improve habitat restoration and protect water quality and quantity.	Possible impacts may include reduced in-stream flow through stormwater attenuation and groundwater recharge, and minor construction related impacts.				

2. Provide public education in the value of conserving water for purposes of achieving sustainable surface water and groundwater drinking water supplies

Project Types	Implementation Areas/IRWM Projects	Most Applicable Sub-Region(s)			
		North Coast	South Coast	North County	Adjacent Regions
Benefit Activities					
Implementation of Low Impact Development best management practices in the installation and educational use of water conservation devices.	Local to existing and new residential developments. IRWM Projects include: • ***MLTP_WMT2 - LID Pilot Program***				
Implementation of <u>regional</u> public education programs on simple and effective water conservation best management practices for improving drinking water supplies	Regional to IRWM region and adjoining IRWM regions who may be touched by such a program through local media, etc. IRWM Projects include: • ***NCNT_WMT1 - Community Based Social Marketing***				
Optimization of educational on-farm irrigation practices to improve drinking quantity and quality of water supplies.	Local to agricultural areas where irrigation practices are degrading available water supplies. IRWM Projects include: • ***NCNT_WMT2 - Precision Agricultural Best Management Practices***				
Impacts					
Impacts from projects using education as the primary tool of increasing water conservation for purposes of achieving a sustainable water supply.	Possible impacts may include reduced in-stream flow through improved irrigation practices, reduced groundwater recharge in areas of surface water application, higher economic cost of plumbing fixtures, and perhaps some minor construction related impacts.				

3. Provide public incentives to gain volunteer change in on-site water use and handling practices.

Project Types	Implementation Areas/IRWM Projects	Most Applicable Sub-Region(s)			
		North Coast	South Coast	North County	Adjacent Regions
Benefit Activities					
Implementation of individual property owner management of livestock waste through improved handling practices of on-site drainage and irrigation water.	Local to rural residential areas with livestock. IRWM Projects include: • ***MLTP_ECO1 - Livestock & Land Program***				
Implementation of Low Impact Development best management practices to create incentives for improving on-site runoff and increasing natural groundwater recharge.	Local to existing and new residential developments. IRWM Projects include: • ***MLTP_WMT2 - LID Pilot Program***				
Implementation of grower-based projects to improve on-site water handling practices to minimize fertilizer transport through irrigation and stormwater runoff.	Local to agricultural areas. IRWM Projects include: • ***NCNT_ECO1 - North County Fertilizer Regions_ Precision Agriculture***				
Impacts					
Impacts from projects using volunteer change as the primary tool for improving sustainable water supplies.	No impacts.				

4. Provide cost-effective alternatives to private property owners in managing on-site sources of contamination.

Project Types	Implementation Areas/IRWM Projects	Most Applicable Sub-Region(s)			
		North Coast	South Coast	North County	Adjacent Regions
Benefit Activities					
Implementation of individual property owner management of livestock through improved waste handling practices.	Local to rural residential areas with livestock. IRWM Projects include: • ***MLTP_ECO1 - Livestock & Land Program***				
Implementation of Low Impact Development best management practices to create incentives for improving on-site urban runoff from entering natural waterways.	Local to existing and new residential developments. IRWM Projects include: • ***MLTP_WMT2 - LID Pilot Program***				
Implementation of grower-based projects to reduce off-site fertilizer transport or groundwater leaching.	Local to agricultural areas. IRWM Projects include: • ***NCNT_ECO1 - North County Fertilizer Regions_ Precision Agriculture***				
Impacts					
Impacts from projects managing the sources of contamination to improve water quality	No impacts.				

5. Create and preserve natural ecosystems and protect endangered flora and fauna through Land Stewardship and Conservation Easement programs.

Project Types	Implementation Areas/IRWM Projects	Most Applicable Sub-Region(s)			
		North Coast	South Coast	North County	Adjacent Regions
Benefit Activities					
Purchase and/or acquire conservation easements over designated natural lands, protecting and preserving the native flora and fauna over these lands in perpetuity.	Applies to regional areas of undeveloped areas. IRWM Projects include: • ***NCNT_ECO2 - Attiyeh Ranch Conservation Easement***				
Implementation of Low Impact Development setting aside sensitive habitat areas within the development area.	Local to new residential developments. IRWM Projects include: • ***MLTP_WMT2 - LID Pilot Program***				
Create new ecosystems (i.e. wetlands, sloughs, etc.) from existing barren lands achieving new habitat for endangered flora and fauna preserving for future generations.	Local and Regional IRWM Projects include: • ***NCST_FLD1- Los Padres CCC Center - Stormwater LID Treatment Project***				
Impacts					
Impacts from projects which achieve long term protection of native lands and protection of flora and fauna.	Potential higher economic cost of development and long term maintenance, monitoring and reporting to ensure protection over time.				

6. Develop and improve water and wastewater treatment facilities to reduce point source discharges of contaminants to natural streams and comply with Waste Discharge permits.[4]

Project Types	Implementation Areas/IRWM Projects	Most Applicable Sub-Region(s)			
		North Coast	South Coast	North County	Adjacent Regions
Benefit Activities					
Implement new treatment technologies to reduce point-source discharges of pollution to natural streams and rivers from existing wastewater treatment plants.	Existing wastewater treatment plants discharging to freshwater streams and rivers. IRWM Projects include: • ***NCNT_GWM1 - Upper Salinas River Basin Water Conservation/ Conjunctive Use Project***				
Construct recycled water systems to improve existing water quality in streams impacted by nuisance flows in urban runoff.	Urbanized areas with adequate wastewater flows for recycled water treatment and use. IRWM Projects include: • ***SCNT_WSP4 - Pismo Beach Recycled Water Project***				
Impacts					
Impacts from projects which improve existing water supply, recycled water, and wastewater treatment plants and their respective waste streams for the protection of downstream rivers and freshwater streams.	Potential higher economic cost of treatment plant construction, and annual energy and operations costs.				

[4] This is typically a secondary benefit of recycled water programs where supplies in excess of demand are discharged to natural streams for improved dilution of urban runoff. All such programs fall under the NPDES Phase II Storm Water Management Program.

7. Develop and Improve methods of water reuse within a community.

Project Types	Implementation Areas/IRWM Projects	Most Applicable Sub-Region(s)			
		North Coast	South Coast	North County	Adjacent Regions
Benefit Activities					
Construct recycled water systems to improve the level of water reuse in a community (i.e. consideration of recycled water use to front yard landscaping).	New and existing residential developments where sufficient wastewater streams are generated. IRWM Projects include: • ***NCNT_GWM1 - Upper Salinas River Basin Water Conservation/ Conjunctive Use Project*** • ***SCNT_WSP2 - Recycle Water Distribution System Expansion*** • ***MLTP_WMT2 - LID Pilot Program***				
Implement water handling practices along the wet coastal areas for better management of irrigating community parks and local ecosystems with local runoff and high dew point events, or fog.	Local to coastal regions with higher rainfall amounts, and a high frequency of summer fog events. IRWM Projects include: • ***NCST_FLD1- Los Padres CCC Center - Stormwater LID Treatment Project***				
Seek regional recycled water solutions, where cost effective.	Regional to higher density areas with parks and public lands suitable for recycled water use. IRWM Projects include: • ***SCNT_WSP4 - Pismo Beach Recycled Water Project***				
Impacts					
Impacts from projects which increase the reuse of water, whether from recycling water or capturing stormwater and applying to a higher purpose (i.e., matching quality to use)	Potential higher economic cost of treatment plant construction, water handling and distribution appurtenances and annual energy and operations costs.				

8. Develop new treatment and conveyance facilities to increase and protect the availability of existing water supplies.

<table>
<tr><th rowspan="2">Project Types</th><th rowspan="2">Implementation Areas/IRWM Projects</th><th colspan="4">Most Applicable Sub-Region(s)</th></tr>
<tr><th>North Coast</th><th>South Coast</th><th>North County</th><th>Adjacent Regions</th></tr>
<tr><td colspan="6">Benefit Activities</td></tr>
<tr><td>Construct innovative treatment and strategic conveyance facilities to benefit existing water supplies.</td><td>Local to existing and new development areas where innovative solutions can be identified as the most cost-effective alternatives.

IRWM Projects include:
• NCNT_GWM1 - Upper Salinas River Basin Water Conservation/ Conjunctive Use Project</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Implement programs targeted at bringing clean water to sources currently using water supply wells or poor quality surface water diversions.</td><td>Local to communities with public water systems which are surface water, groundwater, or both.

IRWM Projects include:
• NCNT_WSP1- City of Paso Robles Lake Nacimiento Water Treatment Plant Construction Use Project
• NCNT_WSP2 - San Miguel Critical Water System Improvements
• SCNT_WMT1 - Lopez Water Treatment Plant Membrane Rack Addition</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Construct new water facilities to (directly or indirectly) protect existing groundwater supplies from salinity intrusion and/or nitrates introduced by septic systems.</td><td>Regional to higher density areas where salinity concentrations are high or where septic systems are still in use and shallow groundwater wells (or imported supplies) serve as a primary drinking water supply.

IRWM Projects include:
• NCST_GWM1 - 8th Street Upper Aquifer Well and Nitrate Removal Facility
• SCNT_WSP2 - Recycle Water Distribution System Expansion
• SCNT_WSP4 - Pismo Beach Recycled Water Project</td><td></td><td></td><td></td><td></td></tr>
<tr><td colspan="6">Impacts</td></tr>
<tr><td>Impacts from projects which construct treatment and conveyance systems for the benefit and protection of existing water supplies.</td><td>Potential higher economic cost of treatment plant construction, water handling and distribution appurtenances and annual energy and operations costs.</td><td></td><td></td><td></td><td></td></tr>
</table>

9. Develop new groundwater management projects to improve the quality and quantity of groundwater in accordance with a regional stakeholder-based groundwater basin plan.

Project Types	Implementation Areas/IRWM Projects	Most Applicable Sub-Region(s)			
		North Coast	South Coast	North County	Adjacent Regions
Benefit Activities					
Construct alternative water supply projects in areas of critical groundwater overdraft.	Local to areas where groundwater basins are at or below a sustainable or safe yield. IRWM Projects include: • ***NCNT_WSP1- City of Paso Robles Lake Nacimiento Water Treatment***				
Construct treatment projects (i.e., recycled, direct injection, well head treatment, surface water, etc.) to increase water quality from existing sources of supply to benefit groundwater resources.	Local to areas of groundwater contamination either from nitrates or salinity. IRWM Projects include: • ***SCNT_WSP4 - Pismo Beach Recycled Water Project*** • ***SCNT_WMT1 - Lopez Water Treatment Plant Membrane Rack Addition***				
Increase capacity, or implement new technologies, of water treatment systems to increase the capacity of existing alternative water supply projects.	Local to regional surface water supply facilities. IRWM Projects include: • ***NCST_GWM1 - 8th Street Upper Aquifer Well and Nitrate Removal Facility***				
Impacts					
Impacts from projects which improve the quality or increase the capacity of existing sources of supply to the benefit of groundwater resources.	Potential higher economic cost of treatment plant construction, water handling and distribution appurtenances and annual energy and operations costs.				

10. Develop methods of adapting to Climate Change and other vulnerabilities to the region’s water resources.

Project Types	Implementation Areas/IRWM Projects	Most Applicable Sub-Region(s)			
		North Coast	South Coast	North County	Adjacent Regions
Benefits					
Construct projects which provide a collection of possible adaptation strategies which can be measured in relation to documented climate change.	Local to coastal areas where climate change sensitivity is thought to be the highest. IRWM Projects include: • ***NCST_FLD1- Los Padres CCC Center - Stormwater LID Treatment Project***				
Incorporate climate change elements into water supply projects to assist in the identification and implementation of adaptation measures over time.	Local to areas with new water supply infrastructure and a watershed plan which includes climate change adaptation. IRWM Projects include: • ***SCNT_WSP4 - Pismo Beach Recycled Water Project***				
Impacts					
Impacts from projects which assist in the clear scientific documentation of climate change adaptation strategies for all water use sectors.	Potential monitoring and reporting costs.				

11. Attenuate storm flows and improve stormwater quality by increasing on-site retention and detention controls.

Project Types	Implementation Areas/IRWM Projects	Most Applicable Sub-Region(s)			
		North Coast	South Coast	North County	Adjacent Regions
Benefit Activities					
Construct projects which collect stormwater for purposes of flood attenuation affecting peak flow events and groundwater recharge.	Local to areas where significant drainage can be captured. IRWM Projects include: • ***SCNT_FLD2 - Oceano Drainage Improvement Project - Hwy 1 & 13th Street***				
Incorporate flood management elements into Low Impact Development strategies.	Local to areas with new drainage and flood control infrastructure. IRWM Projects include: • ***MLTP_WMT2 - LID Pilot Program***				
Impacts					
Impacts from projects which assist in flood management through on-site retention and detention controls.	Environmental impacts associated with the construction, and operation and maintenance of a detention/retention basin.				

12. Seek outside funding for water and flood control projects in low income areas.

Project Types	Implementation Areas/IRWM Projects	Most Applicable Sub-Region(s)			
		North Coast	South Coast	North County	Adjacent Regions
Benefit Activities					
Assist in implementation of projects which benefit low income areas and have secured outside funding sources.	Local to low income communities. IRWM Projects include: • ***NCNT_WSP2 - San Miguel Critical Water System Improvements*** • ***SCNT_FLD2 - Oceano Drainage Improvement Project - Hwy 1 & 13th Street***				
Assist in financing of low income community projects where financial partnerships between adjoining communities have already been formed and actions already taken.	Local to areas where regional benefits occur through project implementation, with special attention to low income areas. IRWM Projects include: • ***SCNT_WSP4 - Pismo Beach Recycled Water Project***				
Impacts					
All actions which assist in the support and financing of projects benefiting low income areas.	No impacts.				

I.3 Benefits and Impacts to Other Resources

Other resources affected by the IRWM Plan, other than water resources and ecosystem management are included in **Table I-6** to provide the full spectrum of analysis which takes place at the project implementation stage, largely via the CEQA/NEPA process, or in accordance with IRWM standards if pursuing IRWM funding. The following are the areas anticipated to be evaluated for impacts and benefits when projects proceed to the implementation stage.

Table I-6. Other Resource Impacts and Benefits

Resource	Impacts	Benefits
Aesthetics Resources There is an interest in maintaining scenic open vistas, the "small town" feel, and neighborhood qualities.	To the degree that new facilities are required, they can be evaluated at a project level to address community concerns about aesthetic resource effects. In coastal areas, any new facilities, such as desalination plants or wastewater treatment plants, including recycled water, would also require review and permitting by the California Coastal Commission.	Implementation of the IRWM Plan will seek preservation of open space, community separators, and the open scenic vistas currently enjoyed by the region's residents.

Table I-6. Other Resource Impacts and Benefits, Continued

Resource	Impacts	Benefits
Agricultural Resources Includes the protection and enhancement of agricultural activities in the region.	Changes in crop types and, more probably, changes in water use efficiency measures, may be required to maintain the same level of agricultural production. While it is not possible to state which agricultural areas may need to review water use practices, it can be stated that a growing population together with growing environmental water demands my create changes in agricultural water use.	The implementation of the IRWM Plan should create a high level of certainty with regards to water supplies and agricultural land use that will provide land managers with a strong foundation on which to base an agricultural investment strategy, thereby strengthening agriculture in the region.
Air Quality Standards Normally, San Luis Obispo County meets all federal air quality standards; however, during certain days state standards for ozone and fine particulates are not met.	Ozone generation is closely related to population and growth issues. The San Luis Obispo County Clean Air Plan and City and County general plans work together to facilitate "smart growth" principles that strive to limit the necessity for vehicle trips. Key strategies may involve compact urban development and limitations on urban sprawl.	Implementation provides support to existing policies in City and County General Plans, the Clean Air Plan, and various other planning, land use, and resource documents. Because water is such a key component in growth and growth pattern issues, providing water resources in a manner consistent with existing Clean Air and growth management policies regarding those same issues can be viewed as bolstering both efforts.
Biological Resources San Luis Obispo County is extremely diverse in biological resources including, but not limited to, natural ecosystems, estuaries, fisheries, wetlands, and flora and fauna.	Implementation of the IRWM Plan is not expected to result in substantial negative impacts to biological resources within the region. To the degree that new facilities are required, they can be evaluated at a project level to address community and agency concerns about biological resource effects.	IRWM policies designed to protect and enhance agricultural areas, wildlife habitat, environmental water needs, and to protect watersheds may be needed to further benefit biological resources.
Cultural Resources Local communities and Native American Tribal groups are strongly interested in protecting prehistoric sites, while historical societies and related groups are involved with protecting and enhancing historic resources.	Project-level analysis and design will limit biological impacts accompanied by adequate mitigation efforts, if needed.	Implementation in a manner consistent with current General Plan policies focuses growth in or adjacent to existing urban areas. The outcomes may include preservation of open space, community separators, and the pre-historic and historic resources currently existing in these areas.

Table I-6. Other Resource Impacts and Benefits, Continued

Resource	Impacts	Benefits
Environmental Justice Environmental Justice (EJ) is the fair treatment of all people regardless of race, color, nation of origin, or income and meaningful involvement of people within communities.	The potential adverse impacts related to EJ include minorities or low-income areas who may be excluded from the environmental and land use policy setting resulting in a disproportionate impact from one or more environmental hazards.	Plan Implementation includes EJ by providing reliable and sustainable water supplies and flood control. All IRWM projects consider EJ in their planning, outreach, construction, and operations.
Natural Hazards/ Hazardous Materials The San Luis Obispo County region is seismically active, containing both portions of the San Andreas Fault system as well as numerous other active faults. Coastal portions of the County are subject to tsunami hazards, while numerous areas present unstable soils and landslide concerns. Further, the presence of substantial areas of ultra-mafic rock gives rise to concerns about naturally-occurring asbestos, mercury and nickel ore, and other heavy metals.	Consideration of natural hazards occurs with all IRWM projects. As a part of planning and execution, consideration takes place of construction activities and associated environmental hazards, including, but not limited to, the risk of spills of petroleum products and mobilizing airborne contaminants.	Projects adjacent to existing urban areas consider and facilitate avoidance of natural hazard impacts (such as flood zones and high fire hazard areas) and/or manmade impacts (such as rerouting construction or chemical transport vehicles through less populated areas).
Population/Housing San Luis Obispo County region ranks as one of the least affordable in the nation, with the typical home priced well above the income range of the average resident.	While it cannot be said that the costs of providing water-related services (water supply, wastewater disposal, and flood control) are major contributors to housing costs in the region, these elements could exacerbate the situation if not planned for appropriately.	Project implementation considers reducing the region's water related costs, primarily by reducing infrastructure and treatment costs through economies of regionalization and integration of projects/programs.
Public Services/Utilities The San Luis Obispo region has a significant number of water supply, drainage, and sanitary sewage facilities, each with separate master plans.	The IRWM Plan considers the regional master plans for providing water, disposing of wastewater, and dealing with flood hazards in a manner that is consistent with long-term community sustainability.	Project implementation provides integration with public services serving as a portion of the blueprint from which planning of the provision of vital public services occurs. The IRWM Plan, together with City and County smart growth policies built in the General Plans, provides these services in the most efficient manner possible.

Table I-6. Other Resource Impacts and Benefits, Continued

Resource	Impacts	Benefits
Transportation/Circulation Transportation plans are influenced depending on the location and level of water resources management to sustain growth (existing and new), and increased tourism.	To the extent new growth and/or increased tourism occurs as a result of improved water resources, additional strain to existing transportation systems may take place.	Implementation of the IRWM Plan supports existing policies in City and County General Plans, transportation and circulation plans, and various other planning, land use, and resource documents. Because water is such a key component in growth, providing water resources in a manner consistent with existing growth management policies regarding those same issues will bolster both efforts.

Section J.
Plan Performance and Monitoring

Section J. Plan Performance and Monitoring

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Tables

Preface

This section has been written to fully address the state guidelines for substantive plan performance monitoring without constraining the content by budget and resource concerns. The expectation is that the actual implementation of this section requires a level of effort that is commensurate with available funding and resources in any given year. The goal is to continuously improve the monitoring effort over time, working with the RWMG, and outside funding sources, in deciding on what monitoring elements are sustainable and beneficial. Funding and resources for Plan implementation will be evaluated regularly and described in the Plan Performance Reporting Plan described herein.

Funding of the full monitoring program is anticipated to occur incrementally over the 20-year planning period as the IRWM Plan implementation moves forward in time with implementation of projects and programs. This means that the full monitoring effort described herein is not currently in place. The District and RWMG plan to work together towards each year in making sure sufficient resources are budgeted for this important effort.

Section J. Plan Performance and Monitoring

J.1 INTRODUCTION

This Section defines the Plan Performance and Monitoring Strategy. The IRWM Plan legislation and DWR standards require that IRWM Plans include performance measures and a monitoring program to document progress towards meeting IRWM Plan Objectives, and a methodology that the Regional Water Management Group (RWMG) will use to oversee and evaluate implementation of projects. The purpose of the Plan Performance and Monitoring strategy is to document how the IRWM Plan Objectives are to be measured and how the projects will be overseen and evaluated in order to ensure the anticipated IRWM Plan objectives are being met. This section also describes the method to report the San Luis Obispo County Region's progress in meeting the objectives and implementing projects.

Performance in meeting IRWM Plan Objectives is tracked at two levels. First, at the IRWM Program-level, performance measures and monitoring methods are developed and used to evaluate the overall progress in meeting each objective. Second, at the IRWM Project-level, each project that is submitted for inclusion in the IRWM Plan is evaluated to see which objectives it will address (see **Section G – Project Solicitation, Selection and Prioritization** and **Section H – Project Integration and Alternatives**). The project sponsor or sponsoring group will provide information on project progress to the District and once complete, verify that the project meets the identified objectives. The results of the performance and monitoring effort at the two levels will be used by the District, referred to as lead agency to measure and track success, prepare regular progress reports to the RWMG, and present IRWM Plan results to public and stakeholders to maintain and gain further support for the IRWM Plan. These processes are described in more detail below.

The Lead Agency is responsible for:

- IRWM Plan implementation, evaluation, and monitoring the overall performance in meeting the Goals and Objectives
- Reaching out to local stakeholders of each Sub-Region and update the Sub-Region Priorities
- Annually evaluating the performance for implementing projects that contribute to meeting the overall Goals and Objectives
- Tracking all project sponsors, including aggregating reports of specific projects performance, and monitoring

- Budgeting resources to ensure the monitoring efforts are affordable given the limited resources of the project sponsors and lead agency

The annual review by the RWMG is part of the adaptive management strategy that will help guide changes to the IRWM Plan in the future. It will be used to facilitate discussion of "lessons learned" from project-specific monitoring efforts.

J.2 IRWM Program Level Performance Measures and Monitoring Methods

The IRWM Plan Objectives were established by the RWMG (**Section E – Goals and Objectives**). The RWMG broadly defines the objectives so that they are easy to communicate and achieve stakeholder consensus. **Section E – Goals and Objectives** (**Tables E-6 to E-10**) provides a qualitative and/or quantitative performance measure to assess each of the IRWM Plan Objectives. For the purposes of this section, the measures have been combined in one column in the tables below. The monitoring methodology for each objective has been added. Monitoring the objectives will inform the RWMG as to how the needs of the Region are being met and what projects or programs should be supported to address deficiencies.

J.2.1 Expected Level of Effort

The volume of information from each performance measurement is expected to vary significantly based on the nature of the metric. The District's efforts in periodically "checking-in" with specific monitoring agencies, stakeholders, and project sponsors and coordinating the expectations in the frequency, format, and interpretation can be considerable. The District will plan to develop and provide a comprehensive database design to capture and report qualitative and quantitative data. This effort is expected to be challenging both in terms of technology, staff training, and long-term funding. With an approximate 5-year monitoring period, maintenance to keep the database current, coordination in keeping the participants engaged and cooperative, and actions in maintaining vigilance over the quality of the data is considered to be a daily task undertaken by the District with a level of effort requiring at least one half of a full-time equivalent Grade 4 or higher Engineering Technician or Associate Civil Engineer.

The District's level of effort in the 5-year evaluation period of the monitoring data is also dependent on the level of interpretation made by the monitoring agencies. In cases where the District cannot make a determination or accurate assessment of the data, the monitoring agency, or a consultant, may be asked to assist in this effort. Costs may be allocated amongst benefiting parties depending on the nature of the data. If financial resources are not available, a qualitative discussion of the data is optional.

Table J-1. Water Supply Goal

OBJECTIVES	PERFORMANCE MEASURES	MONITORING METHODS
1. Maximize the accessibility to existing and supplemental water supplies in the Region through the utilization of existing infrastructure and development of new infrastructure and agreements.	Increasing amounts of total available surface water supply stored for subsequent years or provided to customers as an offset to groundwater pumping, creating in-lieu recharge.	The District collects water use and availability information on an annual basis from all water purveyors (see **Section K – Data Management**). Agricultural and rural water demand will be updated every 5 years as a part of the IRWM Plan's 5-year update cycle. The water use information can be compared to water availability information to track how much water was available but not put to use or otherwise stored in each 5-year period.
2. Provide adequate and sustainable water supplies and infrastructure to address water deficiencies in all communities, including disadvantaged communities and designated low income census blocks.	Decreasing number of communities with deficiencies.	The County collects system deficiency information biennially for its Resource Management System (see **Section N – Relation to Local Water and Land Use Planning**). The number of communities with deficiencies will be tracked via this program in order to support appropriate corrective projects.
3. Support sustainable potable water supply programs for rural residents.	Decreasing number of comments or complaints from the rural community regarding loss, or potential loss, of quality or quantity of their water supplies.	The District will coordinate with other County departments to maintain documentation of identified issues, including dry wells, to support appropriate responses.
4. Support sustainable water quality and supply programs for agriculture.	Decreasing number of comments or complaints from the agricultural community regarding loss, or potential loss, of quality or quantity of their water supplies.	The District will coordinate with other County departments to maintain documentation of identified issues, including dry wells, to support appropriate responses.
5. Support projects aimed to improve existing public water systems to meet state or federal drinking water quality standards.	Decreasing number of community water systems that do not currently meet state or federal drinking water quality standards.	The District will coordinate with the Public Health Agency and state agencies to maintain documentation of systems that do not currently meet state or federal drinking water quality standards so that the RWMG will know which communities need support .

Table J-1. Water Supply Goal, Continued

OBJECTIVES	PERFORMANCE MEASURES	MONITORING METHODS
6. Develop and implement water management plans in communities of all sizes and water uses consistent with CWC requirements and accounting for environmental water needs.	Number of communities without water management plans.	The District will inventory the number of communities without water management plans as a part of the IRWM Plan's 5-year update cycle.
7. Develop and implement conservation programs, measures and practices to increase water use efficiency in all water use sectors in order to maximize water supplies.	Increasing number of acre-feet per year of urban, agriculture, and rural water saved through formal water use efficiency projects and programs.	The District collects water use and availability information on an annual basis from all water purveyors (see Data Management Section). Agricultural and rural water demand will be updated every 5 years as a part of the IRWM Plan's 5 year update cycle. Every 5 years, the extent to which all water use sectors have developed and implemented conservation programs, will be assessed.
8. Plan for potential regional impacts of greenhouse gas emissions, climate change, and droughts on water quantity and quality.	Existence of County-wide planning studies that identify greenhouse gas emission sources, regional vulnerabilities, and forecast the needed changes in water supplies and water supply infrastructure as a result of climate change.	The District will inventory climate change planning efforts as a part of the IRWM Plan's 5-year update cycle.
9. Diversify water supply sources, including the use of recycled and desalinized water.	Decreasing number of communities without a secondary water supply source.	The District will inventory the number of communities without a secondary water supply as a part of the IRWM Plan's 5-year update cycle.
10. Support watershed enhancement projects and programs to increase available water supplies to the Region.	Decreasing number of comments or complaints from the agricultural community regarding loss, or potential loss, of quality or quantity of their water supplies.	The County collects groundwater supply deficiency information biennially for its Resource Management System (see **Section N – Relation to Local Water and Land Use Planning**). The number of basins with deficiencies will be tracked via this program in order to support appropriate corrective watershed projects.

Table J-2. Ecosystem and Watershed (Ecosystem) Goal

OBJECTIVES	PERFORMANCE MEASURES	MONITORING METHODS
1. Develop watershed plans or other methods to determine the existing conditions and critical issues of each watershed or water planning area.	Decreasing number of watersheds without plans or similar methods developed to understand the needs in watershed or water planning area.	The District will inventory the number of watersheds without plans or similar methods developed to understand the needs in watershed or water planning area as a part of the IRWM Plan's 5-year update cycle.
2. Preserve, enhance, restore and conserve riparian corridors and natural creek and river systems through wetland restoration, natural floodplains, riparian buffers, conservation easements, and other mechanisms to protect water supplies.	Increasing number of acres preserved for ecosystem restoration and/or preservation. Increasing number of acres of healthy or improved natural recharge areas associated with riparian corridors.	The District will coordinate with local agencies such as the County Planning Department, Land Conservancy, and Resource Conservation districts to track preservation acreage and mitigation activities that improve recharge areas along riparian corridors.
3. Increase watershed management activities (e.g., education, BMPs, monitoring, etc.) to reduce or prevent point and non-point source discharges of contaminants to surface water and groundwater resources to reduce the potential for developing additional total maximum daily load (TMDL) values.	Increasing number of programs with the intent to protect surface water and groundwater recharge areas and improve surface water and/or groundwater quality. Increasing number of creeks that have a water quality measuring program in place.	The District will coordinate with local agencies such as the Planning Department, Land Conservancy, and Resource Conservation districts to track mitigation activities that improve recharge areas along riparian corridors. The District will inventory the number of creeks that have a water quality measuring program in place as a part of the IRWM Plan's 5-year update cycle.
4. Develop public involvement and stewardship programs for public lands and ecosystems.	Increasing public involvement and stewardship programs that cover all public lands and ecosystems.	The District will inventory the extent to which public involvement and stewardship programs cover all public lands and ecosystems as a part of the IRWM Plan's 5-year update cycle.

Table J-2. Ecosystem and Watershed (Ecosystem) Goal, Continued

OBJECTIVES	PERFORMANCE MEASURES	MONITORING METHODS
5. Protect and recover threatened, endangered and sensitive species through habitat restoration, stream flow management, and fish passage restoration.	Increasing number of management programs and projects with the primary benefit to improve threatened, endangered, and sensitive species corridors.	The District will coordinate with local agencies such as the County Planning Department, Land Conservancy, and Resource Conservation districts to track miles of additional steam or land opened to species habitat or migration; miles of additional stream or watershed corridor restored and the decrease in threatened, endangered, and/or sensitive species populations.
6. Reduce impacts of invasive species by removal and/or other management/control methods to promote healthy ecosystems.	Increasing number of studies and management and/or prevention programs and projects established to reduce invasive species or re-establish native species populations. Decreasing number of invasive species problems.	The District will coordinate with local agencies such as the County Agricultural Commissioner's Office and Resource Conservation districts to track the number of studies and management and/or prevention programs and projects established to reduce invasive species or re-establish native species populations and the number of invasive species problems.
7. Increase monitoring and promote research programs to obtain a greater understanding of the long-term effects of climate change and greenhouse gas emissions on the Region's watersheds and ecosystems.	Existence of monitoring and research programs that identify the long-term effects of climate change and greenhouse gas emissions on the Region's watersheds and ecosystems.	The District will inventory climate change monitoring efforts and the extent to which the long-term effects are understood for the Region as a part of the IRWM Plan's 5-year update cycle.

Table J-3. Groundwater Monitoring and Management (Groundwater) Goal

OBJECTIVES	PERFORMANCE MEASURES	MONITORING METHODS
1. Develop groundwater management plans, including salt and nutrient management plans, or other methods to help understand groundwater issues and conditions.	Increasing percentage of the Region's groundwater basins that have adopted Groundwater Management Plans and governance structures (only in basins where required).	The District will inventory the number of groundwater basins that have adopted Groundwater Management Plans and governance structures as a part of the IRWM Plan's 5-year update cycle.
2. Improve groundwater management with direct support of locally driven processes, including potential formation of groundwater management structures/ organizations for the purpose of implementing water supply and conservation plans, programs, and projects.	Increasing percentage of the Region's groundwater basins that have groundwater management structures for the purpose of implementing plans, programs, and projects.	The District will inventory the number of groundwater basins that have groundwater management structures for the purpose of implementing plans, programs, and projects as a part of the IRWM Plan's 5-year update cycle.
3. Develop and implement projects and programs to further basin management objectives of local basin Groundwater Management Plans or other objectives established under other methods used to define groundwater issues and conditions.	Increasing number of projects consistent with adopted Groundwater Management Plan Basin Management Objectives (BMOs) for the improvement of the health of a groundwater basin.	The District will track the number of projects and programs implemented consistent with adopted Groundwater Management Plan BMOs.
4. Work with local groundwater governance bodies in the development of the California Statewide Groundwater Elevation Monitoring (CASGEM) Program for groundwater basins in the Region where plausible.	Increasing number of basins meeting CASGEM standards.	The District will inventory the number of basins meeting CASGEM standards as a part of the IRWM Plan's 5-year update cycle.

Table J-3. Groundwater Monitoring and Management (Groundwater) Goal, Continued

OBJECTIVES	PERFORMANCE MEASURES	MONITORING METHODS
5. Evaluate and implement groundwater recharge and/or banking programs or efforts to increase the conjunctive use opportunities within the Region, where technically feasible and cost-effective.	Increasing percentage of acreage or groundwater basins within the Region that have been studied or looked at for viability of groundwater banking. Increasing number of groundwater banking projects implemented where technically feasible and cost-effective.	The District will inventory the number of basins that have been evaluated for banking feasibility as a part of the IRWM Plan's 5-year update cycle. The District will inventory the number of basins that have implemented banking projects where technically feasible and cost-effective as a part of the IRWM Plan's 5-year update cycle.
6. Protect and improve groundwater quality from point and non-point source pollution, including geothermal contamination and seawater intrusion.	Increasing number of projects/programs implemented for the improvement and protection of groundwater basin water quality.	The District will track the projects/programs implemented for the improvement and protection of groundwater basin water quality.

Table J-4. Flood Management Goal

OBJECTIVES	PERFORMANCE MEASURES	MONITORING METHODS
1. Understand flood management needs per watershed or water planning area.	Decreasing number of watersheds without plans regarding flood management needs.	The District will inventory the number of watersheds without plans regarding flood management needs as a part of the IRWM Plan's 5-year update cycle.
2. Promote the implementation of Low Impact Development projects and practices to reduce storm runoff to protect infrastructure and property from flood damage.	Increasing number of development projects where specific development conditions have been applied for the incorporation of storm water runoff reduction elements.	The District will coordinate with local agencies such as the County Planning Department, individual communities, Resource Conservation districts and the resource agencies to track the number of development projects where specific development conditions have been applied for the incorporation of storm water runoff reduction elements.
3. Integrate storm water controls, drainage and flood control structures into development projects and/or floodplain restoration to enhance natural groundwater recharge.	Increasing number of projects where specific development conditions apply directly to actions benefitting groundwater recharge.	The District will coordinate with local agencies such as the County Planning Department, individual communities, Resource Conservation districts and the resource agencies to track the number of development projects where specific development conditions have been applied for the purpose of groundwater recharge.
4. Improve flood control infrastructure and operations and flood management strategies to reduce frequency of downstream flooding, improve water quality, and reduce upstream erosion and downstream sediment accumulation.	Increasing number of improvements to flood control infrastructure and operations and flood management strategies for the purposes of reducing frequency of downstream flooding, improving water quality, and reducing upstream erosion and downstream sediment accumulation in watersheds where those issues are identified.	The District will coordinate with local agencies such as the County Planning Department, individual communities, Resource Conservation districts and the resource agencies to track the number of applicable flood management improvements.

Table J-4. Flood Management Goal, Continued

OBJECTIVES	PERFORMANCE MEASURES	MONITORING METHODS
5. Develop and implement flood management and water storage projects that provide multiple benefits such as public safety, water supply, habitat protection, recreation, agriculture, and economic development.	Increasing number of flood management projects where multiple human and habitat-related benefits can be described.	The District will coordinate with local agencies such as the County Planning Department, individual communities, Resource Conservation districts and the resource agencies to track the number of flood management projects that address both human and habitat needs.
6. Develop and implement flood control projects that ensure health and safety and simultaneously protect, restore, and enhance the functions of rivers, creeks, streams, and their floodplains.	Increasing number of miles of waterways where deliberate measures have taken place to improve riparian floodplains. Increasing number of acres of floodplain acquired.	The District will coordinate with local agencies such as the County Planning Department, individual communities, Resource Conservation districts and the resource agencies to track the applicable floodplain projects in terms of waterway mileage and acres of floodplain.
7. Support the adequate protection of disadvantaged communities from flooding without unfairly burdening communities, neighborhoods, or individuals.	Demonstrated efforts to work with flood agencies to bring the flood management needs of DACs to the forefront for consideration of flood management actions.	The District will coordinate with local agencies such as the County Planning Department, individual communities, Resource Conservation districts and the resource agencies to track the number of flood management efforts for DACs.

Table J-5. Water Management and Communications (Water Management) Goal

OBJECTIVES	PERFORMANCE MEASURES	MONITORING METHODS
1. Provide consistent, consolidated and informative public outreach on the coordination of IRWM implementation projects and water resources programs.	Implementation of the reporting plan contained within the IRWM Plan.	The District will track whether the reporting plan is followed.
2. Seek funding for IRWM implementation without unfairly burdening communities, neighborhoods or individuals.	Continuous effort to pursue grants and loans without unfairly burdening communities, neighborhoods or individuals.	The District will track efforts to pursue grants and loans for IRWM implementation.
3. Actively support and promote local control in addressing water resource issues through establishing stakeholder groups, working with local groundwater governance bodies, and partnering with cities, community services districts and other water purveyors when possible.	Development of a communication network for the purpose of reaching out in the most cost effective and timely manner. Total number of communication events making use of documented structured network and the estimated total number of people informed.	The District will coordinate with other local entities to track the occurrence of water management efforts in the Region that are supportive of local control and involve coordination amongst multiple entities, and collect information on the number of people informed and by what method.
4. Consider property owner rights, existing water supplies and cultural values in the planning and implementation of IRWM projects and programs.	Demonstrated efforts to work with planning and water agencies to protect existing water rights and private lands of those possible affected by their actions.	The District will track when property owner rights and cultural values are addressed during IRWM efforts in the Region and by what method.
5. Support efforts by the state, local agencies, water purveyors, and local groundwater governance bodies to align efforts to protect and manage water resources.	Demonstrated water resource management and protection efforts that integrate the state's, local governments', and water purveyors' policies.	The District will coordinate with local entities to track water resource management and protection efforts that integrate the state's, local governments', and water purveyors' policies.

Table J-5. Water Management and Communications (Water Management) Goal, Continued

OBJECTIVES	PERFORMANCE MEASURES	MONITORING METHODS
6. Seek opportunities for water management collaboration between urban, rural, and agricultural interests.	Demonstrated efforts to work with urban, rural and agricultural interest groups to bring them together on water issues. Number of meetings convened specifically to resolve issues and conflicts regarding urban, rural and agricultural differences in water supply.	The District will coordinate with other local entities to track efforts in the Region to resolve issues and conflicts regarding urban, rural, and agricultural differences in water supply, and collect information on the number of meetings.
7. Provide support and promote education for the participation of disadvantaged communities in the development, implementation, monitoring, and long-term maintenance of water resource management projects.	Demonstrated efforts to reach out to DACs and provide assistance and services through local- and state-funded programs for purposes of improving their water resource management projects. Number of grant/loan applications submitted and projects constructed as a result of this effort.	The District will coordinate with other local entities to track efforts in the Region to support water resource management efforts for DACs, and collect information on the number of grant applications and projects constructed.
8. Promote public education programs for groundwater management, watershed protection, conservation, flood management, and water quality.	Existence of public education programs for groundwater management, watershed protection, conservation, flood management, and water quality and efforts to promote them.	The District will coordinate with other local entities to track the existence of public education programs in the Region for groundwater management, watershed protection, conservation, flood management, and water quality and efforts to promote them.

J.3 PROJECT-LEVEL PERFORMANCE AND MONITORING PLAN

The projects included and/or implemented through the IRWM Plan contribute to meeting the overall Regional IRWM Plan's Goals and Objectives. The scope of projects and programs included in the IRWM Plan are evaluated to determine which Plan Objectives will be addressed by implementation of the project or program (see **Section G – Project Solicitation, Selection and Prioritization** and **Section H – Project Integration and Alternatives**). As a part of the IRWM Plan's 5-year update schedule, or when the project list is updated, project proponents/sponsors will provide an updated form to reflect progress and any change in scope in order to re-evaluate the objectives met by the project or program.

Further, each of the projects' sponsors will develop detailed Project Performance and Monitoring plans if IRWM grant funds are received. Information generated from each of the Project Performance and Monitoring plans will be collected by the District for updating the IRWM Plan or the project list on a time schedule as outlined in the grant agreement. The projects and their physical benefits are to be developed during the planning and grant writing phase and are intended to set the stage for tracking a project's contribution to meeting the IRWM Plan Objectives. The performance measures and metrics provide a basis for further developing a detailed project performance database which will identify:

- Project goals
- Desired outcomes
- Output indicators – measures to effectively track output
- Outcome indicators – measures to evaluate change that is a direct result of the work
- Measurement tools and methods
- Measurable targets that are feasible to meet during the life of the proposal
- Monitoring measurements and interpretation of change in output indicators over time

Output indicators measure on-the-ground implementation of management actions, such as acres of habitat restored, miles of levees strengthened, etc. Output indicators also describe the level of activity that will be provided over a period of time, including a description of the characteristics (e.g., timeliness) established as standards for the activity. Outputs refer to the internal activities of a program – the products and services delivered.

The outcome measures should be tied to the goals and objectives of the program. These could also be specific numerical targets. These usually compare systems with and without (baseline) project conditions for large systems variables. The relationship of the projects' monitoring to existing or proposed regional[1] programs and the ability to integrate monitoring efforts should also be evaluated.

Prior to a project's implementation, each project will provide an explanation of the following:

- Describe what is being monitored (e.g., water quality, water depth, flood frequency, and effects the project may have on habitat or particular species, before and after construction)
- Measures to remedy or react to problems encountered during monitoring
- Location and frequency of monitoring, also documenting any quality assurance projects plan (QAPP)
- Monitoring protocols/methodologies, including who will perform the monitoring
- Frequency of interpreting, reporting, and transmitting monitoring data for inclusion in overall IRWM Plan Performance and Monitoring

In addition, project sponsors will provide monitoring data to the state of California, in forms and formats needed to be included in the state's databases, where this is a condition of any grant funding. The RWMG members are already participating in a number of regional monitoring efforts. One of the potential projects is to develop further regional monitoring for purposes of ensuring and demonstrating compliance with the TMDL requirements. Project sponsors will ensure the monitoring schedule is maintained and that adequate resources (funding) are available in maintenance and operations budgets in order to maintain monitoring of the project throughout the scheduled monitoring timeframe.

J.4 Evaluating and Reporting Plan Performance and Monitoring Results

As custodian (or lead agency) of the IRWM Plan, the District (staff) has the responsibility of working with the RWMG, local and Sub-Region stakeholders, and the monitoring agencies, and tracking each of the performance measures in the form of their respective metrics. **Section K – Data Management** includes the description of the numerical data being collected throughout the IRWM region to improve the understanding of listed Regional Interest Classifications (see Table K-1). A different type of data collection effort takes place for measurement of the IRWM Plan's performance.

Performance of the IRWM Plan is tied directly to implementation of the projects and programs identified as being the highest ranking in terms of meeting the stated Goals and Objectives. To accomplish the assembling of data and making the correlation of benefit to the IRWM program,

[1] The term "regional' used in this context refers to monitoring and reporting programs taking place over multiple watersheds, or across defined planning areas.

a separate data collection program is required with a different set of database requirements and District, RWMG and stakeholder involvement in the data collection and reporting process. In the process of meeting with and capturing the Plan's performance, local Sub-Region Priorities identified in **Section E – IRWM Goals and Objectives** will be evaluated, and, if necessary, updated to reflect current-day priorities. The means of monitoring, evaluating and reporting IRWM Plan performance at the Programmatic- and Project-level on a 5-year cycle is described below.

J.4.1 Programmatic-Level Monitoring and Reporting

The information collected in accordance with the monitoring strategies for each objective will be evaluated to determine whether there is progress in meeting the stated objectives. A color coding system will be applied to the "Performance Measures" column of **Table J-1** to **Table J-5**, relabeled as "Performance Category":

- Color 1: Objective has been met (e.g., if the metric is simply "does it exist?" and it does, this monitoring element is satisfied and no longer requires additional monitoring)
- Color 2: Objective is being met (e.g., if projects have been implemented and are resulting in measurable increases or decreases in accordance with the stated metric and objective, monitoring and reporting is successful, and continues until the objective has been met (see Color 1))
- Color 3: The Objective was not addressed in any way in the last 5 years (e.g., if projects are planned and included in the plan, but not implemented, the reporting should include what factors are preventing the implementation from occurring.)
- Color 4: The Objective has never been addressed in any way (e.g., if no projects or programs are included in the IRWM Plan to meet the Objective, the reporting should state a methodology to begin exploring possible solutions.)

The "Monitoring Method" column will be used to describe the things that happened to result in the chosen color and renamed as "Methods of Achieving Objective." **Table J-6** provides an illustrative "fictitious" example showing this methodology for programmatic reporting. The use of Sub-Region reporting is used when appropriate. One objective may result in three colors, one for each Sub-Region. Sub-Region Objectives (see Table E-11) are used to describe the local objective and provide context to the methods being used (e.g., North County methods focus on groundwater benefits and increased use of supplemental water supplies) to achieve the overarching IRWM Plan Objectives.

Table J-6. Example of Programmatic Monitoring and Reporting Table

OBJECTIVES	PERFORMANCE CATEGORY	METHOD(S) OF ACHIEVING OBJECTIVE
1. Maximize the accessibility to existing and supplemental water supplies in the Region through the utilization of existing infrastructure and development of new infrastructure and agreements.	North Coast	North Coast Sub-Region has increased both recycled water and desalinated water supplies through system upgrades and interties.
	North County	North County Sub-Region is maximizing the Nacimiento Pipeline by operating a new surface water treatment plant to meet urban demands, and providing additional surface water to agriculture offsetting groundwater use.
	South County	South County Sub-Region constructed a recycled water treatment plant to reduce salinity and nitrates in the groundwater.
2. Provide adequate and sustainable water supplies and infrastructure to address water deficiencies in all communities, including disadvantaged communities and designated low income census blocks.		5 of the 5 identified water systems throughout the IRWM Region with water supply deficiencies affecting peak demand and annual average demand deliveries have been corrected through local and state grant funded projects and programs.
3. Support sustainable potable water supply programs for rural residents.		No projects are taking place to directly benefit the objective. Agricultural Education programs can be expanded to include rural residents to improve quantity and quality of groundwater
4. Support sustainable water quality and supply programs for agriculture.		North County Sub-Region is seeing groundwater elevations rising in the most severely impacted areas through water use efficiency and increased use of surface water through improved conveyance programs.
5. Support projects aimed to improve existing public water systems to meet state or federal drinking water quality standards.		10 of the identified water systems with water quality deficiencies have not been addressed in the last 5 years. Project sponsors are being solicited for projects to include in the next state grant cycle.

J.4.2 Project-Level Monitoring and Reporting

J.4.2.1 IRWM Past, Present, and Future Projects

By receiving Proposition 50 and Proposition 84 Implementation Grants between 2008 and 2012, the San Luis Obispo project sponsors and the RWMG have a responsibility to monitor project-specific performance and measurable physical benefits, if available; otherwise, qualitative benefits require detailed descriptions. Projects from the 2007 IRWM Plan and the 2014 IRWM Plan Update are provided below with a brief description of the current status and a summary statement with a brief description (if available) and the methodology of objective benefits. This list is also included in **Appendix G-1 – Project Selection Brochure**.

Table J-7. 2007 and 2014 IRWM Project List

Project Category and Title	2014 Project Status	Project Summary Statement
ECOSYSTEM RESTORATION		
Waterways Vegetation Management Program	Ongoing	Provides riparian vegetation, bank stabilization, and stream shading benefiting ecosystem restoration, water quality, flood protection, and aesthetics
Mined Lands Remediation Program	Ongoing	Supports Superfund National Priority Listing for and remediation of inactive/abandoned mining lands that adversely impact public health, water quality, and wildlife habitat.
Invasive Species Program	Ongoing	Provides opportunities for ecosystem preservation, public stewardship, natural resource conservation and integration into drainage improvement projects through utilization of native, drought tolerant plants and public outreach
ENVIRONMENTAL / HABITAT PROTECTION AND IMPROVEMENT		
Steelhead 4(d) Program	Ongoing	Develops and implements a Steelhead 4(d) program consistent with NMFS standards to improve water quality and fish and wildlife habitat.
Arroyo Grande Watershed HCP	Full Project List	Optimizes Lopez Lake Reservoir operations to balance retention of water for supply, release of water for ecosystem preservation, and riparian use.
Morro Bay Estuary Comprehensive Conservation and Management Plan	Completed (2013)	Implementation of these elements of the CCMP will protect, restore, and enhance the diverse habitats found in the estuary watershed and bay; promotes public awareness and involvement in estuarine management issues.
Attiyeh Ranch Conservation Easement Project	2014 IRWM Project	Acquire an 8,000+ acre conservation easement including 6 miles of the Nacimiento River and tributaries upstream of the lake; eliminates the development, subdivision potential, and land use intensification parcels.
WATER SUPPLY RELIABILITY		
Nacimiento Water Project	Completed (2010)	45-mile long pipeline, 3 storage tanks, pump stations, and appurtenant facilities to convey raw water from Lake Nacimiento south to the communities of Paso Robles, Templeton, Atascadero, San Luis Obispo and Cayucos.
San Miguel CSD Water System Improvements	2014 IRWM Project	Provides a new welded steel water storage tank, new/ upgraded water transmission main and distribution mains to improve fire flow and service pressures and deliver drinking water meeting water quality standards
San Simeon CSD Water System Improvements	Full Project List	Replaces distribution piping and upsizes existing reservoir to provide adequate service pressures and fire protection under future conditions while increasing drinking water reliability and meeting water quality standards.
Lopez Water Treatment Plant Upgrade	Completed (2008)	Provides potable water supplies from the Lopez Lake reservoir to the communities of Arroyo Grande, Pismo Beach, Grover Beach, Oceano and the Avila vicinity via the Lopez Water Treatment Plant
Templeton CSD Water System Improvements	2014 IRWM Project	Installs and equips a new water supply well that draws from the Salinas River sub-flow and transmission piping under the railroad right of way for conveyance of water to the community distribution system
Cambria CSD Water System Improvements	Full Project List	Modifies their well system to mitigate contamination in their groundwater supply and meet drinking water standards, and upgrading their piping and storage facilities improve the reliability of their water supply to customers
County Service Area 23 (CSA 23) State Water Project Tie-In (Santa Margarita)	Full Project List	Construction of a State Water Pipeline (SWP) turnout and the approximately 65 feet of pipeline to the community of Santa Margarita. Provide a physical connection to CSA 23 for use during a drought or other water emergency.
Interlake Tunnel Project	Full Project List	Build tunnel between Lakes Nacimiento and San Antonio to allow the capture of

Table J-7. 2007 and 2014 IRWM Project List, Continued

Project Category and Title	2014 Project Status	Project Summary Statement
		watershed runoff (avoids release of thousands of AF of water released for flood control). Provides strategic release for downstream drinking/ groundwater recharge, seawater intrusion abatement, etc.
Design for the Installation of an Inflatable Rubber Dam Spillway Gate at Lopez Dam	Full Project List	Design and construction of an inflatable rubber dam spillway gate or a permanent spillway raise at the Lopez dam to raise the height of the dam, expand storage capacity and increase the safe yield of the Lopez Reservoir.
Heritage Ranch Emergency/Drought Water Supply Project	Removed; Replaced by 2014 submittal	Provide an emergency turnout from the Nacimiento pipeline which allows HRCSD to receive raw lake water for its water treatment plant, during extreme drought conditions when the Nacimiento Lake level is at dead pool elevation.
FLOOD MANAGEMENT		
Flood Control Zone 1/1A Waterway Management Program	Ongoing	Partially funded by Prop 84 Implementation grant. Increase the capacity of the leveed lower three miles of Arroyo Grande Creek while enhancing water quality and sensitive species habitat. Actions include raising levees, managing in-channel vegetation and reducing/managing sediment deposition.
Flood Control Zone 9 Waterway Management Program	Complete (2003)	Conduct an evaluation of the Edna Valley Groundwater Basin in order to establish its condition in terms of safe yield, hydrogeologic characteristics, overlying use, water quality and projected future use.
Federal Flood Insurance Program Compliance Study	Full Project List	Conduct a study to review how the region conforms to the Federal National Flood Insurance Program – determine the root cause of flooding problems, develop requirements for adequate creek setbacks, etc.
Flood Management Plan	Completed (2008)	Developed as a guide to implementing flood control projects; identify significant constraints affecting the ability to implement flood control projects and strategies to address the challenges.
Oceano Drainage Improvement Project – Hwy 1 & 13th Street	2014 IRWM Project	Construction of storm drain pipe, to convey drainage from the intersection of Highway 1 and 13th Street, and an outfall pond (sedimentation basin). Collects storm flows and allow debris/sediments settlement.
GROUNDWATER MANAGEMENT		
Nipomo CSD Salt Management Program	Full Project List	SNMP including strategies for managing water supplies to reduce salt input and identifies sources of salt in their wastewater collection system while implementing a pre-treatment program for non-residential dischargers.
Los Osos Water System Improvements	2014 IRWM Project	Implements the following water system improvement projects, as identified in their Groundwater Management Plan and Water System Master Plan, to manage their groundwater supply and increase supply reliability and quality
Chorro and Morro Groundwater Basin Management Plans	Ongoing	Develops a resource and groundwater management plan for the Chorro and Morro Groundwater basins, including development of strategies to improve the watershed flow quantity and quality, and stream flows and underflows.
Edna Valley Groundwater Basin Study	Full Project List	Conducts an evaluation of the Edna Valley Groundwater Basin to establish its condition in terms of safe yield, hydrogeologic characteristics, overlying use, water quality and projected future use.
Groundwater Management Ordinance Study	Completed (2014)	Evaluates the feasibility of implementing a groundwater management ordinance by exploring terms of existing ordinances in other regions, local adjudication requirements and groundwater management plans or efforts, etc.
Development of a Groundwater Model and Activities within Santa Maria Valley Groundwater Basin	Phased; Characterization Study Underway (2013/14)	Study underway to conduct critical groundwater basin characterization activities in the Santa Maria Groundwater Basin (SMGB) to support development of a groundwater model and SNMP.
Paso Robles Groundwater	Completed (2013/14)	The District, in collaboration with the Paso Robles Groundwater Basin Steering

Table J-7. 2007 and 2014 IRWM Project List, Continued

Project Category and Title	2014 Project Status	Project Summary Statement
Basin Model Update and Analysis of Potential Solutions		Committee, will lead the effort to update the Paso Robles Groundwater Basin model (based on 1981 – 1997 data) to include data through 2011.
Paso Robles Groundwater Basin Salt and Nutrient Management Plan	Completed (2013/14)	Develop a complete SNMP for the Paso Robles Groundwater Basin to serve as model for the SLO Region and develop salt and nutrient management planning recommendations based on lessons learned and feedback from the RWQCB.
Development of Basic Salt & Nutrient Management Plans	Phased; Prioritization of basins study underway (2013/14)	Organized management of basins varies widely and there is a general lack of awareness of the RWQCB Recycled Water Policy (RWP). Identify the basin study areas where SNMPs are needed in the region, relevant stakeholders, etc
Upgrade of Water and Wastewater Systems, Operations, and Maintenance	Removed, Incorporated in other planning studies	Community-specific. Planning/ upgrade of systems, operations, & maintenance to decrease pumping of groundwater and establish a sustainable water system/portfolio. Elements covered by Groundwater Management Plan efforts.
Pilot Project Impact of Santa Margarita Lake Discharges on Groundwater Basin	Removed; Incorporated into other Project List submittals	DESCRIPTION NOT AVAILABLE
RECREATION AND PUBLIC ACCESS		
Morro Bay Harborwalk	Completed (2010)	Constructs multimodal transportation improvements including enhancement and rehabilitation of 5 acres of coastal dunes, non-native species abatement, native restoration and storm water management.
STORMWATER CAPTURE AND MANAGEMENT		
Cambria Flood Control Project	Completed (2011)	Constructs a pressure storm drain system and pump station with an overflow bypass structure to alleviate flooding in Cambria, includes Santa Rosa Creek ecosystem enhancement and improved stormwater quality.
San Miguel Flood Control Project	Full Project List	Two phase implementation (by downstream and upstream) to collect and convey Salinas River 5unoff, includes a system of curbs, gutters, drop-inlets, constructed ditches, and underground storm drainage pipes.
Los Osos Community Stormwater Master Plan	Ongoing	Community-specific; anticipated to be done in conjunction with LOWWTP; there may be elements covered by consolidated watershed planning component.
WATER CONSERVATION		
Conservation and Open Space Element	Completed (2010)	Develop a comprehensive conservation element covering agricultural resources, air quality, biological resources, cultural resources, energy resources, mineral resources, open space resources, soils, visual resources and water resources.
Water Conservation and Erosion Control Education for SLO Co Vineyard Owners	Removed; Incorporated into other Project List submittals	DESCRIPTION NOT AVAILABLE; considered a project/design application. Suggest holding for implementation project solicitation process.
WATER QUALITY PROTECTION AND IMPROVEMENT		
Atascadero Wastewater System Upgrade	Completed (YEAR)	Upgrades to their wastewater treatment plant to ensure compliance with waste discharge requirements and construct new gravity pipeline to to improve water quality of water discharged back into Atascadero sub-basin
Avila Beach Wastewater System Upgrade	Unknown	Updates their wastewater treatment plant to ensure compliance with waste discharge requirements; improves the quality of the water before it is discharged into San Luis Creek and the ocean

Table J-7. 2007 and 2014 IRWM Project List, Continued

Project Category and Title	2014 Project Status	Project Summary Statement
California Men's Colony Wastewater System Upgrade	Completed (YEAR)	Upgrades the wastewater treatment plant to comply with waste discharge requirements and correct inflow/ infiltration problems that lead to treatment plant overflows. Enhance creek ecosystem and protect groundwater quality.
San Miguelito Wastewater System Upgrade	Unknown	Upgrades will potentially accommodate other local entities. Ensure compliance with waste discharge requirements. Improve effluent quality thereby improving source water quality and supporting the implementation of TMDLs.
Pismo Beach Wastewater System Upgrade	Completed (2006)	Upgrades wastewater treatment plant to comply with waste discharge requirements and correct capacity problems that lead to treatment plant overflows. Protect environment, support TMDL and stormwater programs, etc
Copper Piping Impact Study	Removed	Reviews impacts of copper piping in water distribution systems to implement policy to prevent negative impacts on drinking water supply and impacts on source water and the environment resulting from poor effluent quality.
Landfill Regulation Compliance Study	Removed	Reviews impacts of landfill operations on source water quality and ecosystems by documenting how they address TMDL and stormwater programs in complying with waste discharge requirements.
WATER RECYCLING		
San Simeon Wastewater Treatment Facility Upgrade	Completed (YEAR)	Upgrades existing wastewater treatment plant to from secondary to tertiary treatment (approved SEP) and will improve effluent quality. It will formally permit riprap armament and may include installation of seawall.
Morro Bay Wastewater Treatment Facility Upgrade	Completed (YEAR)	Upgrades to tertiary treatment; will provide increased treatment efficiency along with rehabilitation and modernization of the existing plant infrastructure as recommended by the RWQCB
Southland Wastewater Treatment Facility Upgrade	Completed (YEAR)	Retrofits an existing aerated lagoon wastewater treatment facility with wave oxidation technology to reduce nitrate discharge, installing headworks to screen out grit, and adds tertiary treatment to allow for recycled water use.
San Luis Obispo Reclamation Facility Upgrade	Completed (YEAR); Expanded distribution included as 2014 IRWM Project	Upgrading and adding various processes to increase capacity and to improve reliability and operational efficiency of the City's reclamation facility. Phase 2: add processes and equipment to remove nitrates from the treatment plant effluent and improve water quality.
South San Luis Obispo County Sanitation District Facility Upgrade	Covered by Regional RWSP (2013/14)	Upgrading its regional wastewater treatment plant to both meet waste and discharge requirements and allow for recycled water use in projects such a ecosystem enhancement and groundwater management. This meets implementation of inter- agency projects objectives.
Paso Robles Reclamation and Recharge Program	Ongoing; Construction underway	The wastewater treatment plant will be upgraded to tertiary treatment so the effluent can potentially be used for recharge, banking, irrigation, and/or ecosystem enhancement applications. Allow greater supply flexibility.
Recycled Water Master Plan Update	Full Project List	The City of SLO Recycled Water Master Plan Update will guide the expansion of the recycled water distribution system to serve users and maximize the use of available recycled water supply, thereby offsetting the use of potable water.
CSA 16 (Shandon) Water Reliability Project	Full Project List	Construct turnout facilities to connect the Coastal Branch of the State Water Project to the CSA 16 (Shandon) water distribution system.
Nipomo Area Water Reuse Plan	UNKNOWN	Considered planning application; considered community-specific (Nipomo Mesa area of Santa Maria basin), but would work well in a collaborative recycled water planning proposal with a regional-scope.
Supplemental Recycled Water Feasibility Study	Covered by Regional RWSP (2013/14)	The following agencies are investigating the feasibility of implementing recycled water programs within their service areas: Templeton Community Services District (TCSD), City of Morro Bay, City of Pismo Beach, South San Luis Obispo County Sanitation District (SSLOCSD), and Nipomo Community Services District

Table J-7. 2007 and 2014 IRWM Project List, Continued

Project Category and Title	2014 Project Status	Project Summary Statement
		(NCSD) via this Regional Recycled Water Strategic Plan (RWSP).
Preparation of a Recycled Water System Facilities Plan for the City of Pismo Beach	Covered by Regional RWSP (2013/14)	Covered by Supplemental RWSP study underway.
City of Morro Bay and Cayucos Community Services District (MBCSD) Recycled Water Master Plan.	Covered by Regional RWSP (2013/14)	Covered by Supplemental RWSP study underway.
San Simeon Small Scale Recycled Water Project	Full Project List	Title 22 Water available for distribution to offset potable water used for irrigation and hotel laundry use.
WETLANDS ENHANCEMENT AND CREATION		
Wetland and Vernal Pool Mapping	Ongoing; Limited data available (2007)	Map the region's wetlands/vernal pools to facilitate integration of enhancement measures into development and ecosystem restoration and mitigation projects. Some herbaceous wetland and critical habitat delineations mapped.
CONJUNCTIVE USE		
Paso Robles Groundwater Basin Water Banking Feasibility Study	Completed (2008)	Explored the feasibility of banking water in the Paso Robles Groundwater Basin for the benefit of County residents. This was considered a high-priority study with much potential because the Basin is the largest in the County and the Coastal Branch of the State Water Project (SWP) enters the County adjacent to the Basin.
Groundwater Recharge Optimization Program	Completed (2012); within Paso Robles Groundwater Management Plan	Compiles info on the optimal locations for recharge to improve regional water supply reliability and quality by using the other efforts/programs underway such as land use and watershed planning efforts, flood and storm water management; water banking feasibility studies; etc
DESALINATION		
Morro Bay Desalination Facility Upgrade	Completed (YEAR)	Installs an energy recovery system in its existing desalination facility to reduce electrical consumption; increases production capacity via reclaiming facility effluent; reduces dependence on State Water and local groundwater
Cambria Desalination Facility Project	On-hold	Constructs a seawater desalination plant that includes a subsurface seawater intake, pumping and pipeline facilities to transport seawater to the plant, a reverse osmosis (RO) treatment process, a groundwater blending system, etc
Desalination Study	Full Project List	Evaluates potential for desalination applications in the region by reviewing existing desalination facilities and existing study/project information to document opportunities for locations of new facilities.
LAND USE PLANNING		
Low Impact Development Program	Completed (YEAR)	Adopts LID requirements for new development and redevelopment that include wetland and riparian corridor protection and restoration, open spaces, stormwater retention, and utilization of smart growth principles.
Agriculture Element	Completed (2010)	Identifies areas of the region with productive farms, ranches and soils, and establishes goals, policies and implementation measures that will enable their long- term stability and productivity; identifies open space to protect; etc
NPS POLLUTION CONTROL		
Rural Road Erosion Program	Removed	Implements a program to monitor and reduce rural road erosion in order to protect source water quality; can be used to support implementation of TMDL and stormwater programs; will assist with locating or drainage problems

Table J-7. 2007 and 2014 IRWM Project List, Continued

Project Category and Title	2014 Project Status	Project Summary Statement
Morro Bay NPDES Illicit Discharge Detection and Elimination Ordinance	UNKNOWN	Seeks to adopt an Illicit Discharge Detection and Elimination (IDDE) Ordinance, a requirement of the City's Stormwater Management Plan, to prevent illicit discharges to sensitive bay, creek and ocean habitats
Lake Nacimiento Watershed Mercury Sediment Reduction Project	Completed (YEAR)	Includes a comprehensive site assessment, construction of three NPS MMP demonstration project sites designed to eliminate mercury sediment and acid rock drainage inputs and MMP effectiveness monitoring
WATERSHED PLANNING		
Data Enhancement Plan	Completed (2008)	Regional water monitoring program designed to provide data for planning, design, and operational purposes; data frequently interpreted to identify monitoring sites that might be dropped from the network or sampled less frequently, identify spatial gaps or the need for more frequent data collection.
Master Water Report	Completed (2012)	Develop region-wide study analyzing supply and demand by evaluating potential for new supplies; identify deficiencies and recommend projects, policies and programs to address those deficiencies.
Regional Permitting Plan	Completed (2008)	Develops regional permitting plan aimed at aligning Federal, State and local goals and objectives; establishes an orderly set of uniform conditions for projects to reduce processing time and increase consistency and effectiveness.
On-Farm Water Quality Enhancement and Conservation Plan for Coastal Watersheds	Full Project List	Prioritize planning and implementation projects on agricultural lands that address non-point source pollutants and the loss of riparian corridors. Integrate one or more agricultural BMPs such as irrigation efficiency
Floodplain and Riparian Enhancement Feasibility Plan for Arroyo Grande Creek	Full Project List	Design and implement floodplain projects in order to reduce downstream flooding and sediment loads, encourage groundwater infiltration, and expand riparian/ floodplain habitat.
Sustain SLO North: A Water Conservation Stewardship Plan for North County, San Luis Obispo	Full Project List	Considered planning application; considered regional (USLTRCD boundaries); would work well in a collaborative watershed planning proposal with a broader regional- scope.
Alternatives Analysis and BMP Implementation Plan for the Oso Flaco Watershed	Full Project List	DESCRIPTION NOT AVAILABLE; would work well in a collaborative watershed planning proposal with a broader regional-scope. Potential for collaboration with Cachuma RCD.
County-wide Fish Passage Barrier Evaluation	Watershed Management Planning Study (2013/14)	DESCRIPTION NOT AVAILABLE; considered regional (each watershed in Region); would work well in a collaborative watershed planning proposal with a broader regional-scope; financial capacity unknown.
County-wide Approach to Understanding Instream Flow Needs	Completed (2013/14)	Help the SLO Region to better understand the instream flow needs of key species and environmental factors; improve the stakeholders' ability to better manage local water resources in a way that considers environmental stewardship.
WATER AND WASTEWATER TREATMENT		
Atascadero Lake Treatment System	Ongoing	Installs a treatment system for urban lake; improve water quality; provide opportunities for implementing stormwater and TMDL programs
Paso Robles Water Treatment Plant Project	2014 IRWM Project	Constructs a treatment plant to reliably deliver water that meets all drinking water standards to its customers and facilitates conjunctive use between Lake Nacimiento and groundwater supplies
San Miguel CSD Wastewater Treatment Expansion	Completed (2009)	Expand existing wastewater treatment plant capacity (influent lift station, four

Table J-7. 2007 and 2014 IRWM Project List, Continued

Project Category and Title	2014 Project Status	Project Summary Statement
		aeration ponds, three effluent percolation ponds, etc to comply with waste discharge requirements and ensure adequate capacity during storm events
Templeton CSD Wastewater System Expansion	2014 IRWM Project	Expands existing treatment plant (including AIPS ponds) to accommodate buildout flows, ensure waste discharge and stormwater programs compliance; adding additional storage ponds for wet weather storage.
Los Osos Community Wastewater Project	Ongoing; Construction underway	Partially funded by Prop 84 Implementation grant; Includes gravity wastewater collection system and tertiary treatment facility intended for water reuse in the Los Osos Groundwater Basin and habitat site restoration, and roadway improvement.
Lopez Water Treatment Plant Membrane Rack Addition	2014 IRWM Project	Involves the installation of additional membrane filter modules in the existing five membrane filtration racks and the construction of a new sixth membrane filtration rack to increase its filtration capacity to provide greater reliability.
Cambria Pump Station	Completed (2011) with Cambria Flood Control Project Listed Above	Construct a new storm water pump station and outlet structure to pump floodwaters from the lowest part of West Village directly into Santa Rosa Creek, significantly reduce flooding in the sump area of the West Village of Cambria.
Interceptor Sewer System Replacement, Oak Shores, CSA 7A	Full Project List	Construct new gravity sewerlines, 8 lift stations, manholes, pipe bridges, and pump systems to replace the Eastside and Westside Interceptor Sewer System.
Oceano Community Services District Water System Improvements	Full Project List	Provide various water system improvements to the community of Oceano, to improve water supply reliability and to improve water quality.
Lopez Pipeline Improvements	Full Project List	Optimize Lopez pipeline delivery capacity, working in conjunction with project to install additional membranes at the Lopez Water Treatment Plant to increase the overall capacity of the Lopez Project and to improve the water supply reliability.
San Miguel Community Services District Water System Improvements	2014 IRWM Project	Provide various water system improvements to the community of San Miguel, to improve water supply reliability and to improve water quality.
Chorro Valley Master Water and Waste Water Plan	Full Project List	NEED DESCRIPTION
WATER TRANSFERS		
Nipomo CSD Supplemental Water Project	Phased; Phase 1 under construction (2013)	3 phased project constructs treatment facilities and pipeline to ultimately transfer 3,000 acre feet of supplemental water per year from Santa Maria to Nipomo. Phases will increase water supply to 645 AFY, 1,600 AFY, and 3,000 AFY, respectively.

J.4.3 IRWM Future Project Monitoring

Foreseeable project-specific monitoring activities related to each of the selected IRWM projects include the following:

Table J-8. Future Project Monitoring List

Project Code	Project Title	Monitoring Activities
MLTP_ECO1	Livestock & Land Program	Detailed accounting of Participating Property Owners, the BMPs implemented, and, if sufficient density of combined properties (or larger ranch participation), an attempt at developing a baseline comparison of water quality in local streams over a 3-year period.
MLTP_WMT2	LID Pilot Program	Detailed accounting of Participating Property Owners, the BMPs implemented. Because of the small scale and low density of homes in a single watershed, a qualitative discussion of benefits is likely.
NCNT_ECO1	North County Fertilizer Regions_ Precision Agriculture	Detailed accounting of Participating Property Owners, the BMPs implemented, and, if sufficient density of combined properties (or larger farm participation), an attempt at developing a baseline comparison of water quality in local streams over a 3-year period.
NCNT_ECO2	Attiyeh Ranch Conservation Easement	Detailed accounting of activities taking place on the easement including the progress towards meeting public outreach and educational objectives.
NCNT_GWM1	Upper Salinas River Basin Water Conservation/Conjunctive Use Project	Detailed accounting of the amount of treated wastewater percolated into the underflow of the Salinas River, the weekly change in dedicated monitoring wells to measure groundwater elevations underlying the discharge basins and 9000 feet down gradient at the extraction well, and the amount of extracted water for potable uses.
NCNT_WMT1	Community Based Social Marketing	Detailed accounting of the specific measures taken to educate the larger public of the need for water conservation and management. A random public polling process before and after the 3-year effort will be conducted in the Paso Region.
NCNT_WMT2	Improving on Farm Water Management Through Demonstration, Research & Outreach of Precision Agricultural Best Management Practices	Detailed accounting of Participating Property Owners, the BMPs implemented, and, if sufficient density of combined properties (or larger farm participation), an attempt at developing a baseline comparison of water quality in local streams over a 3-year period.
NCNT_WSP1	City of Paso Robles Lake Nacimiento Water Treatment Plant Construction	Detailed accounting of the amount of surface water diverted and treated at the Nacimiento WTP over a 10-year period, along with 3 dedicated monitoring wells for purposes of evaluating the behavior of groundwater with documented reduction in groundwater pumping.
NCNT_WSP2	San Miguel Critical Water System Improvements	Detailed accounting of system performance, (i.e., tank levels, system pressures, number of shutdowns, and run times of generators).
NCST_GWM1	8th Street Upper Aquifer Well and Nitrate Removal Facility	Detailed accounting of the amount of groundwater treated from the shallow extraction well, and the change in groundwater levels over a 10-year period in the deeper aquifer as a result of reduced pumping.
NCST_FLD1	Los Padres CCC Center - Stormwater LID Treatment Project	Detailed accounting of inventory of BMPs implemented and qualitative description of public involvement and ecosystem benefits (e.g., introduction of new flora and fauna)
SCNT_FLD2	Oceano Drainage Improvement Project - Hwy 1 & 13th Street	Detailed accounting on the frequency of basin fill and drain cycles, changes in shallow groundwater elevations using a privately owned well near the project site, and flooding on Highway 1 over a 10-year period.
SCNT_WMT1	Lopez Water Treatment Plant Membrane Rack Addition	Detailed accounting of system performance, total annual increase in surface water volume provided to urban water districts, and regional changes in groundwater elevations over a 10-year period.
SCNT_WSP2	Recycle Water Distribution System Expansion	Detailed accounting of recycled water deliveries, showing increases over time, and changes in groundwater levels and quality underlying the City of San Luis Obispo.
SCNT_WSP3	Pismo Beach Recycled Water Project	Detailed accounting of recycled water deliveries, showing increases over time, and changes in groundwater levels and quality underlying the City of Pismo Beach.

J.4.4 Plan Performance Evaluation Report

The format of the 5-year report will closely follow the outline below:

a) Current State of the IRWM Plan
b) Summary of IRWM Planning Activities over the 5-Year Monitoring Period
c) Updated Sections of the IRWM Plan, Identifying Those Requiring Agency Re-Adoption
d) The Total Level of Effort and Costs to Conduct the Monitoring and Reporting
e) Description of Changes in Governance Structure, RWMG Actions and Plan Amendments
f) Plan Performance and Monitoring
    i) Summary of Responsible Monitoring Agencies and Frequency of Reporting (Includes a table of agencies categorized by Monitoring Element and Performance Measurement)
    ii) Summary Report on Performance Measurements (where data exists)
        (1) Who provided what data
        (2) Interpretation of data
        (3) Meaning to the IRWM Plan's Performance
    iii) Project-Specific Monitoring
        (1) By Project Monitoring Results
        (2) Comparison with Stated Project Benefits
g) Lessons Learned and Improvements to Monitoring Plan
h) Conclusion on Actions to be Taken Over Next 5-Year Monitoring Period

Section f in the above outline includes the Plan Performance and Monitoring results. The first Plan Performance Evaluation Report is estimated to occur by spring/summer 2016 to coincide with the 2015 update of UWMPs and to allow sufficient time to develop a robust database to support the overall IRWM Plan Performance and Monitoring program.

J.5 MONITORING PLAN BUDGET PROCESS

The first year's monitoring activities are set by the District Board of Supervisors with support from the RWMG and WRAC. With the available budget being the constraining factor to the level of effort associated with plan performance and project monitoring, the District provides a reasonable annual monitoring plan knowing that not all of the monitoring elements described can be met, and assuming voluntary efforts by partnering agencies are used to their fullest extent.

Every year the RWMG meets to discuss the prior year's monitoring activities, the total costs incurred, and how the monitoring data is being used in the long-term water resources management of the Region, and to the betterment of the IRWM program. District staff seeks to prepare a sustainable (and meaningful) monitoring plan presenting the proceeding year's expected level of effort, and the estimated budget to complete the required monitoring requirements.

The section's monitoring elements are to be used as a reference and revised in the continued growth of the monitoring effort, especially as technology can reduce future costs over time. The 5-year reporting outline above communicates the importance of the monitoring data and why the state requires monitoring of the Region's water resources for purposes of positive change with their investment in the IRWM process (i.e., planning and implementation). Every attempt at acquiring funding through local, state, and federal sources should be made to meet the Region's monitoring goals by 2035.

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Section K.
Data Management

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Section K. Data Management

Data Management plays a significant role in the implementation the IRWM Plan. Data management includes all activities, by hand or through use of technology, which measure and result in factual information for use in furthering the knowledge and ability to describe the San Luis Obispo region (see **Section C – Region Description**), to capture changes in the region over time and to monitor Plan performance. As an activity of the IRWM Plan implementation, the RWMG understands the importance of data management when used for assessing progress in water resources management and reporting progress of management activities to the region's stakeholders.

Data management is a regional effort amongst stakeholders to actively engage in understanding their interests by measuring and reporting factual information and developing defensible estimates. The task of managing data is at the center of every community, interest group, and agency that has an interest in the understanding of water resources, has a commitment, or regulatory requirement to report on the change in water resources. In either case, the standards of data management do not differ and the quality of data management is continuously reviewed in light of new technology.

K.1 Introduction

This section of the IRWM Plan is developed to address the Data Management Standards of the California Department of Water Resources' Guidelines for the Integrated Regional Water Management (IRWM) Propositions 84 and 1E, dated November 2012 (2012 CDWR IRWM Guidelines), described as follows:

> *The IRWM Plan must describe the process of data collection, storage, and dissemination to IRWM participants, stakeholders, the public, and the State. Data in this standard may include, but is not limited to technical information such as designs, feasibility studies, reports, and information gathered for a specific project in any phase of development including the planning, design, construction, operation, and monitoring of a project.*

In addition, the guidelines provide an overview of the minimum requirements of the IRWM Plan Data Management section:

- A brief overview of the data needs within the IRWM region
- A description of typical data collection techniques

- A description of how stakeholders contribute data to a DMS
- The entity responsible for maintaining data in the DMS
- A description of the validation or quality assurance/quality control measures that will be implemented by the RWMG for data generated and submitted for inclusion into the DMS
- An explanation of how data collected for IRWM project implementation will be transferred or shared between members of the RWMG and other interested parties throughout the IRWM region, including local, State, and federal agencies
- An explanation of how the DMS supports the RWMG's efforts to share collected data
- An outline of how the data saved in the DMS will be distributed and remain compatible with State databases including California Environmental Data Exchange Network (CEDEN), Water Data Library (WDL), California Statewide Groundwater Elevation Monitoring (CASGEM), California Environmental Information Catalog (CEIC), and the California Environmental Resources Evaluation System (CERES)

K.1.1 Background

The term "Database Management" implies a myriad of activities including, but not limited to, database programming, creating and maintaining data driven websites, creating stakeholder driven monitoring programs, processing large queries and data reports, developing graphical user interfaces for interpretation and management of data, uploading to state and federal database systems and running the data through algorithms for QA/QC. The topic of data management and Data Management Systems (DMS) has been extensively studied and implemented in many IRWM regions throughout California.

Given the enormity of the amount of information and the fact that much of it has been captured in detail in other reports, this section only summarizes data needed for the IRWM Plan. In December 2008, the District completed a comprehensive *Data Enhancement Plan*[1] (DEP), setting the stage for the regional data monitoring programs looking ahead. Acting as a clearinghouse for data storage and dissemination, the District seeks to create a flexible system to provide data for planning, design, and operational purposes. Given the regional nature and complexity of these data, the DEP incorporates improvements over time as new technologies are implemented and new resources become available to better collect, evaluate, and manage the data in perpetuity.

To provide additional detail, **Appendix K-1 – Data Management Summary Report by Wallace Group** includes a Data Summary Memorandum prepared by Wallace Group and others, describing the data needs and on-going efforts taking place in the greater San Luis Obispo region.

[1] Go to <http://www.slocountywater.org/site/Frequent%20Downloads/Integrated%20Regional%20Water%20Management%20Plan/Data%20Enhancement/>.

In addition to the Data Summary Memorandum, the County's DEP and Master Water Report (MWR) are used as supporting documents to the summarized format of this section.

The following chapters are included in this section:

- K.1 Introduction – summarizes the contents of Section K
- K.2 Overview of the Data Needs within the IRWM Region – provides a comprehensive listing of the water resource and related data needed to accurately characterize the region and report on changes over time
- K.3 Description of Data Needs – provides a brief description of the state database platforms, locations of various data collection efforts, and data collection issues facing the region.
- K.4 Current Data Programs and Collection Techniques – includes an inventory of on-going data collection efforts and what monitoring techniques are used in harvesting data, and identifies the entities responsible for maintaining data in the IRWM Plan region and applicable State databases to be distributed to.
- K.5. Quality Assurance/Quality Control Measures – describes implementation of steps set by the RWMG for ensuring the highest quality of data generated and submitted for inclusion into the regions Data Management System (DMS) and repository
- K.6 Regional Water Management-DMS Overview – brief overview of the existing DMS used for IRWM region description
- K.7 Anticipated Features of a Data Management System – brief overview of the potential transition of the existing DMS to a GIS-based DMS used for monitoring data throughout the IRWM Region
- K.8 Other Potential Future GIS/DMS Needs and Development – highlights future regulatory monitoring and reporting programs and the need for a robust DMS

The organization of **Section K** is written to identify the anticipated features of the data management system(s), what and how data are being collected, processes of data management taking place after measurement, and an example of the recommended DMS. Please refer to appendices and reference documents for more in-depth detailed information.

K.1.2 Plan Performance Monitoring Data Needs

It should be noted that data is also collected to monitor plan performance at both the programmatic and project level as described in **Section J – Plan Performance and Monitoring**. Monitoring and reporting activities related to measuring the success of the IRWM program in meeting the IRWM Plan's Goals and Objectives using both programmatic monitoring and reporting methods, and project level data measuring physical and qualitative benefits collected from project proponents/sponsors are described in detail in that section.

The data collected is shared per the Communications Plan with the RWMG, local, state and federal agencies and other stakeholders by distributing the 5 year report and/or updated project list and maintaining an online database of reports and/or lists.

K.2 Overview of the Data Needs within the IRWM Region

The data needed for the Region relates to updating the region description and monitoring IRWM Plan Performance at the IRWM program level and project level as described in Section J. The next section describes the data needs for the region description and describes the data collected for those monitoring efforts, the source and/or stakeholder that will supply it, how it is collected, and it's applicability for upload to a State database. The section after that includes the monitoring methods identified in Tables J-6 to J-10 in **Section J – Plan Performance and Monitoring** and describes the data collected for those monitoring efforts, the source and/or stakeholder that will supply it, how it is collected, and it's applicability for upload to a State database. The section after that describes how project and program information will be managed.

K.3 Description of Data Needs

This section describes the data needs for the region, the source and/or stakeholder that will supply it, how it is collected, and it's applicability for upload to a state or federal database system. Popular statewide databases currently include, but are not limited to, the following:

- **Californial Environmental Data Exchange Network (CEDEN)** - Facilitates the integration and sharing of water and environmental data with the purpose of making this data accessible to the public in a simple and standardized manner. The data comes from many diverse monitoring and data management efforts which include participants from federal, state, county and private organizations. <http://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2010/ir2010_factsheet.pdf>
- **GeoTracker -** A data management system for managing sites that impact groundwater, especially those that require groundwater cleanup as well as permitted facilities such as operating USTs and land disposal sites.< http://www.waterboards.ca.gov/publications_forms/publications/factsheets/docs/geotrkgama_fs.pdf>
- **Water Data Library (WDL)** - WDL contains hydrologic data (groundwater level data and some groundwater quality data) for over 35,000 wells California. The data is collected by DWR Region Offices and dozens of local and federal cooperators. < http://www.water.ca.gov/waterdatalibrary/>

- **California Statewide Groundwater Elevation Monitoring (CASGEM)** - In 2009, the Legislature passed SBX7 6, which establishes, for the first time in California, collaboration between local monitoring parties and DWR to collect groundwater elevations statewide and that this information be made available to the public. < http://www.water.ca.gov/groundwater/casgem/>
- **California Environmental Resources (CERES)** - CERES is an information system developed by the California Natural Resources Agency to facilitate access to a variety of electronic data describing California's rich and diverse environments. The goal of CERES is to improve environmental analysis and planning by integrating natural and cultural resource information from multiple contributors and by making it available and useful to a wide variety of users.< http://ceres.ca.gov/>
- **California Environmental Information Catalog (CEIC)** - CEIC is an online directory for reporting and discovery of information resources for California. Participants include cities, counties, utilities, state and federal agencies, private businesses and academic institutions that have spatial and other types of data resources. The Catalog has been developed through a collaborative effort with the California Geographic Information Association, California Environmental Resources Evaluation System, and the Federal Geographic Data Committee <http://ceic.resources.ca.gov/aboutCEIC.html>

The need for numerical data collection varies with each of the three Sub-Regions. Monitoring stakeholders can be categorized based on their area of interest or expertise. A helpful glimpse of the interest categories and issues facing the IRWM region is provided in **Table K-1**. The table briefly describes programs unique to each Sub-Region, and those crossing over multiple Sub-Regions. The different data types are bolded to highlight the context of the specific monitoring programs in the region and where data collection is taking place.

Figure K-1, **Figure K-2,** and **Figure K-3** identify the approximate geographic distribution of the various data collection efforts taking place by the participating monitoring stakeholders. In some cases, limited resources and long-term commitments required to collect data limit the data being harvested, and results in concentrated "areas of concern." Uniformity and changes in topography generally govern the number of monitoring locations for data such as precipitation, temperature and stream flows. Other specific points of monitoring include the coastal beaches, estuaries, and groundwater wells. **Section K.4** provides a brief summary of the various programs. For additional detail, please refer to the 2012 MWR, Chapter 3, Section 3.2.

K.4 Current Data Programs and Collection Techniques

Table K-2 lists all of the region's data collection activities including a short definition of the data and how the resulting data are generally used. Techniques used in the data collection effort vary a great deal based on the agency taking the measurement and the age of the monitoring device or station. Over time, technology has had a big role in the quantity and quality of data for all locations. A brief description of the various programs and methods used follows.

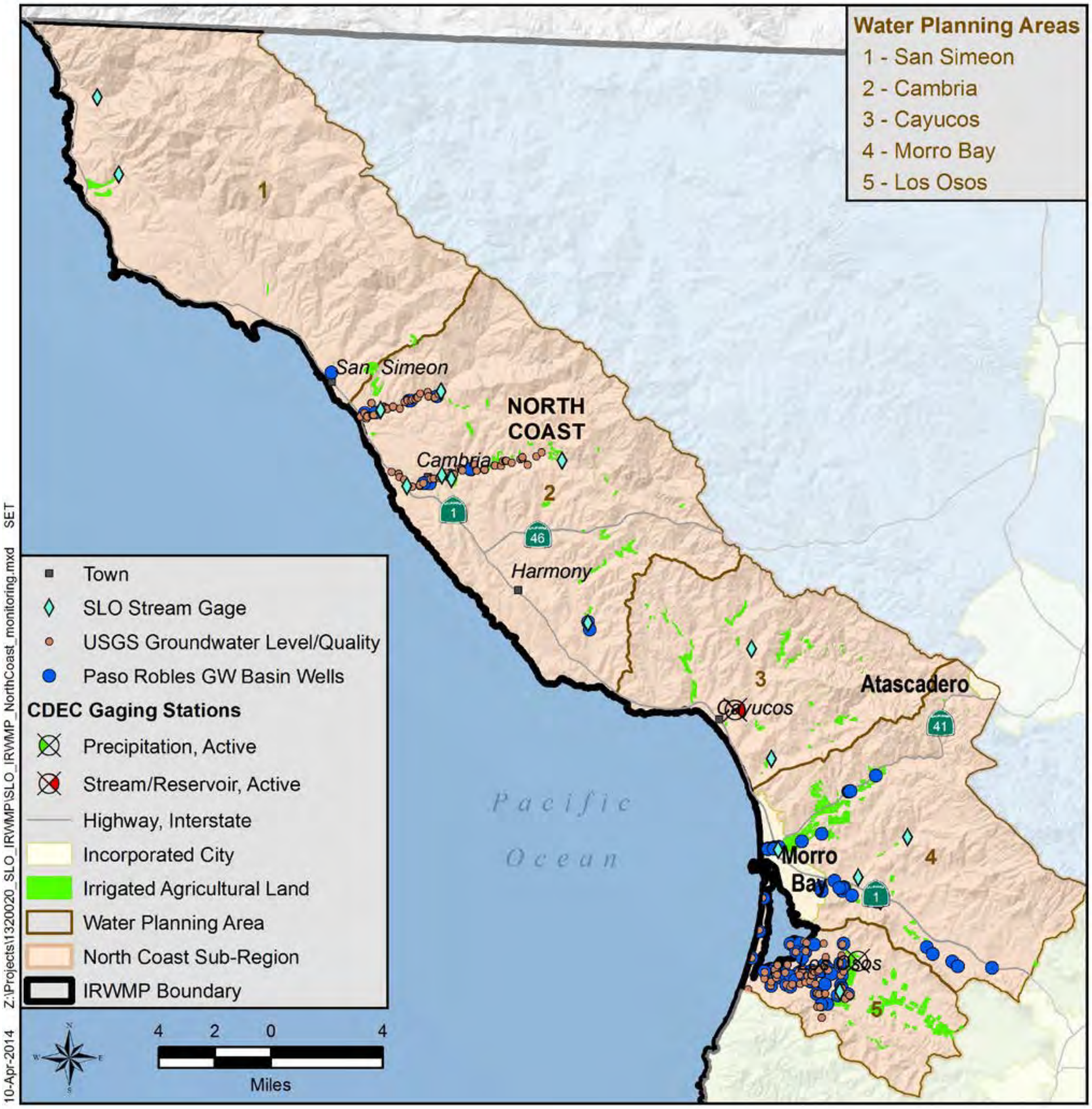

Figure K-1. North Coast Sub-Region Data Monitoring and Collection Programs

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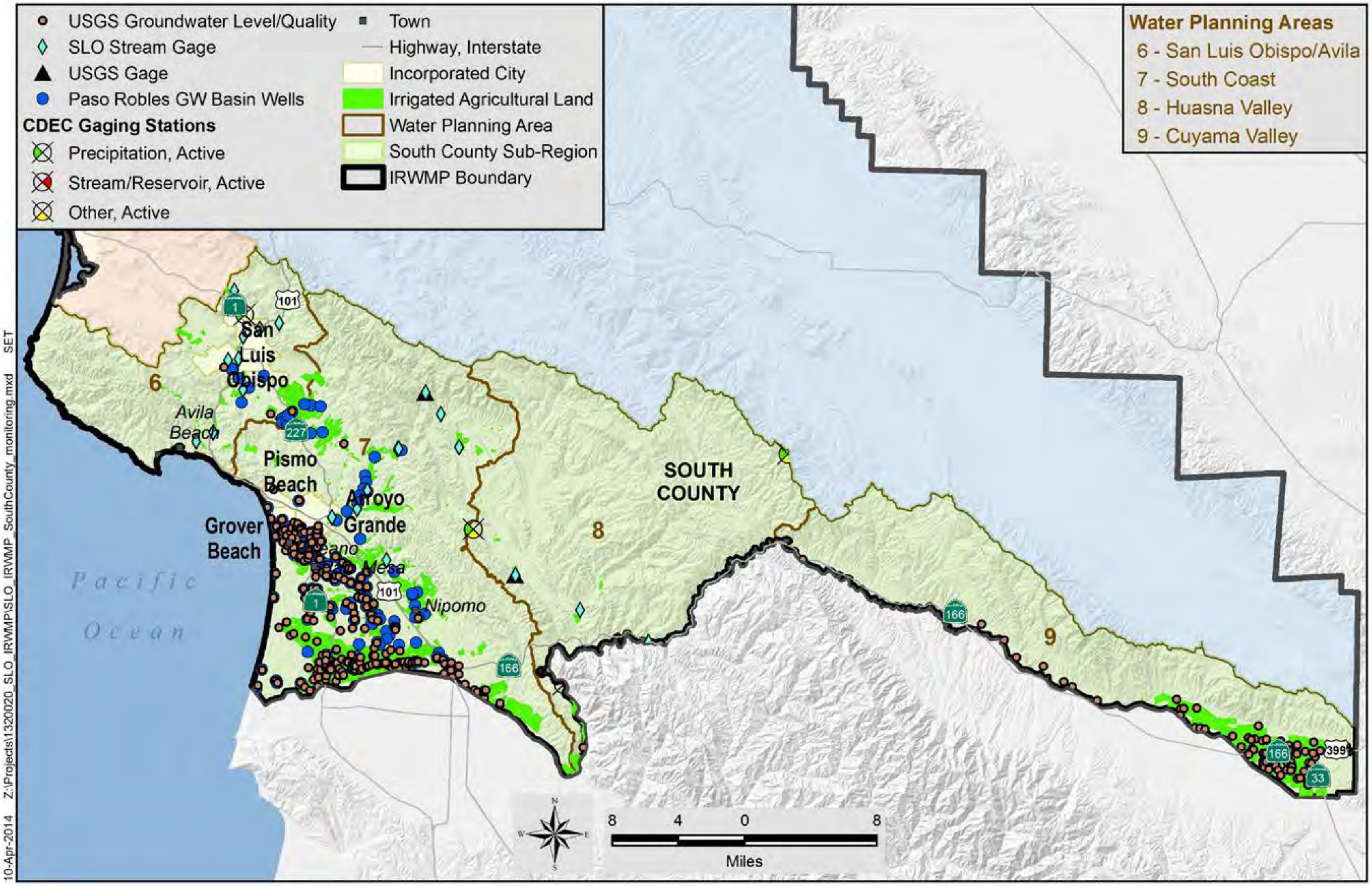


Figure K-2. South County Sub-Region Data Monitoring and Collection Programs

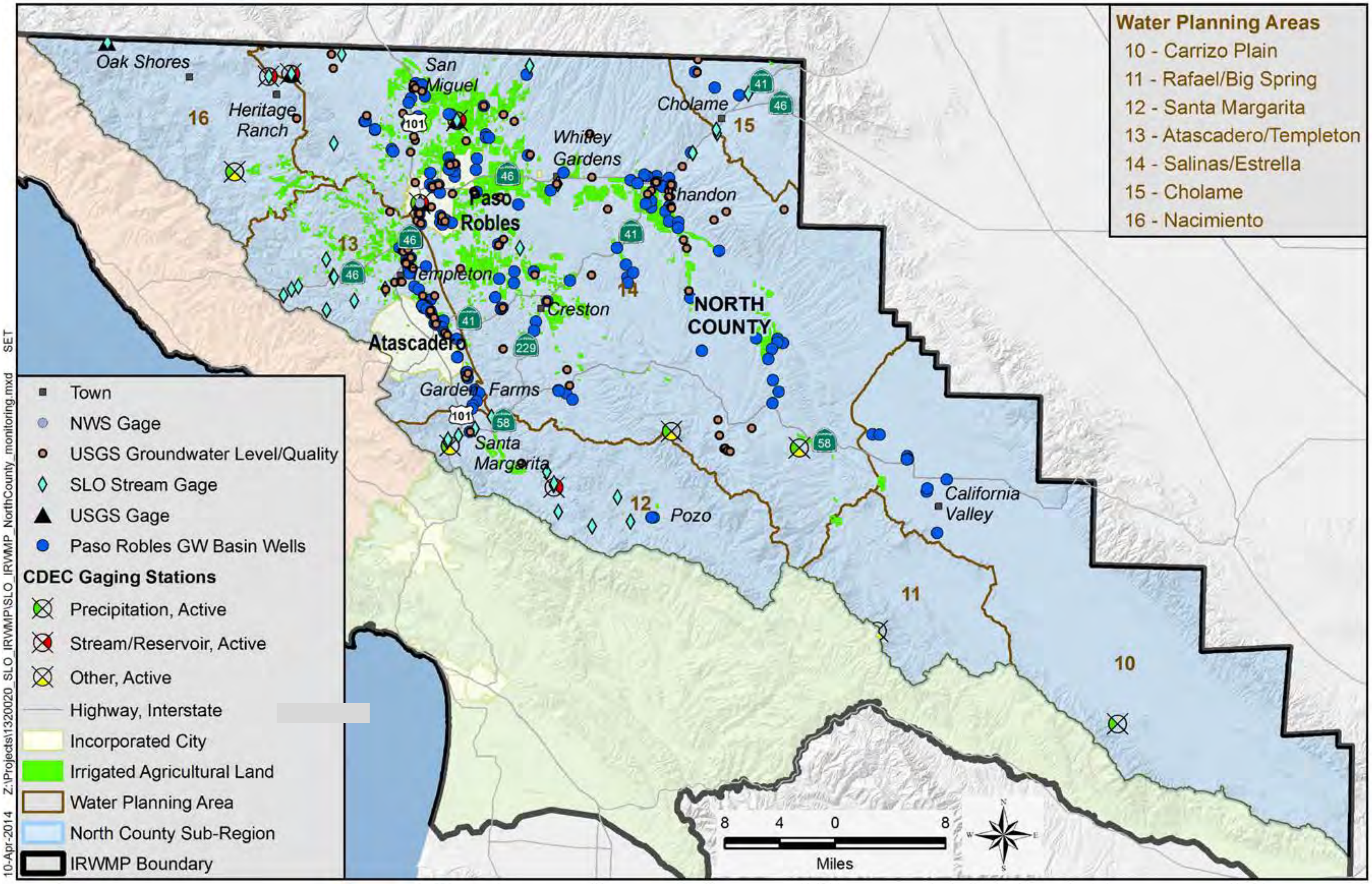


Figure K-3. North County Sub-Region Data Monitoring and Collection Programs

Table K-1. Sub-Region Areas of Concern Requiring Data Collection

Regional Interest Classifications	Primary Definitions as Related to the IRWM Plan and Region	North Coast	South County	North County
Hydrogeology	The study of groundwater and geologic characterization of substrata composing the geologic makeup of water bearing formations and areas of recharge and extractions	Six small coastal alluvial aquifers (Pico Creek Valley, San Carpoforo Valley, Arroyo De La Cruz Valley San Simeon, Santa Rosa, and Villa Valley Groundwater Basins) are the primary source of drinking and irrigation water to the North Coast region requiring a constant groundwater monitoring of groundwater elevations, salinity concentrations and storage, all used as measures of sustainability.	Nine coastal alluvial aquifers (San Luis Obispo Valley, San Luis Valley, Edna Valley, Santa Maria Valley, Pismo Creek Valley, Arroyo Grande Valley, Nipomo Valley, Huasna Valley, Cuyama Valley Groundwater Basins) are the primary source of drinking and irrigation water to the South County region requiring a constant measurement of change due to groundwater management activities, groundwater elevations, salinity concentrations, sea water intrusion and storage availability to measure sustainability.	Nine alluvial aquifers (Carrizo Plain, Rafael Valley, Big Spring Area, Santa Margarita Valley, Rinconada Valley, Pozo Valley, Atascadero, Paso Robles and Cholame Valley Groundwater Basins) are the primary source of drinking and irrigation water to the North County region requiring a constant measurement of change due groundwater management activities, groundwater elevations, salinity concentrations and storage availability as a measure of sustainability.
Oceanology/Marine Biology	The study of marine science, beaches, and the coastal oceanic influences	The Pacific Ocean strongly influences the coastal communities of the North Coast and South County. Tidal patterns, sea level rise, sea water temperature, marine habitats and sea water intrusion (above and below ground) require measurements over long periods of time. Monitoring the safety of public beaches is done through forecasting and buoy measurement data. The predominance of public beaches exist in the South County Sub-Region. Sand movement is a concern to shipping channels along the coast.		While the North County is not contiguous to the Pacific Ocean, however, it is influenced by weather pattern, influencing the amount of precipitation as discussed in climatology.
Climatology	The study of weather and climate change	Weather patterns across the North Coast and South County carry a significant amount of rainfall and are influenced heavily by the ocean and the terrain of the coastal mountain range. Measurement of precipitation and stream flow data are important to flood forecasting, and a long-term understanding of climate change. The average rainfall for the North Coast is		Weather patterns crossing the North County are predominantly influenced by the ocean and being landward of the coastal mountain range. Measurement of climate data, including precipitation and temperature, are important to flood forecasting and a long-term understanding of climate change.

Table K-1. Sub-Region Areas of Concern Requiring Data Collection, Continued

Regional Interest Classifications	Primary Definitions as Related to the IRWM Plan and Region	North Coast	South County
Hydrology	The study of surface water resources and flood plain analysis	Stream and river flows in the North Coast and South County are influenced by precipitation, groundwater elevations, topography and man-made structures and reservoir storage and release operations. Real-time stream flow data provides forecasting and determinations of flood protection (i.e. 100-year flood events). Measurements also take place at river outflow points to the ocean and at release points from man-made reservoirs. Groundwater basin watersheds listed under hydrogeology are monitored.	The Salinas Valley is the largest watershed in the North County Sub-Region requiring real-time stream flow monitoring of flow data throughout its course north into Monterey County and then to the Pacific Ocean. Lake Nacimiento provides fresh water supplies for treated drinking water to North County communities requiring monitoring of lake storage and discharge.
Biology	The study of plant and animal life-cycles as they relate to the quantity and quality of fresh and saline water	Sampling of biological indicators through marine observations and estuary and wetland monitoring is used to protect the sensitive flora and fauna of the region. Minimum in-stream flows are monitored to ensure protection of fisheries along the coastal and inland watersheds. Point and non-point source discharge of pollutants is a primary regulatory concern, and the Coastal Ambient Monitoring Program was created for the purpose of monitoring water quality constituents for the protection of biologically sensitive areas.	
Geography	The study of land use and man's influence on nature	Land use, whether it is agriculture, urban or rural, affects change to both water quality and quantity (or demand). Land use monitoring allows for the study and correlation of human activities and the changes found in the region's water resources through other monitoring programs.	

Table K-2. General Data Collection Efforts and Techniques

Data Need	Data Collection Descriptions
Agricultural Water Demands	Calculating agricultural irrigation demands uses data from measuring crop types (pesticide permits, aerial imagery, growers and drive-by), crop acreage (aerial imagery and parcel maps), and from using weather station data including temperatures, evapotranspiration and precipitation. Water use by well or surface water diversion is difficult to obtain. All water demand data are used to monitor available agricultural water supplies and sustainability of those supplies over time and through drought periods. See **Appendix J – Agricultural Water Demand Analysis** for additional information on agricultural areas and crop locations.
Beach Water Quality	Monitoring (water sampling) of beaches assists in the management of coastal recreation to regulate designated swimming, bathing, surfing, or similar activities. Events affecting the frequency of beach monitoring include pollution from wastewater treatment discharges, point and non-point source discharges including from inland streams and rivers, and marine spills from ocean shipping activities.
Estuaries and Wetlands	Estuaries and wetlands require constant monitoring of man's influence on the long-term health of these sensitive ecosystems. Conductivity (measurement of salinity using probe), temperature (thermometer), dissolved oxygen (oxygen sensor), oxygen saturation, fluorescence, turbidity, nitrate, current/current profile, and depth of water (sonar) are some of the indicator measurements needed to monitor the overall health of estuaries and wetlands.
Geologic Characterization	Geologic characterization is the pursuit of descriptive information on the earth's soils and rock formations. Withing the context of water resources, data are useful in understanding the movement of groundwater, the quality of groundwater and ground elasticity (subsidence). Driller logs are the best means of capturing subsurface lithologic information (driller's interpretation notes) regarding soil types encountered as the well is drilled. Municipal well drillers will also run a geophysical profile (probe) to determine variations in groundwater conductivity, clay content, and porosity and/or saturation. Both lithology and geophysical data are used to determine where to screen a well for both extractions and monitoring.
Groundwater Elevations	Groundwater elevation data (sounding probes and various data loggers) are used to evaluate the total amount and change in groundwater storage in the local and regional groundwater basins. Data are best taken semi-annual to understand the differences between spring and fall as the irrigation season occurs each year. Minimal influence from high production wells, uniform geographic distribution and density of monitoring wells are required to provide the highest degree of certainty in regional groundwater trends.
Groundwater Management Efforts	As Groundwater Management Plans are approved with implementation of adopted Basin Management Objectives (BMOs), monitoring programs (i.e., groundwater elevation and water quality) are used to measure and report positive (or negative) change resulting from BMO activities. Annual reporting through State-of-the-Basin reports, provides dissemination of the changes to basin users.
Groundwater Quality	Groundwater quality monitoring detects changes in the quality of water and ensures early alert if contamination (natural or manmade) is moving towards drinking water supply wells. At a minimum, public groundwater wells are tested for water quality on a regular basis as required by the Department of Public Health. Private wells are often tested by the owner using a grab sample kit from a local lab for analysis. Use of fertilizers and septic systems are a concern in the rural and ag areas.
Land Use and Population Changes	Land use constantly changes over time based on public and private actions to further the interests of the land owner and community. Tracking changes (GIS and aerial imagery) requires high resolution parcel and imagery files to capture changes (including conversion of lands from native to ag, ag to urban, and ag fallowing) as they occur over time. Population changes are measured every ten years with the U.S. Census information. Intervening years are often calculated based on population projections from local and State agencies.

Table K-2. General Data Collection Efforts and Techniques, Continued

Data Need	Data Collection Descriptions
Marine Observations	Marine observations (bouys) of the Pacific Ocean are monitored for purposes of tracking and forecasting the ocean's changes. Forecasters need frequent, high-quality marine observations to examine conditions for forecast preparation and to verify their forecasts after they are produced. Other users rely on marine observation data for the protection of marine life and coastal ecosystems, and monitoring Sea Level Rise as a part of climate change forecasting.
Point and Non-Point Pollution Discharge	Monitoring pollutant concentrations in rivers and streams provides an assessment of the overall health of the watershed. Monitoring of point sources using sampling equipment and measuring discharge flows over time can alert regulatory agencies of non-compliance with NPDES permitting statutes. Non-point source is difficult to monitor but can be correlated with various human activities (e.g., automobile use, gas stations, air pollution, etc.).
Precipitation and Climate	Data from rainfall gauges serves to provide real-time information to flood forecasters and engineers during storm events. The amount of runoff into streams and rivers is calculated using models to warn of possible flood danger. Most locations of climatological monitoring include water-related monitoring activities (i.e., precipitation, humidity, solar radiation and temperature).
Reservoir Storage and Release Flows	Reservoir operations affect flood safety, water supplies and environmental demands. Real-time data of both storage (as a function of level) and release flows are needed to forecast the change required to accommodate storm events over the year. Storage in the reservoir can also affect the attraction for recreation and, as a result, the local economy.
Rural Water Demands	Rural water demands represent a sector of water use comprised of small private water systems or individual wells. A calculated determination of the rural demands is based on the mix of agriculture, livestock, and urban (house and driveways) uses taking place on the small acreage property. Water use by well or surface water diversion is difficult to obtain from private owners. All calculated water demand data are used to monitor available water supplies and sustainability of those supplies over time and through drought periods.
Sea Water Intrusion	Sea water intrusion data is needed for coastal communities reliant on groundwater supplies for their source of drinking water. Salinity monitoring using sentry wells alerts the regions to possible intrusion and to implement preventative measures to halt further intrusion.
Stream Flow	Stream flow measurements (depth of water) are used to calculate the flow of water passing by a specific point along the stream or river channel. Measurements provide an understanding of the watershed's response to various storm events. Real-time data are used to forecast possible flooding and improve public safety.
Drinking Water Quality and Ambient Monitoring Program	Ambient monitoring refers to any activity in which information about the status of the physical, chemical, and biological characteristics of the environment is collected to answer specific questions about the status and trends in those characteristics. Water quality measurements in surface waters assess environmental and human health risks over time. Water quality measurements in drinking water supplies ensure the protection to human health by meeting primary and secondary water quality standards.
Urban Water Demands	Urban water demands are a significant water use sector is growing regions. Monitoring urban growth (planned and existing) through actual water production records (metered water treatment plant discharges or well use), or through changes in land use, provides for the required determination (under SB 610 and SB 221) of long-term sustainability of supplies. Data are also used extensively in the reporting and completion of an Urban Water Management Plan required for larger water systems every five years. See **Section D – Water Supply, Demand, and Water Budget** for more information regarding urban water agency demands and projections.

K.4.1 Existing San Luis Obispo Data Management System and Communication with State and Federal Database Systems

Data is currently being collected and managed as part of county-wide programs cited in the tables above and described more fully in the sections below. The datasets are currently being managed through the San Luis Obispo County Water Resources Division of Public Works website http://www.slocountywater.org/site/ where the public can access map-based real-time data and learn about what data is being collected, how it is reported, and how to request and download the data for use in reporting, etc.

Technology has led to a great deal of efficiencies in data management over the past decade, with the region moving towards improved data transfers between local, state, and federal database systems. The District currently participates in state data management programs (e.g., CASGEM groundwater elevations, GeoTracker local remedial clean-up sites, etc.) and has dedicated staff to support the role as data administrator, ensuring quality control of the data and abiding by confidentiality agreements with various data sources. The website and direct communication with state and federal agencies will continue to take place as the county migrates to a GIS web-enabled data management system (SLO-DMS), as described in **Section K.8.4 – Proposed Implementation of the SLO-DMS;** a planned two-year process to facilitate data upload and download available to regional stakeholders, the public, and state and federal agencies.

K.4.2 Groundwater Elevations

Groundwater levels have been measured by the District in selected wells on a semi-annual basis to provide data for planning and engineering purposes. The monitored wells are located within groundwater basins and sub-basins of the Central Coast Hydrologic Region described in Department of Water Resources Bulletin 118. Program wells are selected based on aquifer definition and uniform aerial distribution.

Well Sounding Probe

The District maintains a database with hundreds of wells. Readings started in the early 1950s. Water level readings are taken in April and October. The groundwater elevation data obtained from this monitoring program collected over time provide a general indication of groundwater basin conditions. This information is used in determining groundwater availability and basin yield estimates, and for hydrogeologic and geotechnical impacts and assessment studies on potential projects.

K.4.2.1 Techniques for Measurement

The method of measurement varies based on who is performing the measurement. Steel tape is the most common method of manually measuring the depth to groundwater below a surveyed reference point where the ground elevation is known. The tape line is chalked and then lowered down the casing to several feet below the last known measurement in the same season. The water wets the chalk and a distance is noted and a calculation made to establish the depth to water. More recent methods include electronic sounding devices where a probe is connected to a measurement tape and sounds off when water is found. Problems can occur when there is insufficient space to lower the device or, in the case of older wells, if oil is being used to lubricate the pump, creating a column of oil standing on top of the water surface.

Downhole surveys of some of the existing wells currently being monitored could be conducted to obtain additional construction details and determine which aquifers are being monitored (or where the wells are screened). These downhole surveys would improve the understanding of the groundwater elevation measurements and groundwater movement in the area of the well.

Dedicated Multi-Completion Monitoring

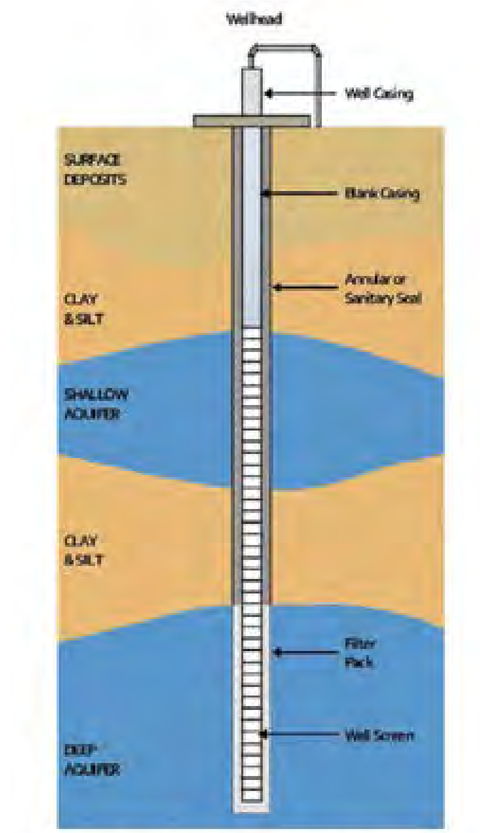
K.4.2.2 Participants

The majority of well owners participate on a voluntary basis and the wells are typically production wells, which create certain challenges with maintaining an accurate, long-term record, making information available to the general public and understanding the condition of every groundwater basin in the County.

The District is initiating the development of a more formal groundwater monitoring program using dedicated monitoring wells for approval by the Board of Supervisors and with elements that can be adopted by ordinance. The program will, at a minimum, monitor well construction, and address groundwater level and water usage data collection. Efforts to develop the program will include town hall meetings to ensure stakeholder involvement. Issues to be addressed during the development of the program would include, but not be limited to, the following:

- Gaps in the existing monitoring network
- Construction methods and impacts and benefits to property owners
- Voluntary versus non- voluntary participation
- Distinguishing how different users (urban, agricultural, rural) would be involved/affected/not affected

- Identify methods in land use planning to preserve monitoring wells rather than abandon wells with urban development
- Methods to educate and provide public outreach on the need to preserve and contribute to the well monitoring program
- Gain understanding what other amendments to County Code related to groundwater data collection are being developed
- Define legal authorities of the County/District



Typical Well Construction

The USGS also contributes to the groundwater measurement program as part of their nation-wide monitoring program. Their groundwater database contains records from about 850,000 wells that have been compiled during the course of groundwater hydrology studies over the past 100 years.

Locally, only a few wells are measured by the USGS, all of which are located on the southern county border in the vicinity of Santa Maria and Cuyama. Information from these wells is served via the internet through NWISWeb, the National Water Information System Web Interface. NWISWeb provides all USGS groundwater data that are approved for public release. More information can be found at: <http://waterdata.usgs.gov>.

K.4.3 Geologic Data

Well Driller Logs are on file for locations throughout the county, and legislators are currently working on legislation to clarify the availability of proprietary well log information to the public. The County's Environmental Health Department is responsible for issuance of well driller's permits and the collection of well log information as a part of its oversight process on adequate spacing between wells and known sources of potential contamination (e.g., septic systems, leaking underground storage tanks, etc.). Some well logs are also on file at both the County Public Works Department and the State Department of Water Resources.

K.4.3.1 Techniques for Measurement

Because of the age of some wells and past practices in the completeness of well logs, well construction data may not be available for all wells in the region and especially those currently included in the groundwater elevation monitoring network. For wells without construction records, video logs could be performed during pump maintenance. Recent technology developments allow down-hole investigation of wells without having to remove their pumps and can provide a video survey to determine their screen intervals; estimate the amount of flow contributed by the aquifer (allowing the aquifer characteristics to be estimated); and collect water quality samples by aquifer. These video surveys do have limitations due to the pump column being in the well during the survey. The well owner could notify the District and the well logging service to coordinate these efforts with their pump maintenance.

K.4.4 Stream Flow

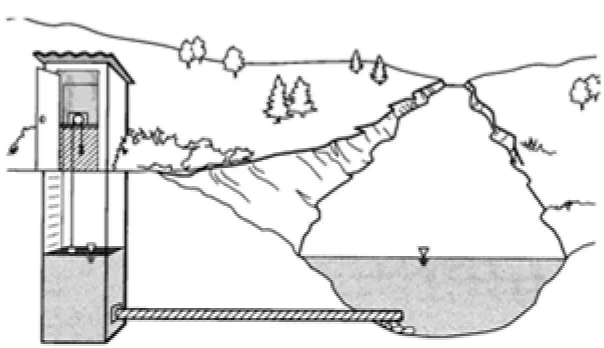
Water levels are typically collected in streams as part of a stream flow monitoring program. In addition, water levels are also collected in streams to support flood protection activities and in reservoirs to assist with daily operations.

The major streams and rivers in the region include:

- Arroyo De La Cruz Creek
- Arroyo Grande Creek*
- Cayucos Creek
- Chorro Creek*
- Estrella River*
- Los Osos Creek*
- Morro Creek*
- Old Creek
- Pismo Creek
- Salinas River*
- San Capoforo Creek
- San Luis Obispo Creek*
- San Simeon Creek*
- Santa Rosa Creek*
- Toro Creek
- Villa Creek

** - has a current gauge station*

K.4.4.1 Techniques for Measurement



Example of Real Time Stream Gage

In order to measure stream flow at the outlet of each Hydrologic Catalog Unit within the region, stream gauges are placed at the outlet of the streams and rivers. The Salinas River, Santa Maria River, and Estrella River watersheds all have real-time USGS stream gauges that measure streamflow from their respective accounting units. Measurements are often made by depth of flow using a staff gauge and knowing the relationship of depth of water to flow in the channel (stage-discharge relationship). Technological advances have provided many other methods, but are typically not as simple to maintain and make measurements over time. Data loggers can be used with transducers to maintain a constant stream of data during storm events when flood forecasting is taking place.

K.4.4.2 Participants

There are two agencies that collect stream flow information in the region: the District and the United States Geological Survey. Stream flow data is also collected on occasion through the Central Coast Ambient Monitoring Program (CCAMP), but only when water quality samples are collected. The CCAMP does not use permanent stream flow gauges.

For more information of the District's Stream Gauges, go to:
<http://www.slocountywater.org/site/Water%20Resources/Data/maps/stream-flow.htm.>

The U.S. Geological Survey's National Streamflow Information Program (NSIP) operates and maintains approximately 7,500 stream gauges which provide long-term, accurate, and unbiased information on streamflow to meet the needs of many diverse users. The mission of NSIP is to provide the streamflow information and understanding required to meet local, State, regional, and national needs.

When adding new sites to the District's stream network, using past, inactive gauges, which may have a period of record that will complement any new data collected, are considered first. The District's real-time monitoring network will be the primary user of the data. Once each major stream in the region has a stream gauge, the District will look to include some of the smaller tributaries and creeks in the region. County basins that would significantly benefit from enhanced stream flow monitoring conducted for land use and water resources planning include the Paso Robles Basin, San Simeon Basin, Santa Rosa Basin, Los Osos Basin, San Luis Obispo/Edna Valley Basin, Arroyo Grande Basin, Nipomo Mesa Basin, and the Santa Maria Basin. When enhancing the monitoring in these regions, placing gauges on major creeks near the confluence with significant tributaries, on some smaller streams and tributaries, and at major cities along the major creeks should be considered.

An enhanced county-wide flood warning system could be used to some extent in participating communities of the region. With adequate warning, property owners may have time to install flood gates or move valuable objects to higher ground. Unfortunately, times of concentration (i.e., time when rainfall travels overland to creeks and then routed to downstream rivers) of creeks and rivers in the county are relatively short – only a few hours or less. A flood warning system only allows time for the most basic preparations. The following communities with historic flooding can benefit from a flood warning system:

- Cambria and other North Coast Communities
- San Luis Obispo to Avila Beach
- Five Cities/Arroyo Grande Watershed
- Los Osos
- Shandon
- Nipomo (old town)

K.4.5 Precipitation and Climate

Manual Rain Gauge

There are a number of recording rain gauges in operation in the County. These gauges provide a record of accumulated precipitation versus time. The District Recording Rain Gauge network consists of 13 recording gauges located throughout the region. The distribution and density of recording rain gauges in the region is fairly limited, and noticeably lacking in the northern and eastern part of the region.

K.4.5.1 Techniques for Measurement

Real-Time Tipping Bucket Rain Gauge

Records of rainfall are usually in the form of daily entries of the precipitation occurring during the preceding 24-hour periods. Simple rainfall gauges are inexpensive and require little to no cost to maintain. Daily records are typically manually taken and are generally summarized in monthly totals. For more reliable and timely rainfall data, recording rain gauges are being used to provide accurate time-series precipitation data. A rainfall monitoring network strives for uniformity across the region with higher density monitoring in regions of changing topography. To partially achieve this uniformity, additional recording gauges would be beneficial in the extreme northwest corner of the County, the Hearst Castle area, the Cayucos area and the Templeton area.

Weather stations are used by some participants for recording rainfall and other climatological data. More of the stations are becoming automated to provide streaming real-time telemetry data. Methods of measurement of rainfall are the same except with sensors to electronically record the measurement at given time intervals, and a method to empty the gauge every 24-hour period. The change from manual to automated weather stations has been identified as leading to erroneous estimates of climate trends because of sampling methods and the higher degree of interpretation obtained from manual observations.

K.4.5.2 Participants

Precipitation data from approximately 50 stations throughout San Luis Obispo County are collected by the County Public Works Department. Volunteer rain gauges are generally operated at-will, by regional residents, business owners, or local agencies. The volunteers independently collect precipitation data and provide it to the District or other agency on an annual basis. There are a significant amount of volunteer rain gauges in the region, particularly in urban and suburban areas. As with the District recording rain program, the east portion of the region is particularly under represented.

ALERT is an acronym for Automated Local Evaluation in Real Time, which is a method of using remote sensors in the field to transmit environmental data to a central computer in real time. This standard was developed in the 1970s by the National Weather Service and has been used by the National Weather Service, U.S. Army Corps of Engineers, Bureau of Reclamation, as well as numerous State and local agencies, and international organizations.

In 1982, through a joint research and development effort between UC Davis and CDWR a computerized weather station system was established as a more cost effective method for estimating crop water use. This program was given the name "California Irrigation Management Information System" or CIMIS. In 1985, the administration and implementation of the program, and its further development, were turned over to CDWR.

The CIMIS is a program of the Office of Water Use Efficiency, California Department of Water Resources (CDWR) that manages a network of over 120 automated weather stations in the State of California. CIMIS was developed to assist irrigators in managing their water resources efficiently. Efficient use of water resources benefits Californians by saving water, energy, and money.

CIMIS Station

The CIMIS stations gather climatic data (precipitation, temperature, humidity, solar radiation, etc.), which is used to calculate the evapotranspiration (ET). ET is the loss of water to the atmosphere by the combined processes of evaporation (from soil and plant surfaces) and transpiration (from plant tissues). It is an indicator of how much irrigation water is needed (or used) for healthy growth and productivity.

CIMIS stations are maintained by local agencies that use standard equipment and maintenance procedures. The data seems to be reliable, particularly for hourly rainfall information during storms. To help estimate agricultural water use in each climatic region and to supplement evaporation data collected at reservoirs and by weather stations, it is recommended that two additional evaporation pans (or weather stations) are established around Cambria (or further north) and east of Paso Robles.

Other smaller contributions made in the measurement of precipitation and climate data include the following:

- National Weather Service Cooperative Observer Program (COOP)
- Citizen Weather Observer Program (CWOP)
- Remote Automated Weather Stations (RAWS)
- Automated Surface Observing System (ASOS) Stations

Each provides a small number of gauge data that is used in region but is, in general, not considered as reliable as the larger programs.


Release Weir

K.4.6 Reservoir Storage and Release Flows

Daily surface water levels are measured for most major reservoirs in the region as part of daily reservoir operations. The County maintains reservoir operational records for two reservoirs – Lopez and Salinas. Other agencies collect and maintain reservoir operation data for the other major reservoirs.

Data for each reservoir is available from the agency that operates the reservoir. As part of regular reservoir operations, daily lake elevation values are recorded at the following reservoirs:

- Chorro
- Lopez (includes Terminal Reservoir)
- Nacimiento
- Salinas
- Whale Rock
- Twitchell

K.4.6.1 Techniques for Measurement

Reservoir storage is typically developed as a function of depth at the dam or discharge point. Sediment transport into a reservoir can change the available storage over time requiring calibration of the function. Releases are measured through weir flow depth or flow meters in discharge pipelines. Data for both storage and release flow is automated at set time intervals and reported at daily intervals.

K.4.6.2 Participants

Water supply reservoir operators typically work with downstream water users in providing sufficient water supplies for urban, agriculture, and rural supplies throughout the year taking into account the need for environmental flows (i.e., minimum in-stream flow requirements). Flood control (or multi-purpose reservoirs) have the same requirements but require a rule curve to ensure sufficient storage exists at the peak of the flood season. The balance of benefits between water supply, environmental, flood, and recreation is constantly being monitored using storage and release data to assist in making operational decisions and in forecasting the next year's performance criteria.

K.4.7 Drinking Water Quality and Ambient Monitoring Program

Numerous federal, State, and local agencies and organizations conduct water quality monitoring in the region, with some programs having several decades of drinking and surface water monitoring data. Non-profit organizations and other smaller agencies are also monitoring water quality in the county and especially in the Central Coast region (including Monterey and Santa Barbara counties). These groups have relatively well-developed programs with monitoring efforts as described below.

K.4.7.1 Techniques for Measurement

Operators of public water systems (defined as any system that serves drinking water to at least 24 persons for at least 60 days out of the year, or who serves domestic water to 15 or more service connections) conduct routine monitoring to ensure that the water they produce complies with Safe Drinking Water Act standards. State certified laboratory testing of water samples results in reports submitted to the State of California Department of Public Health (CDPH) based on their monitoring schedule for the various constituents.[2]

Water Quality at Tap

Monitoring broadly encompasses several categories of

[2] < http://www.cdph.ca.gov/certlic/drinkingwater/Documents/Monitoringschedule/CountyDataFiles-PDF%20Monitoring%20Page/SanLuisObispoCountyDistrict70.pdf>

constituents: microorganisms, disinfectants, disinfection byproducts, inorganic chemicals, organic chemicals, and radionuclides. Sampling is conducted at treatment plants, within distribution systems, and at the tap, and monitoring results are evaluated to ensure that applicable drinking water quality standards are met. For regulated constituents, results are compared to Primary and Secondary MCLs, and unregulated contaminants are evaluated against CDPH Detection Limits for Purposes of Reporting (e.g., color, corrosivity, and odor).

Small water systems are also required to conduct routine monitoring and report to the Environmental Health Services Division of the San Luis Obispo County Public Health Department.

K.4.7.2 Participants

Beyond the local water treatment The Surface Water Ambient Monitoring Program (SWAMP) is the primary program intended to integrate existing water quality monitoring activities of the State Water Resources Control Board and the Regional Water Quality Control Boards, and to coordinate with other monitoring programs.

SWAMP is a statewide monitoring effort designed to assess the conditions of waters throughout the State of California, including California's Coastal waters. The program is administered by the State Water Resources Control Board. Responsibility for implementation of monitoring activities resides with the nine Regional Water Quality Control Boards that have jurisdiction over their specific geographical areas of the State. Monitoring is conducted in SWAMP through the Department of Fish and Game and U.S. Geological Survey master contracts and local Regional Boards monitoring contracts.

Ambient monitoring refers to any activity in which information about the status of the physical, chemical, and biological characteristics of the environment is collected to answer specific questions about the status and trends in those characteristics. For the purposes of SWAMP, ambient monitoring refers to these activities as they relate to the characteristics of water quality.

Unfortunately, only a small portion of SWAMP can be implemented in the IRWM Region at its current funding level. As a result, SWAMP resources are focused where monitoring information is most needed to support their own regional program priorities, such as maintaining high quality waters in Lake Tahoe, or supporting the restoration of priority watersheds throughout California.

SWAMP is also intended to capture monitoring information collected under other State and Regional Board Programs such as the State's TMDL (Total Maximum Daily Load), Nonpoint

Source, and Watershed Project Support programs. Data from sites that are a part of the SWAMP can be obtained online at:

<http://www.waterboards.ca.gov/water_issues/programs/swamp/regionalreports.shtml#rb3>

K.4.8 Point and Non-Point Pollution Discharge

Point Source Discharge Pipeline

As authorized by the Clean Water Act, the National Pollutant Discharge Elimination System (NPDES) permit program controls water pollution by regulating point sources that discharge pollutants into waters of the United States. Point sources are discrete conveyances such as pipes or man-made ditches. Industrial, municipal, and other facilities must obtain permits if their discharges go directly to surface waters.

EPA conducts inspections of facilities subject to the regulations to determine compliance. EPA inspections involve:

- Reviewing discharge monitoring reports
- Interviewing facility personnel knowledgeable of the facility
- Inspecting the processes that generate and treat wastewater
- Sampling wastewater discharges to navigable waterways and other points in the generation or treatment process
- Reviewing how samples are collected and analyzed by the laboratory

Monitoring of the effects of non-point discharges becomes difficult due to the ambiguous nature of the source (e.g., automobile use, gas stations, air pollution, etc.) of offending pollutants. The goal in monitoring any water source over time is tracking changes in constituents of concern and correlating these changes with combined benefits of education and outreach on ways to reduce pollutants (e.g., use of fertilizers, pesticides, washing cars, etc.).

K.4.8.1 Techniques for Measurement

Monitoring protocols for point and non-point source discharges are similar to the *Drinking Water Quality and Ambient Monitoring Program* approach to regulated monitoring and reporting. Individual permitting of point source discharges sets the frequency of sampling and the monitored constituents of concern as described below. Non-point source monitoring activities typically share with other program monitoring and data.

Key permit conditions applicable to all NPDES permits or WDRs include those for monitoring. These conditions apply to both storm water and non-storm water discharges. Although the

State, local authority, or EPA's general permits can impose additional requirements, the permit holder must typically monitor discharges within the following parameters:

- Flow
- Pollutants listed in the terms of the permit conditions
- Pollutants that could have a significant impact on the quality of the receiving streams
- Pollutants specified as subject to monitoring by EPA regulations
- Other pollutants for which the EPA requests monitoring in writing

Each of these monitoring parameters must be measured at the frequency specified in the NPDES permit, WDR, or at intervals sufficiently frequent to yield data that would characterize the nature of the discharge.

K.4.8.2 Participants

The Regional Board regulates point source discharge of wastewater to land and surface waters of the region so that the highest quality and beneficial uses of these waters are protected and enhanced. Regulation is by issuance of either Waste Discharge Requirements (WDRs) or National Pollutant Discharge Elimination System (NPDES) permits. Both WDRs and NPDES permits contain monitoring requirements to verify compliance with applicable conditions. These requirements vary according to those specific conditions.

All persons or agencies discharging (or proposing to discharge) pollutants from a point source into any waters of the State are required to apply for and have a permit under the NPDES program and/or WDRs (issued by the Regional Board) to discharge. Typically publicly owned treatment works are regulated through NPDES permits and/or WDRs to monitor water quality for all points of water discharge. Examples of cities and agencies that are currently operating wastewater collection, treatment, and disposal systems under a NPDES permit include:

- City of Paso Robles
- City of Atascadero
- Atascadero State Hospital
- Templeton CSD
- San Miguel CSD
- South San Luis Obispo County Sanitation District
- City of Pismo Beach

K.4.9 Estuaries and Wetlands

Automated Monitoring in Estuary

Current monitoring in estuaries and wetlands is summarized below. Note that there is significant estuarine monitoring that is conducted by other federal agencies, State and local agencies, and the academic community that may not be discussed here.

K.4.9.1 Techniques for Measurement

Environmental monitoring requires sampling techniques in conductivity (and salinity), temperature, dissolved oxygen, oxygen saturation, fluorescence (a proxy for chlorophyll-a), turbidity, nitrate, current/current profile, and depth of water. Standard practices are used in both manual and automated sampling equipment. More information on the sites maintained by SLOSEA can be found here: <http://www.slosea.org>

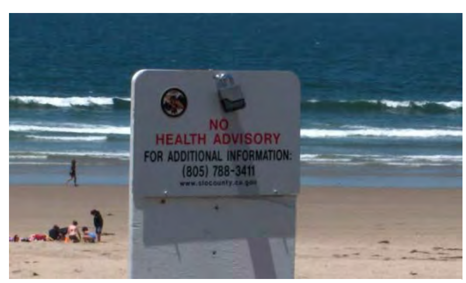
K.4.9.2 Participants

The San Luis Obispo Science and Ecosystem Alliance (SLOSEA) monitors water quality in the Morro Bay Estuary at the following sites and hopes to map spatial and temporal changes in the physical and chemical characteristics of water quality in the Morro Bay ecosystem.

The US EPA's National Coastal Assessment surveys the condition of the Nation's coastal resources by creating an integrated, comprehensive monitoring program among the coastal states.

To answer broad-scale questions on environmental conditions, the Environmental Monitoring and Assessment Program (EMAP) and its partners have collected estuarine and coastal data from thousands of stations along the coasts of the continental United States. EMAP's National Coastal Assessment comprises all the estuarine and coastal sampling done by EMAP beginning in 1990. This includes the sampling done in the biogeographic provinces as well as data from the Regional EMAP (REMAP) studies done by EPA Regional Offices. Locally there are five stations in the region several of which are off-shore, coastal sampling sites. This data can be retrieved and stations mapped online at: <http://oaspub.epa.gov/coastal/coast.search>

K.4.10 Coastal Beaches



Beach Notification

The Beaches Environmental Assessment and Coastal Health (BEACH) Act of 2000 requires that coastal and Great Lakes states and territories report to United States Environmental Protection Agency (US EPA) on beach monitoring and notification data for their coast recreation waters. The BEACH Act defines coastal recreation waters as the Great Lakes and coastal waters (including coastal estuaries) that states, territories, and authorized tribes officially recognize or designate for swimming, bathing, surfing, or similar activities in the water.

The BEACH Program focuses on the following five areas to meet the goals of improving public health and environmental protection for beach goers and providing the public with information about the quality of their beach water:

- Strengthening beach standards and testing
- Providing faster laboratory test methods
- Predicting pollution
- Investing in health and methods research
- Informing the public

K.4.10.1 Techniques for Measurement

Monitoring includes ocean water samples collected from the County's most visited beaches on a weekly basis. Shoreline samples are analyzed for bacterial indicators.

Locally, the County's Environmental Health Services Division conducts the public health beach monitoring and regulatory program. In 2010, nineteen (19) locations were analyzed for three indicator bacteria: enterococcus, total coliform, and fecal coliform. Beaches monitored included:

- Pismo State Beach, Oceano
- Pismo Beach
- Shell Beach
- Avila Beach
- Olde Port Beach
- Hazard Canyon
- Morro Bay City Beach
- Cayucos Beach
- Pico Avenue, San Simeon

K.4.10.2 Participants

The County's Environmental Health Services Division monitors beach water quality for recreational use through a California State grant between April 1 and October 31 of each year.

K.4.11 Marine Observations

National Weather Service (NWS) forecasters need frequent, high-quality marine observations to examine conditions for forecast preparation and to verify their forecasts after they are produced. Other users rely on the observations and forecasts for commercial and recreational activities.

K.4.11.1 Techniques for Measurement

National Data Buoy Center (NDBC) provides hourly observations from a network of about 90 buoys and 60 Coastal Marine Automated Network (C-MAN) stations to help meet these needs. All stations measure wind speed, direction, and gust; barometric pressure; and air temperature. In addition, all buoy stations, and some C-MAN stations, measure sea surface temperature and wave height and period. Conductivity and water current are also measured at selected stations.

K.4.11.2 Participants

The National Oceanic and Atmospheric Administration (NOAA) National Data Buoy Center (NDBC), a part of the National Weather Service, designs, develops, operates, and maintains a network of data collecting buoys and coastal stations.

The major marine observing systems that form the US national marine observations backbone are:

- NOAA's National Weather Service's NDBC Ocean Observing System (NWS NOOS)
- NOAA's National Ocean Service's (NOS) National Water Level Observation Network (NWLON) and their Physical Oceanographic Real-Time System (PORTS)
- NOAA's Tropical Moored Buoy (TMB) projects
- NOAA's OAR drifting buoy programs

There are only a few stations in the region. More information on stations that are a part of the National Data Buoy Center can be found at: <http://www.ndbc.noaa.gov>

K.4.12 Groundwater Quality

USGS Groundwater Quality Sampling

Groundwater is often sampled to determine the chemistry of the groundwater for purposes of utilizing the water for human consumption. Public water supply systems are subject to regulation by the California Department of Public Health, which specifies minimum guidelines for sampling frequency and sampling procedures that must be followed by any water system operator. Additional sampling of groundwater takes place as part of groundwater management reporting and Basin Management Objective implementation (see *Groundwater Management Efforts* data need). Basin management activities often focus on areas of natural or manmade contamination and methods to reduce the threat of the contamination from migrating into drinking or irrigation supply wells.

K.4.12.1 Techniques for Measurement

Analytical parameters vary, but can include physical measures (e.g., pH and temperature) nutrients, major inorganics (e.g., chloride, potassium, and sulfate), and minor inorganics (e.g., boron and manganese).

K.4.12.2 Participants

The USGS has conducted water quality sampling at more than 150 sites in the County since the 1920s. The USGS also conducts research and special studies to further the development of scientific knowledge and its application to real world management problems.

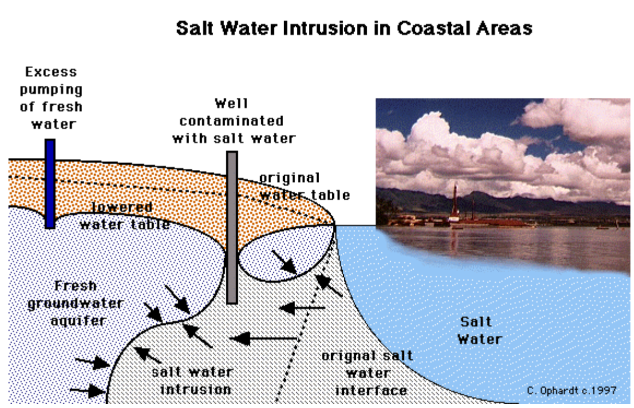
The Regional Board regulates discharges of wastewater to groundwater (e.g., direct injection or recharge ponds using recycled water) so that the highest quality and beneficial uses of these waters are protected and enhanced. Regulation is by issuance of either Waste Discharge Requirements (WDR) or a NPDES permit. WDRs contain monitoring requirements to verify compliance with applicable conditions. These requirements vary according to those specific conditions.

WDR permit requirements often include groundwater monitoring. For example, the Regional Board has established monitoring programs for recycled water and wastewater operations that discharge to groundwater. Dischargers must periodically collect and analyze groundwater quality samples from wells representative of the receiving groundwater. For a list of adopted orders, permits, resolutions, and settlements issued by the Central Coast Regional Water Quality Control Board, go to:

<http://www.waterboards.ca.gov/centralcoast/board_decisions/adopted_orders/>

K.4.13 Sea Water Intrusion

Management areas and communities along the coast monitor for seawater intrusion. For example, the Northern Cities Management Area (NCMA) conducts quarterly monitoring of four coastal "sentry wells" along with an Oceano observation well. Each well location includes a "cluster" of individual well completions at various depths. Quarterly monitoring includes level measurement, as well as sampling and analysis for water quality. The monitoring results are presented in the NCMA Annual Report, which is filed with



the Court. The coastal sentry wells monitored by the NCMA were renovated in 2010 to raise the surface completions above grade and secure them within locking enclosures. In early 2011, the NCMA agencies installed combination pressure transducers and conductivity probes in four of the sentry wells: 32S/12E-24B1; 32S/12E-24B2; 32S/13E-30F03; and 32S/13E-30N02. These probes allow the NCMA agencies to observe short duration variations in groundwater levels and quality to better characterize short- and long-term trends as they relate to variables such as tidal variation, precipitation patterns, and urban pumping.

K.4.14 Groundwater Management Efforts

Various groundwater management efforts in the County also include groundwater elevation and quality sampling. These include efforts where:

1. Basins under adjudication are required to monitor and report annually and/or develop Groundwater Management Plans
2. A Groundwater Management Plan is voluntarily being developed
3. An entity is implementing a project with monitoring requirements
4. Individual entities or groups are developing Salt and Nutrient Management Plans in accordance with the State Water Board's Basin Plan
5. Seawater intrusion is of concern to agencies that rely on coastal groundwater basins for their water supply
6. Individual property owners check the quality of their drinking and/or irrigation water supply

The availability of the information varies with each effort, making it challenging to fully understand the condition of all groundwater basins. Sharing of this data with governmental agencies or regional groups conducting groundwater basin studies and, when appropriate, the public at-large is encouraged and promoted.

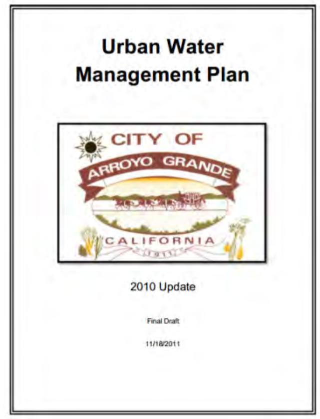
K.4.15 Land Use and Population Changes

Land use monitoring refers to the deliberate action of collecting data on land use over time as part of an overall effort to understand the region and what changes might be affecting managed water resources. Local jurisdiction Planning departments, the State Department of Finance, and the San Luis Obispo Council of Governments all harvest and create land use and population data for use in making land use policy decisions.

Population data generally comes from U.S. Census data, using historical data to understand past trends in population providing insight into extrapolating population growth (or decline) in the future. Population data in WSMPs and UWMPs has become important in the calculation of water use per capita (or person). Water conservation goals are State mandated (SBX7-7) using the per capita water use methodology.

K.4.16 Urban Water Demands

Urban land uses refer to the unincorporated communities and incorporated cities in the County, and include residential, commercial, industrial, parks, institutions, and golf courses.



Primary sources of water demand data for urban centers came from water system master plans (WSMP) and urban water management plans (UWMP) prepared by water purveyors, incorporated cities, and unincorporated communities. Additionally, the County's Annual Resource Summary Report 2008 (ARS) provides projected water demand and population data for these areas.

Since existing water demands and future water demand projections are based on information from WSMPs and UWMPs, land use information is not used to calculate water demand. Urban areas (or small water suppliers) where neither document is available are contacted and demand estimates are made through direct communication.

K.4.17 Data Enhancement Plan (DEP)

The DEP was a regional water monitoring program designed to provide data for planning, design, and operational purposes, yet it was also designed to be flexible and to change over time. This is not necessarily contradictory. Rather, it implies that regional water monitoring program data will be frequently interpreted to identify monitoring sites that might be dropped from the network or sampled less frequently, as well as identifying spatial gaps or the need for more frequent data collection. The design also recognizes that there will continue to be improvements in instrumentation that will allow for more in-situ monitoring and the collection of more data by remote sensing. New technologies will be incorporated into the regional water monitoring program when they are ready for operational deployment.

K.5 QUALITY ASSURANCE/QUALITY CONTROL MEASURES

Quality Assurance/Quality Control Measures (QA/QC) in completing tasks related to data management follow the trail of data as it is collected in the field, uploaded to electronic data files, and stored for historical long-term access and interpretation (See **Figure K-4**).

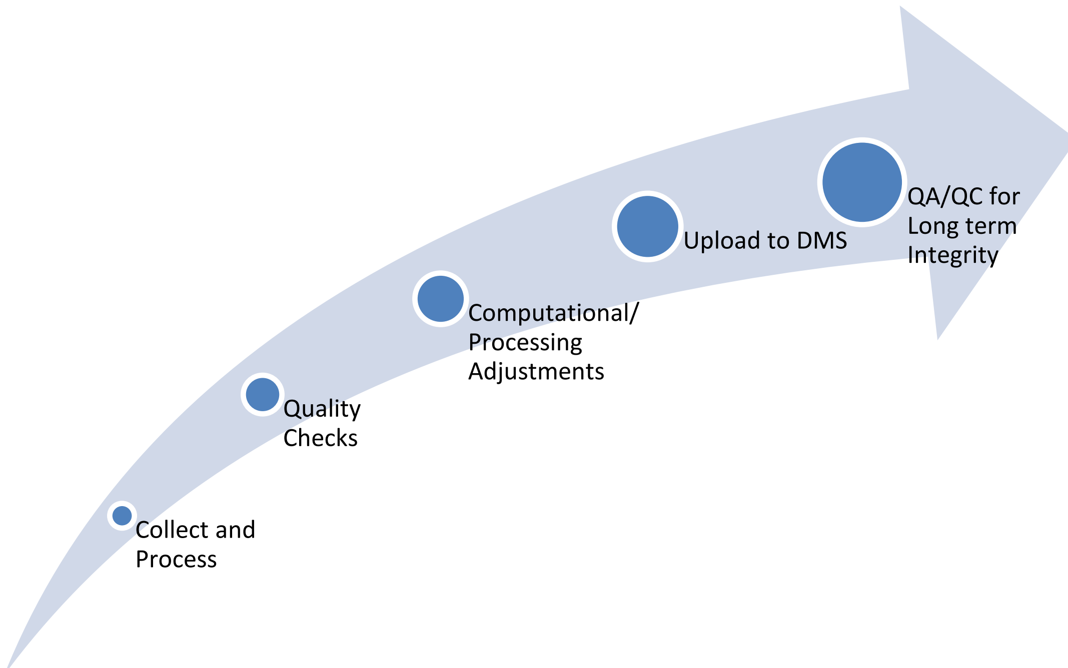


Figure K-4. Data Collection Process Leading to QA/QC Storage

K.5.1 Assessment of Existing DMS

The QA/QC measures implemented at the step where regional data is deposited for long-term storage and accessibility ensures the integrity of the data over time. So often, data becomes contaminated due improper data management practices or inexperience of DMS operators. To improve the existing DMS practices and operations, the District requested a review of the existing data collection program by the consulting firm URS in June 2009, *Technical Memorandum Water Resources Data Management System Update Recommendations (TM).* This review of the San Luis Obispo Water Resources Data Management System (SLO-DMS) describes the pros and cons of the SLO-DMS and a recommended set of steps to improve the SLO-DMS for purposes of maintaining the long-term integrity of stored data.

Specific points concerning the SLO-DMS are identified as follows:

1. The system is the result of 100+ years of data collection, with most of the hand written data converted over to electronic files
2. The long history of the SLO-DMS has created an organic construction of the system with much of the data structure not integrated into larger, more secure and more manageable sizes
3. The data in the SLO-DMS is highly fragmented making it difficult for staff to know where the data is located and how to manage the data

4. The data is stored as a series of electronic files with differing formats and a multitude of processing methods, leading to gross inconsistencies in similar data categories
5. The fragmentation of the data leads to extended time and effort to manage the data, support data requests and ensure long-term data integrity

In addressing these points, the District identified several primary objectives for URS to consider in the recommended solutions. These were to:

- Streamline the data entry and retrieval system
- Better manage existing data
- Standardize data collection and processing procedures
- Assess the range and completeness of existing datasets
- Report water resources information in a timely and appropriate manner

To accomplish these tasks, the District identified the following elements that should be addressed in the proposed recommendations to improve the SLO-DMS:

- Means to consolidate historic and current water resources data
- Methods to streamline data entry, retrieval, and reporting
- Methods or a framework to certify water resources data (QA/QC checks)
- Flexibility of proposed data management system to accommodate future data formats and types
- Future integration with GIS-based applications

K.6 Regional Water Management–DMS Overview

This section provides a brief overview of the RWM-DMS and built-in tools used to complete updates to the IRWM Plan. The database is currently populated with all relevant data needed to fully describe the IRWM Region within the context of the IRWM planning guidelines. The inherit nature of drilling down to information starting from the IRWM Region, Sub-Region, Water Planning Area, and Watershed is conducive to database design of providing data at the highest resolution and rolling up the data into summary reports unless the detail is needed.

The RWM-DMS is designed around the sections of the IRWM Region Description and Water Supply, Demand, and Water Budget, allowing for updates of the section with each update of the IRWM Plan or other regional water studies (e.g., Master Water Report). As a reporting tool, the interface accepts and outputs data in various formats to adhere to consistent reporting of data over time. The current level of populated data is considered to be sufficient to move forward assuming maintenance of descriptive data and updates in time sensitive numerical values as the two primary responsibilities.

The interface shown in **Figure K-6** is structured to allow for drilling down into each of the geographic and political entities. The tabs along the top are structured from left to right to allow the user to follow the hierarchy of choices shown in **Figure K-5**.

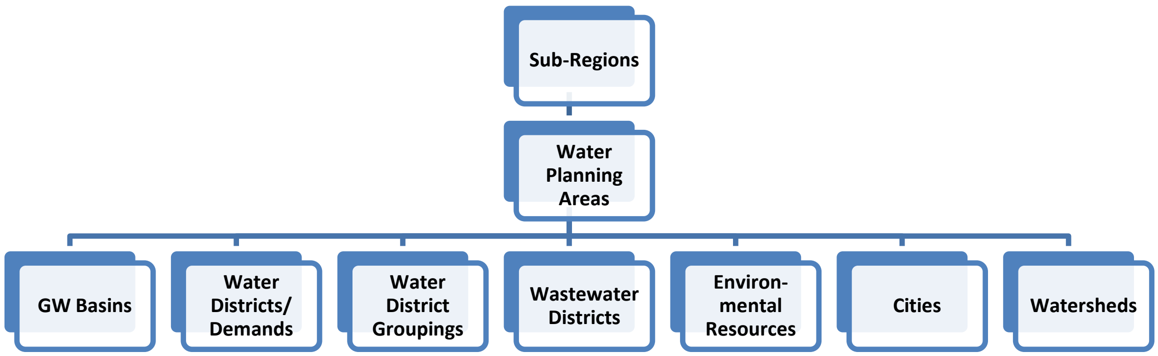


Figure K-5. Regional Water Management – DMS Hierarchy

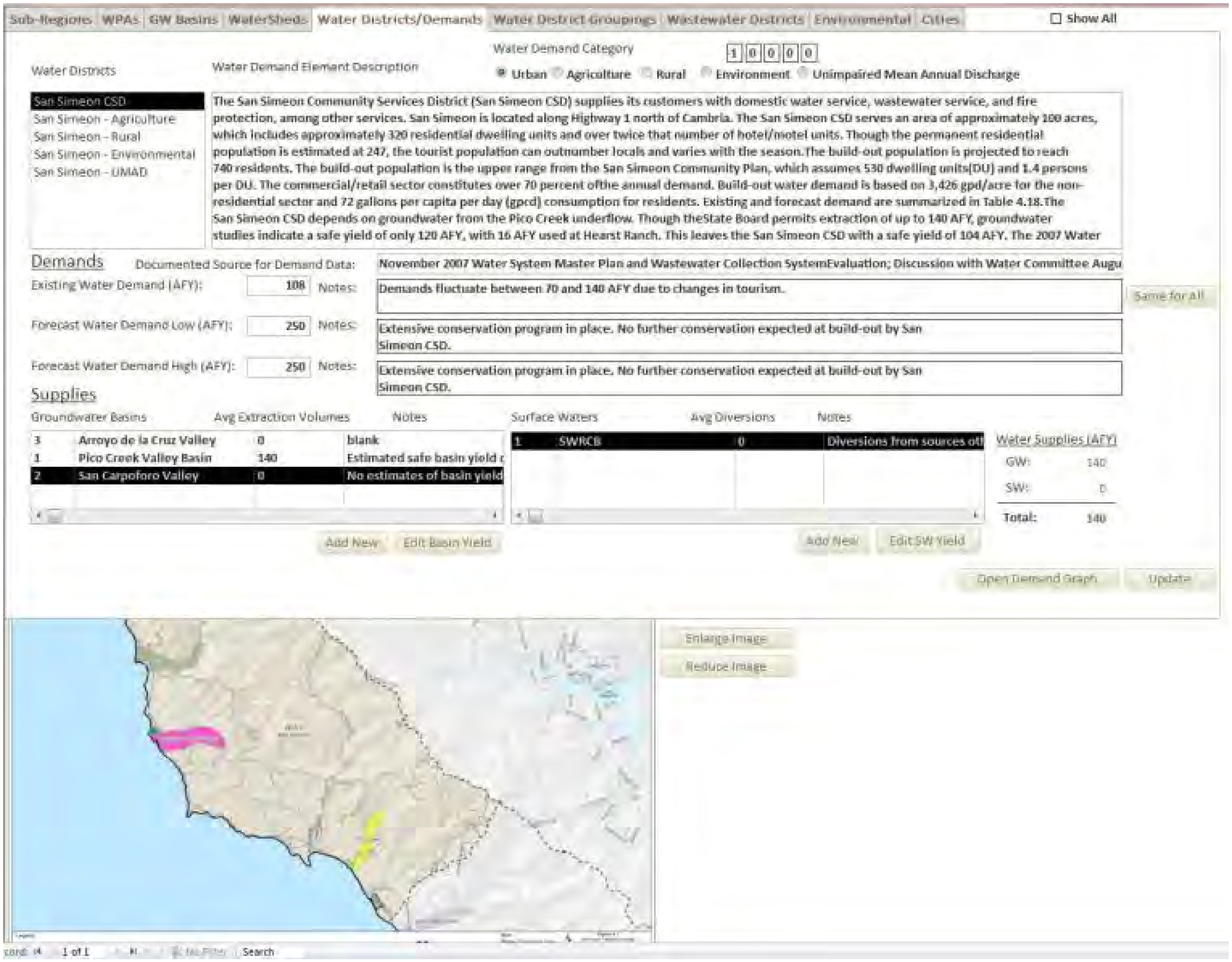


Figure K-6. Regional Water Management - DMS

Various approaches to maintaining[3] the data include the District updating the data directly or passing the database off to representative stakeholders for each Sub-Region and request that all data be updated annually or biennially. Portability and ease-of-use of the database is essential to both methods. The updated database can be emailed to the District and can easily be aggregated for all three Sub-Regions for purposes of reporting. The tabular reports in **Section D – Water Supply, Demand, and Water Budget** are generated through this tool, with one example report illustrated in **Figure K-7**.

WPA No. 9 - Cuyama Valley

	Water Districts/Use Sectors/Environmental/Unimpaired Summary	**Cuyama Valley - Agriculture**		**Cuyama Valley - Rural**		**Environmental & UMAD**		**Total**	
Urban/Ag/ Rural Water Demands		**Demand (AFY)**	***Notes***	**Demand (AFY)**	***Notes***	**Demand (AFY)**	***Notes***	**Demand (AFY)**	***Notes***
	Existing Demands	30,714		10				30,724	
	Forecasted Demands (2035)	**28,823**		**180**		**0**		**29,003**	
Water Supply Source	**Groundwater**	**GW Supply (AFY)**		**GW Supply (AFY)**		**GW Supply (AFY)**		**GW Supply (AFY)**	
	Cuyama Valley	9,800	***1***	61	***1***			9,861	
	Other GW Supply Sources	19,023		119				19,142	
	Total GW	**28,823**		**180**		**0**		**29,003**	
	Surface Water	**SW Supply (AFY)**		**SW Supply (AFY)**		**SW Supply (AFY)**		**SW Supply (AFY)**	
	SWRCB - WPA 9	0						0	
	Total SW	**0**		**0**		**0**		**0**	
	Total Supplies	**28,823**		**180**		**0**		**29,003**	
	Balance (Supplies - Demand)	**0**		**0**		**0**		**0**	
Environmental Water						0	***2***		
Unimpaired Mean Annual Inflow						0	***3***		

Notes:

1 There is no separate yield estimate for the San Luis Obispo County portion of the basin.

2 Not Available

3 The eastern portion of the County (i.e., WPAs 9, 10, 11, 14, and 15) was ultimately excluded from the environmental water demand analysis due to the lack of data and regional physiographic differences.

Figure K-7. Illustration of Tabular Data Generated by the Regional Water Management - DMS

K.7 ANTICIPATED FEATURES OF A DATA MANAGEMENT SYSTEM

As part of the Updated 2013 IRWM Plan development, the need for a Regional Water Management DMS (RWM-DMS) in storing qualitative information regarding the IRWM region and projects became imperative. With regional descriptive information updated in the recent 2012 MWR, the intent of the content provided in the Updated Plan resulted in the refinement

[3] GEI Consultants, the developer, will not be maintaining the RWM-DMS beyond completion of IRWM Plan Update.

and merging of the MWR and IRWM Plan region descriptions. The RWM-DMS is also a tool to be used in the future to recreate the storyline with each subsequent update of the IRWM Plan.

Through the RWM-DMS, the advantages of having both a qualitative DMS and a quantitative San Luis Obispo DMS (SLO-DMS) outweighed the economies of a single DMS with the ability to do both jobs. The differences in the desired structural features and timeframe for implementation made it advantageous to push forward with the two system concept. The long list of structural features required of a DMS with today's technology has been trimmed down to the following list and short descriptions.

Database Platform

There are many choices of database platforms and tools to work with large data sets. The right database is often based on preference and level of support over time. The measure of a system's robustness is often made based on the database platform used. The platforms can be simple, such as using MS Excel, or very complex, such as Oracle. In between, there are many other platforms with various strengths and weaknesses. **Table K-3** provides a summary of the well-known database platforms in use for the type of data under consideration. The shaded attributes signify the strengths in areas indicated.

Table K-3. Strengths and Weaknesses of Common Database Platforms

Database Platform	Notes	Attributes								
		Portability and Cost	Minimum IT Support	Minimum Training	Provider Support	Scalable Over Time	Ease of Programming and Querying data	Reporting Tools	Web-Enabled	Compatibility with State Platforms
MS Excel	While convenient and requires little training, Excel has poor scalability making it difficult to expand with the data.									
MS Access	Portable with good support and average training, scalability is average.									
MS SQL Server Light	Portable and scalable, however not supported or popular for large secure datasets.									
MS SQL Server	Well supported and popular, but requires training and IT resources.									
Oracle	Very robust, web-enabled, but requires high level of training, mandatory IT resources, and long-term support.									

Upload/Download Methods

The upload/download method describes how the stakeholder will communicate with the system. Ease and speed of uploading or downloading data creates improved participation in the data management program and minimizes criticism leading to continuously changing systems or platforms.

Change/Edit Log

Secure data systems often require the need to track changes made by the various users as a means of understanding the frequency of use or misuse of the system, the quality of data, and debugging interface and attending to user support issues.

Data Privacy

Secure data systems also feature privacy provisions to limit the access and visibility to some or all data to other users. A privacy management feature is used to profile the users and their level of access to the data.

Data Accessibility

Accessibility of the data is a measure of acceptance by the public audience for which the data is intended. Accessing data over the internet is a standard feature of any data management program built today. The deciding factor is whether the data is live or fixed (snapshot). Some users want to see up-to-the-minute monitoring data as it becomes available, making the need for data accessibility high relative to simply providing a spreadsheet or pdf file of a report.

Reports

Reporting comes standard with most platforms and third party software is often available to further improve reporting capabilities. As a critical interface piece with the intended users (i.e., State and federal regulatory agencies), a comprehensive well thought out set of standardized reports are often a measure of the data system's level of compliance.

System Backups

Automated system recovery and back-up features are necessary to ensure the data is not lost with a manmade or natural disaster affecting the integrity of the database or the servers upon which the database is stored. This requires IT resources in providing the needed hardware and software to have full system recovery activities taking place in the background on a continuous basis.

K.7.1 Preferred Features in Selected DMS

Each of the structural features described above have been screened for the preferred option while moving forward with having two systems, the RWM-DMS and SLO-DMS. The two unique feature profiles recognize that advances and changes in technology will occur over time; especially since the timeframe for full implementation of both systems is not set.

RWM-DMS System Features

The RWM-DMS will initially serve as the dataset to updating and describing the region for purposes of tracking and reporting changes. Ultimately, the RWM-DMS will be used for monitoring IRWM and project implementation and reporting at the Water Planning Area and Sub-Region level. The current dataset properties include:

- Water districts
- Cities/communities
- Watershed descriptions
- Water supplies
- Groundwater basins
- Water demands
- Environmental resources
- Project tracking and ranking
- IRWM implementation monitoring

Foreseen use of the RWM-DMS is limited to water resources planners and IRWM implementation functions. As described in **Table K-4**, the system can be smaller in scale and more reliant on built-in data management and reporting tools. The qualitative nature of the RWM-DMS makes the need for GIS compatibility unnecessary, with large text and image files likely being the bulk of stored data along with numerical data for characterizing the region. The ability to store and view images and a user-friendly graphical interface are to be developed over time as needed to improve usability and to reduce needed training.

Table K-4. RWM-DMS Structural Profile

Structural Feature	Selection Criteria
Database Platform	MS Access selected for its portability, level of MS support and backward compatibility.
Upload/Download Methods	Data entry to be done through a VBA interface, use of a spreadsheet for large table-level changes, and use of copy and paste from Word to database.
Change/Edit Log	No log is needed.
Data Privacy	Database not to be publically available and no confidential data is anticipated.
Data Accessibility	Data accessible to IRWM development and implementation staff through direct access to the database.
Reports	Reporting for purposes of updating the IRWM Plan and creating project reports through MS Access tools
System Backups	System back-ups anticipated through current IT protocols of managing network drives.

SLO-DMS System Features

Foreseen use of the SLO-DMS is to provide the maximum amount of numerical information and interpretation staying within privacy and confidentiality constraints of the stakeholders. A GIS interface is recommended as the primary method of accessing data along with MS Excel and text file upload and download features. Full security and back up features are a requirement along with IT resources in the day-to-day and long-term use of the system. Consideration is continuously given to advances in hardware and software and specialized training in their use.

K.7.2 Stakeholder Support and Ease of Use

The DMS needs of the region will eventually transition to a GIS web-enabled tool for secure use in collecting, sharing and storing all numerical data from monitoring sources in the SLO region. The intent would be for a map-based visualization tool to show many regional attributes at one time, include monitoring locations, images, information about the monitoring location and measuring device, monitoring data, contouring for groundwater elevation and water quality, stream flow hydrographs and historical flooding problem areas, and areas of groundwater contamination or salinity intrusion.

This future DMS effort would allow for multiple layers of stakeholder-provided information to be incorporated into shared database layers where data can be aligned with demographic information, city/county/district boundaries, and topographic and geologic features. The database would also store georeferenced reports, images, texts, plans, and other documents that can be easily retrieved. The DMS could be developed to allow secure access by stakeholders and the public through the web.

This transition is dependent upon the availability of funding and resources to develop such a tool. If accepted by the RWMG, the existing SLO-DMS would need to be populated with historic data, monitoring site locations and supporting information. The SLO-DMS would also require data maintenance and website hosting for stakeholder and public access, and uploads to state and federal databases (See **Section K.3 Description of Data Needs**).

K.8 OTHER POTENTIAL FUTURE GIS/DMS NEEDS AND INITIAL DMS DEVELOPMENT

K.8.1 MS4[4] Permit/Order and TMDL DMS Needs

[4] A MS4 is a conveyance or system of conveyances that is: 1) owned by a State, city, town, village, or other public entity that discharges to waters of the United States; 2) designed or used to collect or convey storm water (including storm drains, pipes, ditches, etc.); 3) not a combined sewer; and 4) not part of a Publicly Owned Treatment Works or sewage treatment plant.

The MS4 and TMDL permits will require an individual permittee to develop an Integrated Monitoring Program (IMP) or to participate with other permittees in a Coordinated Integrated Monitoring Program (CIMP). Either approach will have extensive data collection, management and reporting. MS4 Permit/Order notes the benefits of the CIMP approach, noting that "the CIMP provides Permittees opportunities to increase the cost efficiency and effectiveness of the monitoring program" and that "the greatest efficiency may be achieved when a CIMP is designed and implemented on a watershed basis".

The IRWM region could reduce the overall monitoring and data management program costs to individual members through the CIMP to achieve economies of scale and management efficiencies. A CIMP will require a shared approach to sampling, laboratory analysis, data management and compliance reporting. The SLO-DMS could be expanded to include functionalities needed to support the CIMP, including:

- Allowing users to submit laboratory testing and monitoring results to a central data base that supports:
  - Quality control and assurance measures
  - Management of water quality time series data
  - Preparation of required compliance reports
- Submitting of the required data to the State (SWAMP/RWQCB)
- Tracking of projects that implement best management practices
- Management of reports and special studies to share and distribute results

K.8.1.1 Quality Control and Assurance Measures

MS4 permittees are required to develop a Monitoring and Reporting Plan (MRP) and Quality Assurance Project Plan (QAPP) for Regional Water Board Executive Officer approval. The IRWM Region could jointly develop the monitoring plan, establish locations and develop both the MRP and QAPP for the IRWM Region. The QAPP will include protocols for sample collection, standard analytical procedures, and laboratory certification. All samples will be collected in accordance with applicable Surface Water Ambient Monitoring Program (SWAMP) protocols.

K.8.1.2 Management of Water Quality Time Series Data

Large amounts of monitoring data will be generated by an IMP or CIMP and a DMS would need to effectively manage the sampling, QA/QC, monitoring, and reporting program. A GIS element to the DMS and the monitoring and reporting plan would help document the results and explain the problem and solutions to the public. The IRWM Region will need to make decisions regarding how to develop and apply a GIS/DMS to meet the requirements.

K.8.1.3 Preparation Compliance Report

The MS4 Permit/Order spells out the reporting requirements, including how the TMDL reporting could be integrated. The IRWM Region will need to develop a system to support reporting to the RWQCB.

K.8.1.4 Submitting of the Required Data to the State

Any tools developed to support the IRWM Region monitoring should include a functional requirement to support submittal to the State's regional data center as well as the required reports to the RWQCB.

K.8.2 Project Submittal System

For IRWM Plan updates and future rounds of grant funding, the IRWM Region could develop additional functionality in the web enabled SLO-DMS tool to:

- Allow project sponsors to submit and update their project information online
- Promote transparency and let other IRWM Region stakeholders view the project information and seek opportunities of integration or teaming
- Provide a map of proposed projects, also documenting the status of the project
- Allow for upload of supporting projects documentation
- Manage the IRWMP and project performance monitoring during implementation

K.8.3 Public Comments on Acceptance of a Single GIS/DMS

With the above concept of a single all-encompassing data management platform, public acceptance is a necessary requirement. Using the IRWM Plan public workshops as an audience for feedback on the current data management systems and the proposal of a single DMS, several comprehensive responses provided valuable feedback for consideration in moving forward. The questions posed to the audience in the form of a handout to be filled out by interested stakeholder, are as follows:

Question 1 – DATA NEEDS:

Regardless of data currently being monitored and managed, please list all of the data management and monitoring needs you see in your Sub-Region.

The purpose of this question is to find out from local residents and interest groups:

1. Where problems may exist and where monitoring activities are warranted for measuring change over time
2. How a given monitoring program is described, and, if implemented to its full extent, can improve the understanding and knowledge of the water-related resource

Question 2 – EXISTING MONITORING AND DATA MANAGEMENT PROGRAMS:

In the table below, please list existing monitoring and data management programs you are familiar with. Also provide what the collected data is used for/its purpose. Please identify the location of each program on the attached maps of your Sub-Region, and fill in as much of the table as you can.

The purpose of this question is to:

1. Correctly identify existing monitoring programs
2. Create a list of who is using data collected and why
3. Provide a list of who is currently managing the data
4. List the current funding sources for on-going monitoring programs (if known)

Question 3 – POTENTIAL WAYS TO MANAGE DATA:

How would you like to see your Sub-Region's data being managed?

The purpose of this question is to understand the preferences between having data management under a single IRWM Region entity/single data management system, for instance, or having data management under the entity actually doing the monitoring.

Question 4 – ACCESS TO DATA:

Why should managed data be, or not be, available via the internet, assuming security protocols are in place to limit access to confidential or proprietary data? What limitations do you see relative to online data management systems?

The purpose of this question is to find out the general acceptance of being able to download data from the internet, regardless of who is managing the data.

Question 5 – PRIORITY DATA AND REPORTING:

What types of data would be important to you if a reporting program was implemented for each Sub- Region. Please include elements of Climate Change or elements of the IRWM Plan Performance and Monitoring (i.e. ways that the region will monitor the IRWM Plan's implementation and achievement of benefits over time).

> The purpose of this question is to gauge the IRWM Plan's reporting mechanisms based on the needs of the stakeholders over and above the minimum required by the State water code.

The cumulative response to these questions is included as **Appendix K-2 – Stakeholder Feedback on Regional DMS** of the IRWM Plan. Monitoring of groundwater and streamflow are identified as the highest priority activities for regional data collection and management. Also, in the case where there is an adjudicated groundwater basin, such as the Santa Maria Groundwater Basin, it is important to note that the monitoring of groundwater elevations is a Court requirement along with annual reporting. Permission by the Court to include the data in a public database (with QA/QC and security measures for confidential data), would be required, but is not seen as a fatal flaw in the proposed single DMS concept.

K.8.4 Proposed Implementation of the San Luis Obispo County Data Management System (SLO-DMS)

From the previous section, the purpose and needs of the initial SLO-DMS have been defined through regional stakeholder discussions, and has taken shape as a GIS web-enabled tool for secure use in collecting, sharing and storing all numerical data from all monitoring sources in the SLO region. The initial need is for a map-based visualization tool to show many regional attributes at one time, include monitoring locations, images, information about the monitoring location and measuring devices, monitoring data, contouring and bubble-plots for groundwater elevation and water quality measurements, stream flow hydrographs and historical flooding problem areas, and areas of groundwater contamination or salinity intrusion.

The initial SLO-DMS allows for multiple layers (See **Figure K-8** for example screenshot) of public domain and stakeholder provided information to be incorporated into shared database layers where data can be aligned with demographic information, city/county/district boundaries, and topographic and geologic features. The database can also store geo-referenced reports, images, texts, plans, and other documents that can be easily retrieved. The SLO-DMS is designed on a platform built for secure access by stakeholders and the public through the web.

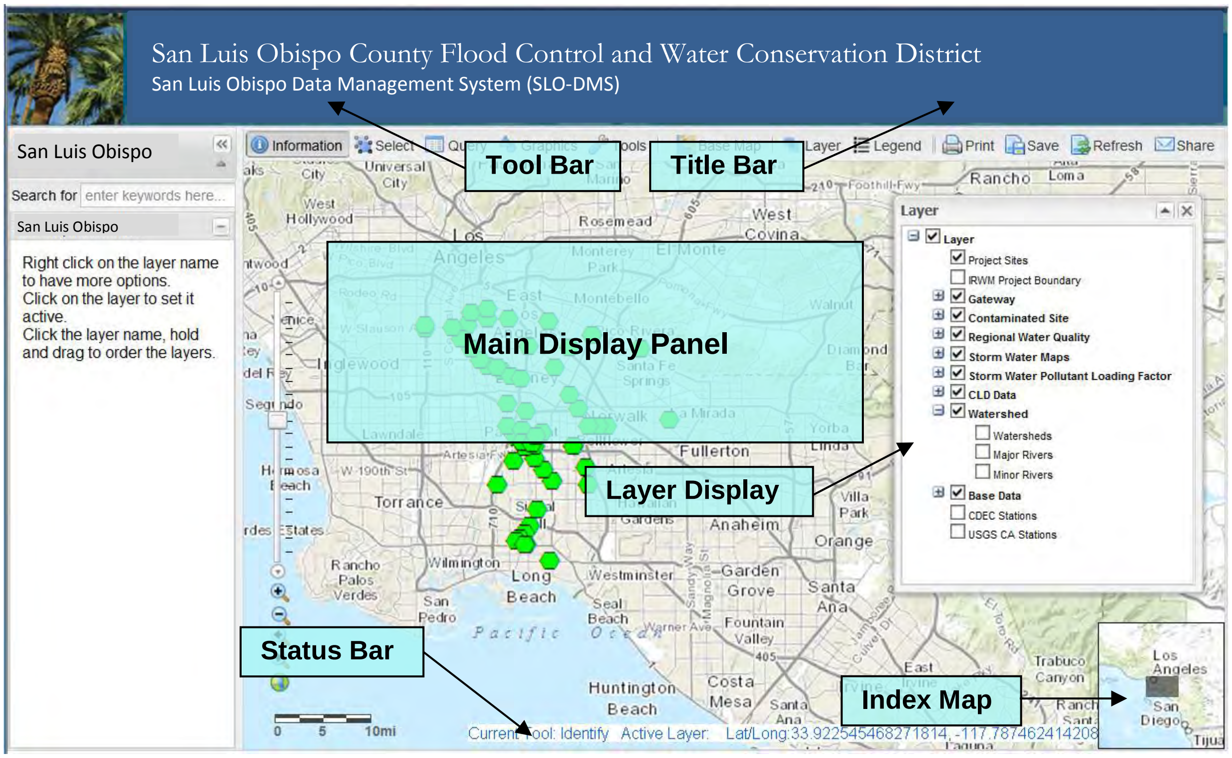


Figure K-8. SLO-DMS Interface and Map Layers (Example)

Accepted by the District for use as the region's DMS for monitoring data, the District will work to begin populating the SLO-DMS with historic data and monitoring site locations and any supporting information. The District will maintain the data and hosting of the website for stakeholder and public access; restricting confidential data based on permissions and agreements set for each type of user. Implementation is proposed to take approximately two-years with the estimated work plan shown in **Figure K-9** to bring the SLO-DMS online to internal stakeholders beginning in September 2015, scheduled uploading to state and federal databases in February 2016, and first available to the public by June 2016.

K.8.5 Formatting Data and Interacting with State and Federal Database Platforms

The initial SLO-DMS is built on a platform, and by a program developer,[5] which is familiar with state and federal database platforms described in **Section K.3**. The SLO-DMS platform and programing provides for interrogation by state database systems to download stored water quality data, or to allow the District DMS administrator to upload similar datasets (e.g., CASGEM data) deemed to be publically available. Based on **Figure K-9**, first uploading of data can possibly begin in February 2016.

[5] Dr. Donghai Wang, author, works closely with state agencies in relational database design and integration.

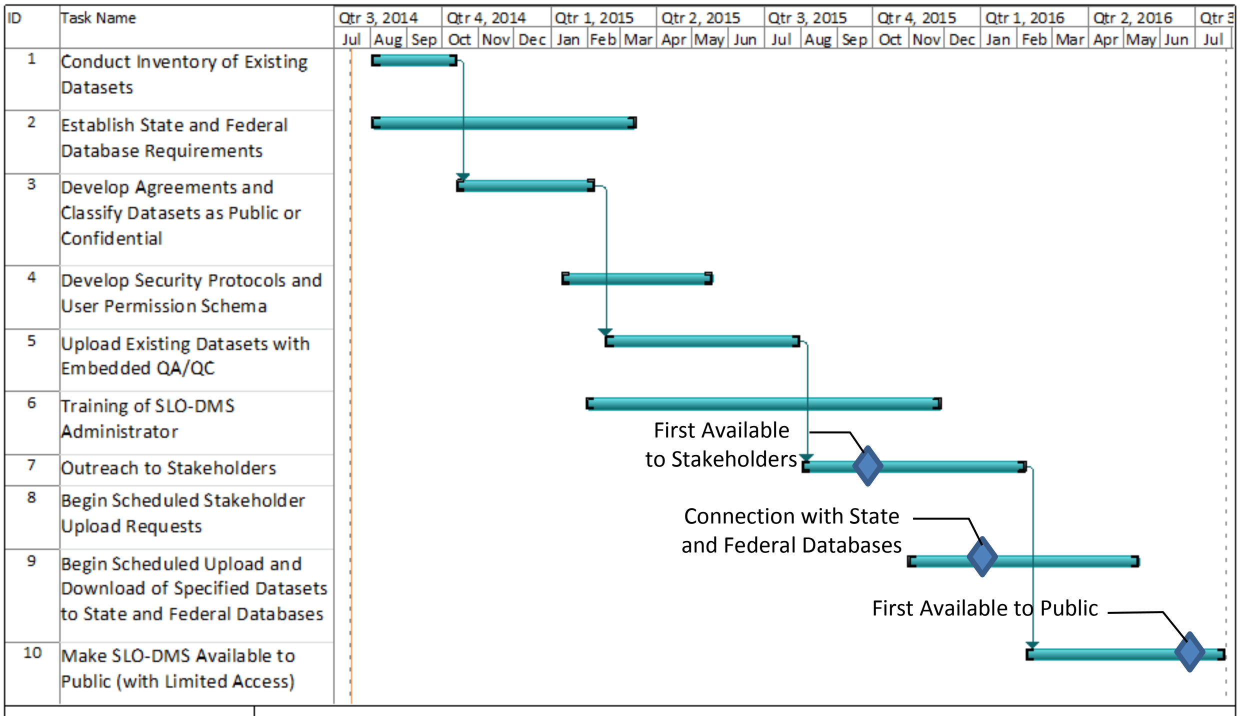


Figure K-9. Proposed Work Plan to Implement Initial SLO-DMS

Section L.
Financing Strategies

Section L. Financing Strategies

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Tables

Section L. Financing Strategies

Research conducted as part of the Integrated Regional Water Management (IRWM) Planning process provides alternative funding opportunities specific to implementation of local and regional projects and programs. This section begins with the review of these programs to bring awareness for available:

- Local government funding to the IRWM Plan member agencies
- Grants and loans that may be applied for by IRWM Plan stakeholders

A comprehensive table of the current state and federal funding programs is included as a resource for existing and future project sponsors wishing to pursue government financial support in the implementation of their projects.[1]

For additional project support, a definition on how the IRWM Plan's adaptive approach is based on the project type and the current stage of planning, design, and construction is included in **Section G - Project Solicitation and Prioritization**. Depending on whether the project is regional or local, additional details in **Section H – Project Integration-Project Alternatives** demonstrate how projects can be grouped and integrated for application in various implementation and funding strategies. Section L expands upon the two funding approach methodologies first discussed in **Section A. Introduction** by utilizing the available funding sources and strategies described herein. Project specific funding mechanisms, such as rate structures, for project construction and project operation and maintenance are described within the List of Projects (Table G-3) approved for IRWM Plan implementation.

This section includes the following:

Funding for the IRWM Plan – Describes the funding sources, programs, and grants used for the long-term development and funding of the IRWM Plan.

Local Government Funding – Describes local funding mechanisms/sources in the IRWM Planning region for consideration by the Regional Water Management Group (RWMG) in implementation of IRWM Plan capital projects and programs, including the funding certainty for maintenance and operations after construction.

[1] Hyperlinks are used throughout this section to direct the reader to internet information related to the various funding programs. Over time, many of these links may become stale and no longer work. As part of the five-year IRWM Plan update cycle, new funding programs will be added to this section and all hyperlinks will be re-established.

Grants and Loans (State and Federal) – Details the currently available funding programs from state and federal sources.

Funding Recycled Water/Desalination Programs – Details the potential funding of a regional recycled/desalination project in the IRWM Planning region.

Grant Funding Matrix – Lists the different grant and loan programs currently on-going with specialized funding based on appropriations given to the program, and according to the project type, project benefits, agency, etc.

Project Implementation Strategy – Includes an expanded methodology of funding based on the regional and local benefits of a project.

Funding of Selected IRWM Projects – Lists the known funding approaches to each of the IRWM implementation projects and the level of certainty for long-term implementation, and operations and maintenance.

L.1 Funding of the IRWM Plan Implementation

To date, the IRWM Planning effort has been funded through the San Luis Obispo County Flood Control and Water Conservation District (District). The District serves as the approving body and lead agency for the IRWM Plan's development and implementation. While the District is governed by the San Luis Obispo County Board of Supervisors, its board members and shared county staff act separately, depending on assigned responsibilities, on behalf of the both the County of San Luis Obispo and the District.

The District receives local funding through its general property tax allocations and from revenues provided by participating agencies, organizations, and other parties benefiting from District services. Both the District and the California Department of Water Resources (DWR) provide funding for developing and updating the IRWM Plan. DWR funding for planning and implementation of the IRWM Plan has historically been obtained through the District's application for publically supported grants issued as part of Propositions 50 and 80; both being water bond measures voted by the people of California to support integrated water resources management in the state. Past grants awarded to the San Luis Obispo IRWM Region are included in **Table L-1**. Awardees also contribute to the cost of IRMW Program efforts, such as IRWM Plan updates, in accordance with the RWMG MOU.

In-kind staff time is also provided by members of the RWMG. As noted in the Governance section, the RWMG is a volunteer group of water resources stakeholders representing water entities throughout SLO County expected to actively participate in all aspects of the San Luis Obispo IRWM Plan Update process including, but not limited to, the following activities:

- Actively communicate IRWM Planning activities to all stakeholders including represented interest groups, and individuals
- Review and provide guidance in the preparation of the IRWM Plan Update
- Adopt elements of the IRWM Plan Update to elevate to a policy level
- Prepare and attend RWMG meetings and actively participate in discussions
- Attend workshops and other outreach activities
- Work with the Water Resources Advisory Committee (WRAC) subcommittee in responding to questions and concerns
- Approve the Final IRWM Plan Update and forward to the WRAC for their recommendation of approval to the SLO County Board of Supervisors

Table L-1. Past State Grants Awarded to the IRWM Region

Grant Title	Year	Amount	Description of Benefit/Work Product
Proposition 50 Chapter 8 IRWM Planning Grant	2008	$500K	• Data Enhancement Plan • Flood Management Plan • Groundwater Banking Plan • Regional Permitting Plan
Proposition 84 IRWM Implementation Grant (Round 1)	2011	$11.5M	• “Plan B” Water Supply Replacement Projects
Proposition 84 IRWM Planning Grant	2012	$1M	• IRWM Plan Update • Salt & Nutrient Planning • Groundwater Modeling • Recycled Water Planning • Watershed Planning

L.2 LOCAL GOVERNMENT FUNDING

The information presented below identifies potential sources of local funding used for capital projects and management programs for implementation of required actions in IRWM Plan. This includes sources of funding that RWMG member agencies will use to meet maintenance and operations obligations for IRWM projects. It also describes the constraints that local governments face in generating revenues. Each member that seeks grant funding will need to demonstrate that maintenance and operations funds are to be committed to the projects. This could include proof through an adopted capital improvement plan, other engineering feasibility studies and reports, rate studies, or approved funding programs adopted pursuant to California requirements.

L.2.1 Integrating Funding Authorities and Sources

Because most grant programs require a local match, integrating local funding authorities and sources could help the SLO Region pursue grant-funded projects and seek state and federal funding. Integrating available local funding; supporting an approach; and cost sharing may be needed to meet local match contributions and for funding project feasibility studies, design and environmental review. Planning and permitting work also often require local investments prior to obtaining state or federal grant funding or loans for construction.

Under their general government authority, the cities, county, and District generate local revenue from a variety of sources including general funds or enterprise funds, water and/or sewer rates, developer or impact fees, connection fees, property taxes (acreage or ad valorem assessments), sales taxes, etc. The SLO County can also generate fees pursuant to the county ordinance and state law. Joint Powers Authorities (JPAs) are often formed to coordinate shared project funding.

The County of San Luis Obispo and the San Luis Obispo County Flood Control and Water Conservation District entered into a joint exercise of powers authority (JPA) by forming the SLO County Financing Authority on August 22, 2000. The JPA was formed in order to create a single public agency capable of arranging financing of the acquisition and improvements for public projects that benefit multiple agencies. This was done in order to avoid duplication of effort, inefficiencies in administration, and excessive costs related to the financing of these projects.

L.2.2 San Luis Obispo County Financing Authority

The SLO County Financing Authority has been instrumental in the efficient financing of several large wholesale water projects that serve multiple agencies throughout the County. This includes the Lopez Dam Seismic Remediation Project which serves the Cities of Arroyo Grande, Pismo Beach, Grover Beach, Oceano Community Services District, and County Service Area 12 directly and many other entities indirectly. It also was used to finance the Nacimiento Water Pipeline Project currently serving the Cities of Paso Robles, San Luis Obispo, Atascadero Mutual Water Company, Templeton Community Services District, and County Service Area 10.

The SLO County Financing Authority has issued both tax-exempt bonds to serve municipal agencies and taxable bonds to serve private water companies. Any agency can become an associate member of the JPA to issue debt specific to their individual needs. For example, the City of San Luis Obispo became an associate member in order to issue Bond Anticipation Notes to finance preliminary costs for its share of the Nacimiento Water Pipeline Project.

L.2.3 Benefits/Assessments, Benefits/Assessment Zone Formation

Funding for a large regional project such as a drinking water or recycled water treatment plant, or large water conveyance systems, is often obtained through benefit assessments. Benefit assessments are special charges levied on property to pay for public improvements that benefit property in a predetermined district. Regional drinking water, recycled water, flood control and storm water, ecosystem management, and groundwater storage and water quality protection are all projects that have been identified as candidates for projects of high priority in the SLO Region.

Benefit assessments link the cost of public improvements to those landowners who specifically benefit from the improvements. Benefit assessment zones are defined geographically and levies are put on all properties within a designated benefit assessment zone. The boundaries of a benefit assessment district may coincide exactly with those of a city, county, or other existing special district, or they may cover only part of those jurisdictions.

A comprehensive engineer's report is needed to form a benefit assessment district. The report must outline the proposed area, key projects, estimated project costs, annual cost to each property, and the benefit formula used to determine each property's share of the cost. It forms the legal basis for a benefit assessment district and must be formally approved by the governing body that will administer the district. In November 1996, California voters approved Proposition 218, the Right to Vote on Taxes Act, which among other constraints (see **Section L.2.4**, below), established a strict definition of special benefits, and instituted a common formation and ratification process for all benefit assessment districts.[2]

L.2.4 Local Funding Constraints

The RWMG defines how monies are collected and decisions are made. One purpose of the RWMG is to identify stable sources of funding for shared programs where these programs are determined to provide benefits to member agencies. The RWMG provides the mechanism for ongoing and stable funding for programs and projects with shared benefits.

Local government funding is required for multiple purposes and the ability for local governments in the SLO Region is constrained by economic and political realities. Like other regions of the state, the SLO Region has a limited ability to pay for all necessary improvement projects or

[2] Understanding Proposition 218. Legislative Analyst's Office, December 1996. December 1996. <http://www.lao.ca.gov/1996/120196_prop_218/understanding_prop218_1296.html#intro> Chapter 2: "Proposition 218 defines a special benefit as a particular benefit to land and buildings, not a general benefit to the public or a general increase in property values."

programs. Unemployment has been high across the state and the ability to raise local revenue is limited by economic conditions. Grants and loans become important in leveraging the limited local financing capacity.

Passed in 1978, Proposition 13 created limits on the ability of city and county governments to raise property taxes. Proposition 218 creates similar constraints for agencies and special districts, including specific procedural requirements related to generating fees and assessments. Any efforts to generate new charges and assessments would be subject to property owner and/or customer approval. Planning or construction of new facilities requires a full evaluation of benefits and costs and an electoral process, as defined by the proposition and amendments to state law.

For specific projects to be implemented under the IRWM Plan, it is important to note that one of the evaluation criteria for project prioritization was the presence of the local funding match, or the presence of a solid plan to define stable funding for construction and long-term maintenance and operations of proposed projects. The process included review of the economic conditions of the proposing sponsor, and disadvantaged communities (DACs) were carried forward and granted higher priority in the second stage of review for Proposition 84 monies since there is an opportunity for DWR to waive the matching fund requirements. The DAC sponsors are still required to demonstrate that stable funds are available for maintenance and operations.

L.3 Grants and Loans (State and Federal)

Like other regions of the state, the IRWM Region has a limited ability to pay for further projects or programs. With numerous areas of the Region being designated in the 2010 census as low income (i.e., in addition to state designated DACs), there is a limited ability to raise local revenue. This makes grants and loans an important element in leveraging the limited local financing capacity. Fortunately, grants and/or loans are available that can facilitate implementation of IRWM Plan projects and programs.

International, federal and state agencies provide technical assistance and program funding for IRWM Plan-related projects or programs in the SLO Region, including implementation of DWR recommended Resource Management Strategies. RWMG stakeholder agencies have submitted projects for:

- Groundwater management
- Water recycling
- Water quality protection and improvement
- Desalination of brackish groundwater

- Support for meeting critical water supply treatment, storage, and quality needs of DACs and other small cities

DACs often qualify, and many times are prioritized, for grant programs to support basic needs for facility planning, design work, and environmental review.

The number and type of grant and loan programs available to public agencies and utilities in any given year can vary significantly based on whether the Legislature targets appropriations to the programs. Many of the grant programs below are on-going with rounds of grant monies provided upon availability of funding. A given program may go 3 to 4 years between funding cycles, while other programs may terminate due to reaching maximum funding limits included in voter approved legislation enacting the program. Regardless of the funding intervals, the grant and loan program listing below, while not comprehensive, is a living accounting that requires updates as part of SLO Region's IRWM Plan implementation and planned 5-year updates.

As the SLO Region develops, at some point the IRWM Plan website could be developed to provide links to available state, federal and international grant programs and to provide notification for solicitation of grant applications associated with one or more of the programs. The cost to prepare the grant application is the typically the responsibility of the benefitting agency/agencies.

L.3.1 Proposition 84 IRWM and Proposition 1E Stormwater Flood Management Grants

A summary of grant programs listed under Proposition 84/1E is provided in the Grant Funding Matrix Programs tables at the end of this section. Both programs are managed by DWR under common guidelines.

The DWR IRWM Grant Program is a competitive grant first created under the Water Security, Clean Drinking Water, Coastal and Beach Protection Act of 2002 (Proposition 50) with continuing funding provided by the Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coast Protection Bond Act of 2006 (Proposition 84). Complementary funding was also provided by the Disaster Preparedness and Flood Prevention Bond Act or 2006 (Proposition 1E) for Stormwater Flood Management Grant Program.

Both funding programs are administered by the DWR, awarding funds to local public agencies and non-profit organizations, for projects and programs to improve water supply reliability and improve and protect water quality. DWR requires such projects and programs to be consistent with an adopted and DWR approved IRWM Plan. Using Proposition 50 IRWM guidelines (2004) as the program foundation, the DWR developed Program Guidelines that meet the requirements of Proposition 84 and Proposition 1E and related implementing legislation. These guidelines are used for the disbursement of the Proposition 84 IRWM funding and the related Proposition 1E Stormwater Flood Management funding. Final Program Guidelines were adopted and released by DWR in August 2010 and updated in November 2012. The guidelines include general program requirements, eligibility requirements, proposal selection information, and the IRWM Plan standards and associated guidance. The guidelines establish three component grant programs – the IRWM Planning Grant Program, the IRWM Implementation Grant Program, and the related Stormwater Flood Management Grant Program.

Source: Strategic Growth Plan Bond Accountability/IRWM
<http://bondaccountability.resources.ca.gov/plevel1.aspx?id=14&pid=4>

L.3.1.1 Proposition 84 Grant Funding[3]

The intent of the program is to promote the practice of integrated regional water management to ensure sustainable water uses, reliable water supplies, better water quality, environmental stewardship, efficient urban development, protection of agriculture, and a strong economy. General obligation bonds in the amount of $5.388 billion were authorized with Proposition 84 (2006) to fund safe drinking water, water quality and supply, flood control, waterway and natural resource protection, water pollution and contamination control, state and local park improvements, public access to natural resources, and water conservation efforts. The September 25, 2013, Round 2 Draft Funding Recommendations provided total funding of $131.1 million to fund 139 projects in 20 grant proposals. Roughly $472.5 million remain for Round 3 implementation grant awards; currently planned for distribution in the 2014/15 timeframe.

The program recognizes the interconnectivity of water supplies and the environment and rewards projects yielding multiple benefits (e.g., water supply system rehabilitation and improvements serving disadvantaged communities). The total Proposition 84 allocation amounts are shown in the pie chart in **Figure L-1**.

[3] Strategic Growth Plan Bond Accountability/Proposition 84 Overview
<http://bondaccountability.resources.ca.gov/p84.aspx>

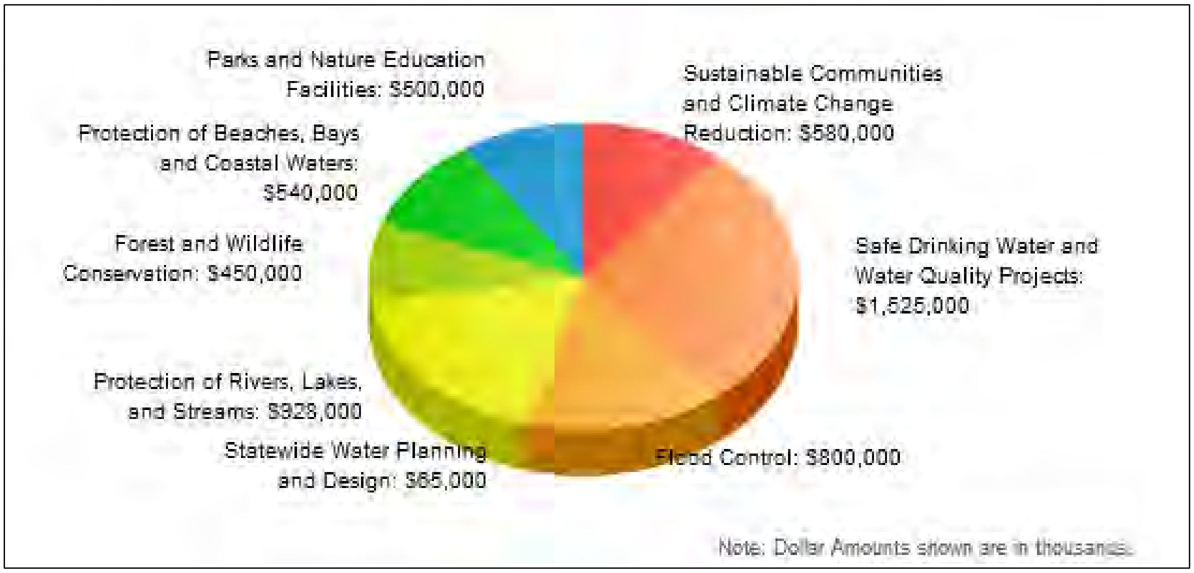

Figure L-1. Proposition 84 Grant Program Allocations

Source: Strategic Growth Plan Bond Accountability/Proposition 84 Overview
<http://bondaccountability.resources.ca.gov/p84.aspx>

The state's IRWM program provides a mechanism for local regions to set priorities to pursue IRWM Implementation Grant funding. It thereby incentivizes local stakeholders to coordinate, refine, and integrate their planning efforts within a comprehensive, regional context; and to identify specific regional priorities for implementation projects. Each region's IRWM Plan is its basis to apply for implementation grant funding support for identified plans, programs, and projects.

The SLO Region developed its IRWM Plan with substantial local funding and was awarded a $1 million Proposition 84 Planning Grant. In 2013, the SLO Region applied for, but did not win, Round 2 grant funding. The SLO Region plans to compete for future round IRWM Implementation Grant funding to be made available in the 2014/15 timeframe.[4] Typically, not less than 10 percent of the available funding is used to support projects that address critical water supply or water quality needs for DACs.

L.3.1.2 Proposition 1E Grant Funding[5]

The California State Legislature was authorized to appropriate $300 million for grants for Stormwater Flood Management (SWFM) projects. To be eligible, projects have to be within an approved IRWM region, with special consideration given to projects meeting multiple benefits. In

[4] DWR, Public Meeting Presentation of Draft Funding Recommendations, October 2013. <http://www.water.ca.gov/irwm/grants/docs/Guidelines/Impdrft_funding_rec_handout.pdf>

[5] Strategic Growth Plan Bond Accountability/Proposition 1E Overview. <http://bondaccountability.resources.ca.gov/p1e.aspx>

the second round of SWFM Grant funding, projects submitted requested a total of $500 million in funding. Round 2 Draft Funding Recommendations, dated June 12, 2013, provided approximately $92 million in SWFM funding to the top 10 projects located throughout California. At the time of writing, appropriations are not in place for funding a third round of the SWFM grant.

L.3.2 State Revolving Funds

L.3.2.1 USEPA Clean Water and Drinking Water State Revolving Funds[6]: ARRA Implementation[7]

The American Recovery and Reinvestment Act of 2009 provides funding for states to finance infrastructure projects needed to ensure clean water and safe drinking water. The Clean Water State Revolving Fund (CWSRF) program, in place since 1987, received $4 billion, including funds for Water Quality Management Planning Grants. The Drinking Water State Revolving Fund (DWSRF) program, in place since 1997, received $2 billion.

> *USEPA is making Recovery Act grants to states... to capitalize their State Revolving Fund (SRF) programs, from which assistance is provided to finance eligible high priority water infrastructure projects. The states will set priorities based on public health and environmental factors, in addition to readiness to proceed to construction, and identify which projects will receive funding. States must provide at least 20% of their grants for green projects, including green infrastructure, energy or water efficiency, and environmentally innovative activities.*
>
> Source: USEPA ARRA. <http://water.epa.gov/grants_funding/eparecovery/index.cfm>

The USEPA CWSRF is a loan program that provides low-cost financing to eligible entities within state and tribal lands for water quality projects including:

- All types of nonpoint source (NPS)
- Watershed protection or restoration
- Estuary management projects
- More traditional municipal wastewater treatment projects

  Source: USEPA/Pacific Southwest, Region 9/CWA SRF <http://www.epa.gov/region9/water/grants/srf-loan-prog.html>

[6]USEPA Drinking Water State Revolving Fund. <http://water.epa.gov/grants_funding/dwsrf/>
[7]USEPA ARRA. <http://water.epa.gov/grants_funding/eparecovery/index.cfm>

The Safe Drinking Water Act (SDWA), as amended in 1996, established the DWSRF to make funds available to drinking water systems to finance infrastructure improvements. The program also emphasizes providing funds to small and disadvantaged communities and to programs that encourage pollution prevention as a tool for ensuring safe drinking water.

See Source: USEPA Drinking Water State Revolving Fund. <http://water.epa.gov/grants_funding/dwsrf/>

The USEPA SRF programs help put the state's CWSRF and DWSRF on a firmer foundation. USEPA works with the state agencies and local partners to develop sustainability policies including management and pricing for future infrastructure funded through SRFs to encourage conservation and to provide adequate long-term funding for future capital needs. SLO Region agencies may access SRF funds for regional IRWM programs that focus on urban water conservation programs that would benefit DACs and/or a specific Sub-Region.

L.3.2.2 Clean Water State Revolving Fund[8]

California State Water Resources Control Board (SWRCB) manages the CWSRF program to finance the protection and improvement of water quality. The program is funded by federal grants, state funds, and revenue bonds, and offers low interest financing agreements for eligible projects.

Eligible projects include, but are not limited to:

Construction of publicly-owned facilities:

- Wastewater treatment
- Local sewers
- Sewer interceptors
- Water reclamation facilities
- Stormwater treatment

Expanded use projects include, but are not limited to:

- Implementation of nonpoint source (NPS) projects or programs
- Development and implementation of estuary comprehensive conservation and management plan

Eligible Applicants

- Any city, town, district, or other public body created under state law
- A Native American tribal government or an authorized Native American tribal organization having jurisdiction over disposal of sewage, industrial wastes or other waste
- Any designated and approved management agency under Section 208 of the

[8] SWRCB Clean Water SRF. <http://www.waterboards.ca.gov/water_issues/programs/grants_loans/srf/> The Federal Water Pollution Control Act (Clean Water Act or CWA), as amended in 1987, established the Clean Water SRF program, which offers low interest financing agreements for water quality projects. Annually, the State program disburses between $200 and $300 million to eligible projects.

Clean Water Act
- 501(c)(3)'s and National Estuary Programs

Financing Terms

- Interest Rate – secure half of the most recent General Obligation (GO) Bond Rate at time of funding approval
- Financing Term – 20 Years; up to 30 years for small DACs or regionalization projects
- Financing Amount – No maximum funding limit
- Repayment – Begins 1 year after completion of construction

See *True Interest Cost Table*

Applications are being accepted on a continuous basis...

Source: SWRCB/ CWSRF <http://www.waterboards.ca.gov/water_issues/programs/grants_loans/srf/>

L.3.2.3 SWRCB Small Community Wastewater Grant Program

The Small Community Wastewater Grant (SCWG) Program was most recently funded in 2002 (by Propositions 40 and 50), and it provided grants to small (i.e., with a population of 20,000 persons, or less) disadvantaged . . . communities for planning, design, and construction of publicly-owned wastewater treatment and collection facilities.

Source: SWRCB/Small Community Wastewater Grant Program <http://www.swrcb.ca.gov/water_issues/programs/grants_loans/small_community_wastewater_grant/index.shtml>

The types of technical assistance offered include:

- Preparation of financial assistance applications
- Compliance audits and troubleshooting to address permit violations or improve operations
- Review of proposed project alternatives to assist in identifying low-cost, sustainable approaches
- Assistance with planning and budgets, including capital improvement planning
- Assistance with community outreach, awareness, and education, especially with regard to rate setting and Proposition 218 compliance

L.3.2.3.1 January 2013 List of Potentially Eligible Small DAC Wastewater Projects

Based on feedback from the Regional Water Quality Control Boards, Environmental Justice and Small Community Assistance Groups, and individual local agency inquiries, the Division of Financial Assistance (DFA) has compiled a list of potentially eligible small, DAC wastewater projects (See **Table L-2**). This list is used to help quantify statewide needs, and it will continue to be updated based on any new information provided to DFA staff.

The SWRCB's SCWG Program is no longer soliciting projects due to lack of funding. The SCWG Program provided assistance for the construction of publicly-owned wastewater treatment and collection facilities to communities meeting specific population restrictions and income requirements.

Source: CDBH Financial Assistance Programs – Grants and Loans Small Community Wastewater Strategy <http://www.swrcb.ca.gov/water_issues/programs/grants_loans/small_community_wastewater_grant/strategy.shtml>

Table L-2. San Luis Obispo IRWM Region Agencies and Projects Included in Project List of Potentially Eligible Projects

Applicant	Project Title	Estimated Cost
City of Morro Bay	Morro Bay/Cayucos Sanitary District WWTP Project Upgrade	$2M
City of Paso Robles	Paso Robles Pump Station No. 1	Unknown
County of San Luis Obispo	Los Osos Wastewater Project	Unknown
Cuyama Community Services District	Percolation Ponds for Cuyama's Community WWTP	$500K
Cambria Community Services District	Biosolids & Nitrate Removal Project	Unknown
Heritage Ranch Community Services District	Convert from Percolation Ponds to Spray Fields	Unkown
San Miguel Community Services District	San Miguel Community Services District Percolation Disposal Pond Upgrade	$2.5M

Source: Potentially Eligible Small, Disadvantaged Community Wastewater Projects. January 2013.
<http://www.swrcb.ca.gov/water_issues/programs/grants_loans/small_community_wastewater_grant/docs/sdac_masterlist.pdf>

L.3.2.4 Safe Drinking Water SRF[9]

California Department of Public Health (CDPH) has a range of funding opportunities for public water systems. *Safe Drinking Water State Revolving Fund Intended Use Plan* (SDWSRF) (CDPH, Final September 2013) identifies specific programs that assist small communities and DACs.[10] Three of the programs are described, as follows:

Small Water System (SWS) Technical Assistance Set-aside. The program is for communities serving populations of less than 10,000.[11] Technical assistance is provided through the Rural Community Assistance Corporation (RCAC), California Rural Water Association (CRWA) and Self-Help Enterprises (SHE, active only in the Central Valley]. The CDPH Small Water Systems Technical Support Unit holds quarterly meetings with the technical assistance providers

[9] CDPH Safe Drinking Water SRF. <http://www.cdph.ca.gov/services/funding/Pages/SRF.aspx>
[10] CDHP Drinking Water SRF Plan Final. September 2013.
<http://www.cdph.ca.gov/services/funding/Documents/SRF/2013%20Funding/FINALSFY2013IUP.pdf>
[11] CDPH Small Water Systems Support.
<http://www.cdph.ca.gov/certlic/drinkingwater/Pages/Smallwatersystems.aspx>

(CalTAP). These meetings provide the opportunity to identify and implement more effective and meaningful methods of providing technical assistance to smaller and disadvantaged community systems.

Small Water System Technical Assistance. The program strategy was developed with the assistance of interested groups such as CRWA, RCAC, Community Development Block Grant program, California Conference of Directors of Environmental Health, local environmental health agencies, SHE, American Water Works Association and others. Funding workshops introducing state and federal infrastructure funding programs are held throughout the state each year for an opportunity to provide direct feedback to SDWSRF program representatives.

Small Water Systems Capacity Development Program. Funded through the SDWSRF, CDPH also administers this program.[12]

L.3.3 Additional Resources for Small and/or DAC Water Systems

Financial assistance for small and/or DAC water systems can be found through multiple programs where attention is focused on making the cost of needed assistance technically and economically feasible. The programs described and links provided herein, and those included in the Grant Funding Matrix Programs tables are available to local communities seeking financial assistance on their own. Below is a discussion on the assistance made available to small water systems through legislation amending the SDWA and the California Water Code:

> *The federal Safe Drinking Water Act Amendments of 1996 (SDWA) were signed into law in part because of the significant problems that small public water systems (SWS) had in providing safe, reliable drinking water to their customers. The SDWA emphasized technical, managerial, and financial (TMF) prevention and assistance to resolve the problems. It included mandates to the states to prevent new non-viable systems. It also mandated the development and implementation of a comprehensive capacity development strategy to assist public water systems in obtaining adequate capacity. The SDWA provided the resources and flexibility to accomplish the end objective.*
>
> *In 1997 Senate Bill (SB) 1307 became law, enabling California to implement the provisions of the federal SDWA. This statute established a financial assistance program entitled the State Revolving Fund (SRF), which included a comprehensive*

[12] Small Water Systems Capacity Development Program.
<http://www.cdph.ca.gov/certlic/drinkingwater/Pages/TMF.aspx>

technical assistance program for small systems. In order to help ensure the provision of safe, reliable drinking water to customers on a long term basis, this legislation was designed to prevent the formation of a new public water system or the approval of a public water system change of ownership unless that system had been determined by the State to have adequate TMF capacity.

CDPH developed TMF capacity criteria based on guidance provided by the federal Environmental Protection Agency, experience in CDPH's Drinking Water Program and Local Primacy Agencies, and experiences of other states. Input also was received from affected stakeholders and the public. The current TMF Assessment Information can be found at the links noted below.

The Drinking Water Program provides free technical help through contracts with Rural Community Assistance Corporation (RCAC) [and] California Rural Water Association, and Self-Help Enterprises [active only in the Central Valley]. If you need help with Technical, Managerial or Financial issues or help with the SRF Funding Program contact your local CDPH District Map or your Local Primacy Agency to see if you qualify.

For more drinking water-related information, see the links at Public Drinking Water Systems and Small Water Systems – Technical Support Unit. Or contact: Phone: (916) 449-5652

FREE: For a measure of a public water system's TMF capacity and a list of resources to help build TMF capacity, go to the TMF Tune-Up.

Source: CDPH/Small Water Systems Capacity Development Program
<http://www.cdph.ca.gov/certlic/drinkingwater/Pages/TMF.aspx>

Resources for Small Public Water Systems

- Rural Community Assistance Corporation (RCAC). <http://www.rcac.org/>
- California Rural Water Association (CRWA). <http://www.calruralwater.org/>
- Expense Reimbursement Grant (ERG), CPS Human Resources Services <http://www.cpshr.us/>
- California State University Sacramento, Office of Water Programs (CSUS) <http://www.owp.csus.edu/>
- American Water Works Association (AWWA), California-Nevada Section <http://www.ca-nv-awwa.org/canv/web>

L.3.3.1 USEPA Hardship Grants Program for Rural Communities[13]

[13] USEPA Federal Funding Sources for Small Community Wastewater Systems. <http://water.epa.gov/type/watersheds/wastewater/eparev.cfm#7>

The USEPA Hardship Grants program assists small (fewer than 3,000 residents), disadvantaged rural communities address wastewater treatment. California identifies eligible projects and may commit a portion of its grants for technical assistance. Designed to complement the CWSRF loan program, this program distributes funds based on the number of rural communities in California lacking access to centralized water treatment and the rural per capita income.

L.3.3.2 HUD Community Development Block Grant Program[14]

U.S. Department of Housing and Urban Development (HUD) offers Community Development Block Grants (CDBG). These are given directly to California, which then allocates the funds to small cities and nonurban counties. Grants may be used for community and economic development activities, but are primarily used for housing rehabilitation, public infrastructure projects including wastewater and drinking water facilities. Seventy percent (70%) of grant funds must be used for activities that principally benefit low- and moderate-income communities. HUD CDBG Programs that are or may be applicable to the IRWM Region are provided in **Table L-3**.

Table L-3. HUD CDBG Program Areas Applicable to the San Luis Obispo IRWM Region

Entitlement Communities	The program allocates annual grants to larger cities and urban counties to develop viable communities by providing decent housing, a suitable living environment, and opportunities to expand economic opportunities, principally for low- and moderate-income persons.
State Administered CDBG	Also known as the Small Cities CDBG program, states award grants to smaller units of general local government that carry out community development activities. Annually, each state develops funding priorities and criteria for selecting projects.
Section 108 Loan Guarantee Program	CDBG entitlement communities are eligible to apply for assistance through the section 108 loan guarantee program. CDBG non-entitlement communities may also apply; provided their state agrees to pledge the CDBG funds necessary to secure the loan. Applicants may receive a loan guarantee directly or designate another public entity, such as an industrial development authority, to carry out their Section 108 assisted project.
Disaster Recovery Assistance	HUD provides flexible grants to help cities, counties, and states recover from Presidentially declared disasters, especially in low-income areas, subject to availability of supplemental appropriations.

[14] See HUD/Community Development Block Grant Program – CDBG.
<http://portal.hud.gov/hudportal/HUD?src=/program_offices/comm_planning/communitydevelopment/programs>
California Department for Housing and Community Development/CDBG.
<http://www.hcd.ca.gov/fa/cdbg/index.html>

Neighborhood Stabilization Program	HUD provides grants to communities hardest hit by foreclosures and delinquencies to purchase, rehabilitate, or redevelop homes and stabilize neighborhoods.

Source: HUD/CDBG.
<http://portal.hud.gov/hudportal/HUD?src=/program_offices/comm_planning/communitydevelopment/programs>

L.3.3.3 USDA Rural Development Utilities Water and Environmental Programs[15]

USDA Rural Development provides grants and loans through its Water and Waste Disposal (WWD) program. The program targets rural communities with 10,000 people or less for drinking water, wastewater, solid waste, and storm drainage projects. Rural Utilities Service brings assistance to rural areas for safe, affordable drinking water.[16]

The Rural Development programs are a resource for DACs in the IRWM Region as they plan and develop their water and wastewater facilities, and can assist them to prepare their projects for other funding sources. Funds can be used for construction, land acquisition, legal fees, engineering fees, capitalized interest, equipment, initial operation and maintenance costs, and costs to complete a project. Both public agencies and nonprofit organizations are eligible.

Water and Environmental Programs (WEP) provides loans, grants, and loan guarantees for drinking water, sanitary sewer, solid waste and storm drainage facilities in rural areas and cities and towns of 10,000 or less. Public bodies, non-profit organizations, and recognized Indian tribes may qualify for assistance. WEP also makes grants to nonprofit organizations to provide technical assistance and training to assist rural communities with their water, wastewater, and solid waste problems.

The following types of assistance are available through the USDA Rural Development Utilities Water and Environmental Programs:

Utilities Assistance

> *Loans and Grants for Rural Communities*
>
> *Program assistance is provided in many ways, including direct or guaranteed loans, grants, technical assistance, research and educational materials. Please check the links below for more*
>
> *Direct Loans and Grants. To develop water and waste disposal systems in rural areas and towns with a population not in excess of 10,000. The funds are available to public bodies, non-profit corporations and Indian tribes.*

[15]USDA RD /Utilities/Water and Environmental Programs. <http://www.rurdev.usda.gov/uwep_homepage.html>
[16]USDA/RD /Utilities/Water and Waste Disposal Direct Loans and Grants <http://www.rurdev.usda.gov/UWP-dispdirectloansgrants.htm>

Guaranteed Loans. To provide a loan guarantee for the construction or improvement of water and waste disposal projects serving the financially needy communities in rural areas. This purpose is achieved through bolstering the existing private credit structure through the guarantee of quality loans which will provide lasting benefits. The water and waste disposal guarantee loans are to serve a population not in excess of 10,000 in rural areas.

Emergency Community Water Assistance Grants. To assist rural communities that have experienced a significant decline in quantity or quality of drinking water due to an emergency, or in which such decline is considered imminent, to obtain or maintain adequate quantities of water that meets the standards set by the Safe Drinking Water Act. This emergency is considered an occurrence of an incident such as, but not limited to, a drought, earthquake, flood, tornado, hurricane, disease outbreak or chemical spill, leakage or seepage.

Pre-development Planning Grants. Predevelopment planning grants may be available, if needed, to assist in paying costs associated with developing a complete application for a proposed project.

Loans for Very Small Projects. To assist communities with water and wastewater systems. Qualified private non-profit organizations will receive RFP grant funds to establish a lending program for eligible entities. This grant program is to serve a rural area with a population not in excess of 10,000.

Opportunities for Native American Indian Tribes. Native American Indian Tribes are eligible for most of the Utilities Programs' water and waste water loans and grants. In addition, grants, specifically designed to address Native American water and waste disposal needs are available.

Opportunities for Colonias and Rural or Native Alaskan Villages. In addition to the general loan and grant offerings for water and waste disposal projects, the Utilities Programs offers grants specifically designed to address the needs of Alaskan Native Villages and areas designated as Colonias.

Opportunities for Lenders. The Utilities Programs works with private lenders to guarantee loans to borrowers for the construction of water and waste systems in rural areas. Loan guarantees can be issued for up to 90% on any loss of interest and principal on a loan.

Technical Assistance Programs and Providers. Grants are available to non-profit organizations to provide water and waste disposal-related technical assistance and/or training to rural water systems and rural areas, towns and cities with a population of 10,000 or less.

Individual Household Water Well Program. Grants are available for private non-profit organizations to establish lending programs that provide low-cost loans to individuals living in eligible rural areas for the construction of water wells.

Solid Waste Management Program. To evaluate current landfill conditions to determine threats to water resources. Provide technical assistance and/or training to enhance operator skills in the operation and maintenance of active landfills. Provide technical assistance and/or training to help communities reduce the solid waste stream. Provide technical assistance and/or training for operators of landfills which are closed or will be closed in the near future with the development and implementation of closure plans, future land use plans, safety and maintenance planning, and closure scheduling within permit requirements.

Revolving Fund Program. To assist communities with water and wastewater systems. Qualified private non-profit organizations will receive RFP grant funds to establish a lending program for eligible entities. This grant program is to serve a rural area with a population not in excess of 10,000.

Circuit Rider Technical Assistance for Rural Water Systems. Regulation Citation: Terms established in service contract issued through RD Procurement.

Source: USDA/RD/Utilities/ Water and Environmental Programs.
<http://www.rurdev.usda.gov/UWEP_HomePage.html>

The program is administered locally by the USDA Rural Development office in Santa Maria, which has worked extensively with communities in the San Luis Obispo, Santa Barbara, and Ventura communities.

For additional Rural Development information and assistance, contact Al Correale via telephone: 805-928-9269 ext. 119.

L.3.3.4 Economic Development Administration Grants for Public Works and Development Facilities[17]

[17] USEDA Investment Programs <http://www.eda.gov/programs.htm>

U.S. Department of Commerce provides grants through the U.S. Economic Development Administration (USEDA) Investment Programs to assist economically distressed areas for public works projects, including water and wastewater facilities. The projects must promote economic development, create long-term jobs, and/or benefit low-income persons or the long-term unemployed, and fulfill a pressing need of the area.

Recycling to create water for expanding the renewable energy industry should be a candidate since it would help to establish industrial plants or facilities. Projects must have an adequate share of local funds; evidence firm commitment and availability of matching funds, be capable of being started and completed in a timely manner. State money could be used to match the federal money. The state, cities, and nonprofit organizations would be eligible.

For funding opportunities and other information, visit the USEDA Investment Program website.[38]

- *NEW – 2014 Economic Development Assistance Programs
- USEDA's Planning and Local Technical Assistance Programs
- Preliminary Engineering and Environmental Templates *(Required documents for submitting an application for construction assistance to USEDA)*

One or more of the USEDA programs are shown in **Table L-4** may be applicable to SLO Region stakeholders.

Table L-4. USEDA Investment Programs

Economic Adjustment	Assists state and local interests in designing and implementing strategies to adjust or bring about change to an economy. Focuses on areas that have experienced or are under threat of serious structural damage to the underlying economic base.
Partnership Planning	Supports local organizations (Economic Development Districts, others) with long-term planning. *The Comprehensive Economic Development Strategies (CEDS) Summary of Requirements* (PDF) provides a synopsis of requirements for comprehensive economic development strategies.
Trade Adjustment Assistance for Firms	National network of *11 Trade Adjustment Assistance Centers* to help strengthen competitiveness of American companies that have lost domestic sales and employment because of increased imports of similar goods and services.
University Centers	A partnership of the federal government and academia that makes the varied and vast resources of universities available to the economic development community.
Research and National Technical Assistance	Supports research of leading edge, world class economic development practices and information dissemination efforts.
Local Technical Assistance	Helps fill knowledge and information gaps that may prevent leaders in public and nonprofit sectors in distressed areas from making optimal decisions about local economic development.

Source: USEDA Investment Programs. <http://www.eda.gov/programs.htm>

L.3.4 Recycled Water, Brackish Water Desalination, and Groundwater Development Funding Programs

The IRWM Plan identifies several projects for recycling of wastewater, desalination of ocean water, and groundwater banking and/or storage (for **Appendix G-4 – Ranked Project List**). Implementing such projects will help the Region to live within its limitation on imported California Delta water, and to supply water to meet new uses as Delta water available to the Region is reduced.

State and federal financial programs for recycled water projects are available to the SLO Region through the CWSRF, administered by the SWRCB Division of Financial Assistance and the DWR Desalination Funding Program; and on the federal level, U.S. Bureau of Reclamation's (USBR) WaterSMART Title XVI Water Reclamation and Reuse Grant Program. Integrating state and federal funding to develop projects is a strategy that can serve the IRWM Region.

CWSRF programs provide low-interest construction loans for water recycling and groundwater development projects, and provide funds for recycling and desalination projects. As shown in **Table L-5**, eligible project types include publicly owned wastewater treatment facilities, local sewers, sewer interceptors, and water reclamation facilities, as well as, USEDA pollution control projects. The DWR funds construction of brackish water desalination projects, feasibility studies, research and development, and pilot and demonstration projects.

Table L-5. SWRCB Water Recycling Funding Program Description of Project Categories

Category II - State Water Supply	Provide for treatment and delivery of municipal wastewater or groundwater that is contaminated due to human activity, for uses (including groundwater recharge) that replace the use of the state water supply with recycled water, but do not provide benefits to the Delta.
Category III – Local Water supply	Provide for treatment and delivery of municipal wastewater to users that replace the use of local water supply with recycled water.
Category IV – Local Groundwater Reclamation	Provide treatment and reuse of groundwater contaminated due to human activity; and provide local water supply benefits.
Category V and Category VI projects may only be considered for funding by SRF Loan Program for the objective of pollution control	
Category V – Pollution Control	Provide for the treatment and disposal of municipal wastewater to meet waste discharge requirements for water pollution control.
Category VI – Miscellaneous	Projects that do not have identifiable benefits to the state or local water supply.

Source: Water Recycling Funding Program Guidelines, Table 2.

L.3.4.1 SWRCB Water Recycling Funding Program (WRFP)[18]

Water Recycling Construction Program (WRCP). ***[19]*** *The program provides loans and grants to eligible applicants for the design and construction of water recycling facilities. Detailed information on eligible projects, applicants, and the funding process are presented in the Water Recycling Funding Program Guidelines. Applications are accepted on a continuous basis. The available funding is distributed to projects that meet the requirements of these Guidelines and are first ready to proceed to construction. Very limited grant funding is available.*

Water Recycling Facilities Planning Grant Program (FPGP). ***[20]*** *Encouraging new recycling planning studies, funds are intended to supplement local funds and enhance the quality of local planning efforts. Funds are provided for planning studies to determine the feasibility of using recycled water to offset the use of fresh and/or potable water from state and/or local supplies.*

Source: Water Recycling Funding Program Guidelines as adopted October 21, 2004 by SWRCB Resolution No. 2004 -0064_ California State Water Resources Control Board

[18] SWRCB Water Recycling Funding Program (WRFP)
<http://www.waterboards.ca.gov/water_issues/programs/grants_loans/water_recycling/>
[19]SWRCB Water Recycling Funding Program (WRFP)/Water Recycling Construction Program (WRCP)
<http://www.waterboards.ca.gov/water_issues/programs/grants_loans/water_recycling/construction.shtml>
[20] Water Recycling Funding Program (WRFP)/ Facilities Planning Grant Program
<http://www.waterboards.ca.gov/water_issues/programs/grants_loans/water_recycling/facilitiesplan.shtml>

L.3.4.2 DWR Desalination Grant Funding Program[21]

This grant program is designed to assist local public agencies to develop new local water supplies through the construction of brackish water and ocean water desalination projects and help advance water desalination technology and its use by means of feasibility studies, research and development, and pilot and demonstration projects.

L.3.4.3 Reclamation Wastewater and Groundwater Study and Facilities Act – Title XVI[22]

Title XVI of Public Law 102-575, the Reclamation Wastewater and Groundwater Study and Facilities Act, authorizes the federal government to partially fund the capital cost of recycling projects. The Title XVI act directs the Secretary of the Interior to undertake a program to investigate and identify opportunities for water reclamation and reuse of municipal, industrial, domestic, and agricultural wastewater, naturally impaired ground and surface waters, and for design and construction of demonstration, and permanent facilities to reclaim and reuse wastewater.

It also authorizes the Secretary of the Interior to conduct research, including desalting, for the reclamation of wastewater and naturally impaired ground and surface waters. The funds have also been used to evaluate water markets, transfers, and create economic incentives to conserve water. These funds are managed and distributed by the USBR.]

L.3.5 USEPA Water: A Grants & Funding Overview

For USEPA Pacific Southwest, Region 9 contacts, visit:
<**http://www.epa.gov/region9/water/contactus.html#grants**>

For USEPA Pacific Southwest, Region 9 Funding Sources for Communities, visit:
<**http://www.epa.gov/region09/funding/funding-sources/index.html**>

For All USEPA Region program funding options and links, visit:
<**http://water.epa.gov/grants_funding/**>

[21] DWR 2013 Desalination Grant Funding (Round 3) <http://www.water.ca.gov/desalination/2013DesalGrants.cfm>
[22] SWRCB Financial Assistance Funding - Grants and Loans.
<http://www.waterboards.ca.gov/water_issues/programs/grants_loans/>

American Recovery and Reinvestment Act (ARRA) of 2009.
ARRA provided significant funding for states to finance high priority water infrastructure projects through a $2 billion appropriation to the DWSRF program and a $4 billion appropriation to the CWSRF program. EPA's CWSRF & DWSRF ARRA Implementation webpage provides information on the status of ARRA implementation as well as guidance and resources for states and other stakeholders.

Beach Grants
Learn about BEACH Act grants awarded to eligible coastal and Great Lakes states, territories, and tribes to develop and implement beach monitoring and notification programs.

Catalog of Federal Funding
Search this database of financial assistance sources (grants, loans, cost-sharing) available for a variety of watershed protection projects.

Clean Water State Revolving Fund (CWSRF)
The CWSRF provides attractive, low-cost funding for projects that improve water quality, renew wastewater infrastructure, and support local economies. The Independent, revolving loan funds in all 50 states and Puerto Rico administer the SRF program, providing financial assistance to local communities.

Drinking Water State Revolving Fund (DWSRF)
The Safe Drinking Water Act, through the DWSRF, makes funds available to drinking water systems to finance infrastructure improvements. The program also emphasizes providing funds to small and disadvantaged communities and to programs that encourage pollution prevention as a tool for ensuring safe drinking water.

Federal Funding for Water/Wastewater Utilities in National Disasters (Fed FUNDS)
Fed FUNDS features federal disaster funding programs for water and/or wastewater utilities to obtain information on federal disaster funding programs from Federal Emergency Management Agency (FEMA), EPA, U.S. Department of Agriculture (USDA), Housing and Urban Development (HUD), and Small Business Administration (SBA). Using Fed FUNDS, a utility can easily identify appropriate funding opportunities, gain insight on the application process, access customized forms to document costs, download successful utility applications, and contact utility funding mentors.

PPG Performance Partnership (PPG) Grants
Learn how states and certain interstate agencies can combine two or more environmental program grants into a single PPG to reduce administrative costs and direct EPA grant funds to priority environmental problems or program needs.

Section 106 Water Pollution Control Grant Program
Section 106 of the Clean Water Act authorizes EPA to provide federal assistance to states (including territories, the District of Columbia, and Indian Tribes) and interstate agencies to establish and implement ongoing water pollution control programs.

Section 319 Grants Reporting and Tracking System (GRTS)
Discover the GRTS, the primary tool for management and oversight of the EPA's Nonpoint Source Pollution Control Program. These centralized grants and financial databases allow grant recipients to enter detailed information on the individual projects or activities funded under each grant.

Safe Drinking Water Act
The Safe Drinking Water protects public health and our nation's drinking water. It sets national, health-based standards for both naturally occurring and man-made contaminants that may be found in drinking water. EPA, states, and water systems then work together to make sure that these standards are met.

Targeted Watersheds Grants Program
Established in 2003, the Targeted Watersheds Grant program is designed to encourage successful community-based approaches and management techniques to protect and restore the nation's watersheds.

Tribal Funding
EPA is currently soliciting applications to support the National Tribal Water Council to facilitate tribal participation and build tribal capacity to address water quality and drinking water issues.

Watershed Funding
Visit this Web site to find tools, databases, and information about sources of funding to practitioners and funders that serve to protect watersheds.

Wetlands
Find out more about two grant programs, Wetlands Program Development Grants and the Five Star Restoration and Grants Programs that help protect the Nation's wetlands

L.3.6 USBR WaterSMART (Sustain and Manage America's Resources for Tomorrow) Grants Program

For USBR WaterSMART Grants Information, visit:
<**http://www.usbr.gov/WaterSMART/grants.html**>

Congress recognizes the stresses on water supplies through the country and the significant climate change-related impacts taking place currently. With the passage of the SECURE Water Act, a law was created that authorizes federal water and science agencies to work together with state and local water managers to plan for climate change and the other threats to our water supplies, and to take action to secure our water resources for the communities, economies, and the ecosystems they support.

To implement the SECURE Water Act, the WaterSMART program was implemented in February 2010. WaterSMART allows all bureaus of the Department of the Interior to: [23]

> *…work with States, Tribes, local governments, and non-governmental organizations to pursue a sustainable water supply for the Nation by establishing a framework to provide federal leadership and assistance on the efficient use of water, integrating water and energy policies to support the sustainable use of all natural resources, and coordinating the water conservation activities of the various Interior offices.*[24]

The United States Bureau of Reclamation (now commonly referred to as Reclamation) plays a key role in the WaterSMART program as the Department of the Interior's main water management agency. Focused on improving water conservation and helping water and resource managers make wise decisions about water use, Reclamation's portion of the WaterSMART program is achieved through administration of grants, scientific studies, technical assistance, and scientific expertise.

Planning and implementation of projects associated with the use of recycled or desalinated water should include the WaterSMART program as a resource to investigate as part of any funding alternatives analysis.

WaterSMART Program links:

- *WaterSMART*
- *WaterSMART Grants*

WaterSMART Water & Energy Efficiency Grants

- *System Optimization Reviews*
- *Advanced Water Treatment Grants*
- *Grants to Develop Climate Analysis Tools*
- *Basin Studies*
- *Landscape Conservation Cooperatives*
- *Title XVI - Water Reclamation & Reuse*

[23] USDOI includes Bureau of Indian Affairs , Bureau of Land Management , Bureau of Ocean Energy Management , Bureau of Reclamation , Bureau of Safety and Environmental Enforcement, National Park Service ,Office of Surface Mining, Reclamation and Enforcement , U.S. Fish and Wildlife Service , and U.S. Geological Survey
[24] USBR WaterSMART. <http://www.usbr.gov/WaterSMART/water.html>

WaterSMART Cooperative Watershed Management Program

- [Examples of Previously Selected Proposals]
- [Water Conservation Field Services Program]
- [WaterSMART Clearinghouse]

Source: USDOI/Bureau of Reclamation/ WaterSMART Grants <http://www.usbr.gov/WaterSMART/grants.html>

Table L-6. WaterSMART Grants Information

Cost-shared Funding for the Following Types of Projects	
Water and Energy Efficiency Grants	Projects that save water, improve energy efficiency, address endangered species and other environmental issues, and facilitate transfers to new uses. More...
System Optimization Review Grants	A System Optimization Review (Review) is a broad look at system-wide efficiency focused on improving efficiency and operations of a water delivery system, water district, or water basin. The Review results in a plan of action that focuses on improving efficiency and operations on a regional and basin perspective. More...
Advanced Water Treatment and Pilot and Demonstration Project Grants	Pilot and demonstration projects that address the technical, economic, and environmental viability of treating and using brackish groundwater, seawater, impaired waters, or otherwise creating new water supplies within a specific locale. More...
Grants to Develop Climate Analysis Tools	Projects focused on the information gaps detailed in the joint Reclamation and U.S. Army Corps of Engineers (USACE) Report titled “Addressing Climate Change in Long-Term Water Resources Planning and Management: User Needs for Improving Tools and Information” (Section 3). Projects support the ongoing efforts under 9503(b) of the SECURE Water Act and may help narrow uncertainties, provide information in more usable forms, or develop more robust strategies for incorporating uncertainty into water management decision-making. **More...**

Source: USDOI/Bureau of Reclamation/ WaterSMART Grants <http://www.usbr.gov/WaterSMART/grants.html>

L.4 GRANT FUNDING MATRIX

As stated in the beginning of this section, the disposition of any grant or loan program is often unknown from year to year based on the funding appropriations process. The tables listed below provide a means of tracking and updating the most current understanding of the potential funding sources. These tables are comprehensive and categorized as follows:

- **Table L-7**, Grant Funding Matrix Programs, Federal Stimulus
- **Table L-8**, Grant Funding Matrix Programs, State Drinking Water
- **Table L-9**, Grant Funding Matrix Programs, State IRWM and Groundwater
- **Table L-10**, Grant Funding Matrix Programs, State Recycled and Storm Water
- **Table L-11**, Grant Funding Matrix Programs, State Habitat Restoration
- **Table L-12**, Grant Funding Matrix Programs, State Beaches and Federal Wetlands Restoration
- **Table L-13**, Grant Funding Matrix Programs, USBR WaterSMART

Table L-7. Grant Funding Matrix Programs, Federal Stimulus

Program	Brief Description	Key Points	Key Application	Contact Info
Federal Stimulus (American Recovery & Reinvestment Act) in California				
CDPH, Safe Drinking Water State Revolving Fund	Projects that assist in achieving or maintaining compliance with the Safe Drinking Water Act (SDWA). Includes source water protection projects.	Eligible funding currently at $78.77 M	Planning applications due March 24, 2014 Construction applications due June 23, 2014	http://www.cdph.ca.gov/services/funding/Pages/SRF.aspx dwpfunds@cdph.ca.gov
SWRCB, Clean Water State Revolving Fund (CWSRF)	Provides funding under the American Recovery and Reinvestment Act of 2009 to California to capitalize its revolving loan fund for financing and construction of wastewater treatment facilities and associated infrastructure, green infrastructure, nonpoint source (NPS) projects, estuary projects, and program administration.	Program funding: $280 M (SFY 12/13) No state matching required. No upper limit for project; however maximum annual funding cap of $50 M per agency per year.	Applications under Economic Stimulus Package.	http://www.waterboards.ca.gov/water_issues/programs/grants_loans/srf/index.shtml CleanWaterSRF@waterboards.ca.gov Division of Financial Assistance (DFA) home page: http://www.waterboards.ca.gov/water_issues/programs/grants_loans/ Note: The DFA administers the implementation of the SWRCB's financial assistance programs, that include loan and grant funding for construction of municipal sewage and water recycling facilities, remediation for underground storage tank releases, watershed protection projects, USEDA pollution control projects, etc.

Table L-8. Grant Funding Matrix Programs, State Drinking Water

Program	Brief Description	Key Points	Key Application Dates	Contact Info
State				
Drinking Water, General – CA Department of Public Health (CDPH)				
CDPH, Prop 84 Section 75021: Safe Drinking Water Emergency Funding	To fund emergency and urgent actions to ensure safe drinking water supplies. Eligible projects include, but are not limited to, the following: • Provide alternate water supplies including bottled water where necessary to protect public health. • Improvements in existing water systems necessary to prevent contamination or provide other sources of safe drinking water including replacement wells. Establishing connections to adjacent water system. • Design, purchase, installation and initial operation costs for water treatment equipment and systems.	Minimum 50% cost share Maximum: $250 K per project	Applications not currently open; prior pre-application period closed in September 2008.	http://www.cdph.ca.gov/services/funding/Pages/Prop84.aspx 916-449-5600 dwpfunds@cdph.ca.gov
CDPH, Prop 84 Section 75022: Small Community Infrastructure Improvements for Chemical and Nitrate Contaminants	To fund grants for small community drinking water system infrastructure improvements and related actions to meet safe drinking water standards. Priority shall be given to projects that address chemical and nitrate contaminants, and other health hazards.	Minimum: 50% cost share Maximum: $5 M per project.	CDPH is no longer accepting pre-applications for Prop 84 Section 75022 funding.	http://www.cdph.ca.gov/services/funding/Pages/Prop84.aspx 916-449-5600 dwpfunds@cdph.ca.gov

Table L-9. Grant Funding Matrix Programs, State IRWM and Groundwater

Program	Brief Description	Key Points	Key Application Dates	Contact Info
Integrated Regional Water Management (IRWM)				
DWR, Prop 84 Chapter 2 & Prop 1E Article 4: Integrated Regional Water Management (IRWM)	Projects that assist local public agencies to meet long-term state water needs, including delivery of safe drinking water, protection of water quality, and protection of the environment. For use in Development/Revision of IRWM Plans, or Implementation projects of IRWM Plans.	Funds awarded to date: Prop. 84 Round 1: $150 M Round 2: $131.1 M recommended to fund 139 projects Prop. 1E Storm Water Flood Management (SWFM) Round 1 and Round 2: $269 M	Proposed projects must be included in approved IRWM Plan. Prop. 84 Round 3: Expected to open in 2014. Prop. 1E Round 3 Implementation Grant (pending appropriation): Winter 2014/2015.	http://www.water.ca.gov/irwm/grants/index.cfm DWR_IRWM@water.ca.gov
Groundwater				
CDPH, Prop 84 Section 75025: Groundwater Contamination	Grants to prevent or reduce contamination of groundwater that serves as a source of drinking water.	Available Funding: $60 M. Max per applicant: $10 M. Funds awarded to date: Round 1 and 2: $46 M. Projects must be completed within three years of funding agreement execution.	Open invitation period has ended. CDPH is not accepting applications at this time.	www.cdph.ca.gov/ser vices/funding/Pages/ Prop84.aspx 946-449-5600 dwpfunds@cdph.ca.gov
DWR, Prop 84: Local Groundwater Assistance Program	Groundwater studies, groundwater monitoring, groundwater management activities.	Program funds: $4.7 M funded in 2011-2012 $4.8 M funding in 2012-2013 Up to $250,000 per applicant	Applications not currently open.	http://www.water.ca.gov/lgagrant/ Laura.Peters@water.ca.gov
SWRCB, Underground Storage Tank (UST) Cleanup Fund	Federal and state governmental entities are not eligible for reimbursement from the Fund. Program created to provide a means for petroleum UST owners and operators to meet federal and state requirements. Fund also assists in a large number of small businesses and individuals by providing reimbursement for unexpected and catastrophic expenses associated with the cleanup of leaking petroleum USTs.	Available Funding: $30 M from unexpended FY 11/12 site budgets to pay for over-budget costs incurred in FY 11/12 and additional funding for FY 13/14 site budgets. Maximum reimbursement per occurrence is $1.5 M less the eligible claimant's applicable level of financial responsibility, also known as claimant's deductible.	Applications accepted on a continuous basis.	www.waterboards.ca.gov/water_issues/programs/ustcf/ USTcleanupfund@waterboards.ca.gov

Table L-10. Grant Funding Matrix Programs, State Recycled and Storm Water

Program	Brief Description	Key Points	Key Application Dates	Contact Info
Recycled Water				
SWRCB, Prop. 13/50: Water Recycling Construction Grants	Grants provided for design and construction of water recycling facilities. All proposed projects must be placed on the SWRCB's WRCP Competitive Project List (CPL) and/or the SRF Priority List to be considered.	25% of eligible construction cost up to $5 M.	Applicants accepted on a continuous basis.	http://www.waterboards.ca.gov/water_issues/programs/grants_loans/water_recycling/
SWRCB, Prop. 13/50: Water Recycling Facilities Planning Grants	Grants provided for facilities planning studies to determine feasibility of using recycled water to offset use of fresh/potable water from state and/or local supplies. Pollution control studies, in which water recycling is an alternative, are not eligible.	50% of eligible costs up to $75 K.	Applicants accepted on a continuous basis.	http://www.waterboards.ca.gov/water_issues/programs/grants_loans/water_recycling/
Stream & Habitat Restoration				
CA State Parks, Prop. 1E: Habitat Conservation Fund Program	Eligible funding categories: ▪ Deer/Mountain Lion habitat land acquisition ▪ Rare, endangered, threatened, or fully protected species habitat land acquisition ▪ Wetlands habitat projects ▪ Acquisition, enhancement, or restoration of anadromous salmonids and anadromous trout habitat ▪ Acquisition, enhancement, or restoration of riparian habitat ▪ Acquisition, enhancement, restoration of trails ▪ Acquisition or development of trails program ▪ Event or series of events intended to bring urban residents into areas with indigenous plants and animals	$2 M available annually through FY 2019/2020. No Min/Max; Recommended maximum $200 K. Required match of 50%.	Applications deadline the first work day of October annually.	http://www.parks.ca.gov/?page_id=21361 localservices@parks.ca.gov
DWR, Prop. 84 Chapter 5: Urban Streams Restoration Program	Grants and technical assistance to local communities for projects to reduce flooding and erosion and associated property damages; restore, enhance, or protect the natural ecological values of streams; and promote community involvement, education, and stewardship. Eligible applicants: local public agencies, non-profit/citizens' groups.	$9 M remain in Prop. 84 and Prop. 13 funds to implement this program. Eligible applicants: local public agencies, non-profit/citizens' groups.	Next application solicitation is tentatively scheduled for release during winter of 12/13 Fiscal Year.	http://www.water.ca.gov/urbanstreams/

Table L-11. Grant Funding Matrix Programs, State Habitat Restoration

Program	Brief Description	Key Points	Key Application Dates	Contact Info
Land and Water Conservation, Wildlife Conservation				
CA State Parks: Land and Water Conservation Fund	Acquisition or development of lands and facilities that provide or support public outdoor recreation.	Max 50% of total project cost up to $2 M. Funds are divided: 60% available for Local Agency Competitive Grants. 40% available to state agencies on a pro-rata competitive basis.	Deadline: February 3rd, every year for Local Agency Applications.	www.parks.ca.gov/?page_id=21360
CA Wildlife Conservation Board: Various	Wildlife Conservation Board's three main functions are land acquisition, habitat restoration and development of wildlife oriented public access facilities. Wildlife Conservation Board programs include: ▪ California Forest Conservation Program (CFCP) ▪ California Riparian Habitat Conservation Program (CRHCP) ▪ Ecosystem Restoration on Agricultural Lands (ERAL) ▪ Habitat Enhancement and Restoration Program (General)		Applications accepted continuously.	https://www.wcb.ca.gov/
Beaches and Stormwater				
SWRCB, Prop. 84: Clean Beaches Initiative Grant	Provides funding for projects that restore and protect water quality and environment of coastal waters, estuaries, bays, and near shore waters. Funding priority is given to projects that reduce bacterial contamination on California public beaches. Two types of concept proposal applications: implementation projects and research projects. Eligible applicants: Public agencies, 501(c)(3,4,5), nonprofit organizations, public colleges, Indian Tribes.	Available Funding: $37 M $36 M for capital improvement projects that reduce bacterial contamination at priority beaches $10 M max towards fecal indicator bacteria FIB projects Potential award limits: $150 K to $5 M 20% matching for projects > $1 M 15% match for projects < $1 M Matching for DACs: 10% match for projects > $1 M 5% match for projects < $1 M	Accepting concept proposals for implementation projects from October 25, 2013 to January 13, 2014.	http://www.waterboards.ca.gov/water_issues/programs/beaches/cbi_projects/index.shtml
SWRCB, Prop. 84: Stormwater Grant Program	Projects designed to reduce and prevent stormwater contamination of rivers, lakes, and streams. Eligible applicants: Local Public Agencies.	Program funds: $38.4 M Award limits: $250 K to $3 M 20% match of total project cost match reduction for DACs	Round 2 Full Proposals due January 2014.	http://www.waterboards.ca.gov/water_issues/programs/grants_loans/prop84/

Table L-12. Grant Funding Matrix Programs, State Beaches and Federal Wetlands Restoration

Program	Brief Description	Key Points	Key Application Dates	Contact Info
Federal				
U.S. Army Corps of Engineers – Section 206 Aquatic Ecosystem Restoration Projects	For local government projects to restore aquatic ecosystems. Projects are evaluated to determine if they benefit the environment through restoring, improving, or protecting aquatic habitat for plants, fish and wildlife. Proposed projects are also reviewed to determine if they are technically feasible, environmentally acceptable, and provide cost effective environmental benefits. Each project must be complete within itself and not part of a larger project.	Maximum federal expenditure per project is $5 M. Project costs are shared 65% federal and 35% non-federal. Study costs: shared 50% federal and 50% non-federal after the first $100,000 in study costs. The first $100,000 in study cost is federally funded.	Continuously soliciting programs to carry out the program objectives.	http://www.nae.usace.army.mil/Missions/PublicServices/ContinuingAuthoritiesProgram/Section206.aspx
USEPA: Targeted Watersheds Grant Program	Designed to encourage community-based approaches and management techniques to protect and restore watersheds	Approximately $50 M awarded since inception. Unknown future funding.	Currently not accepting applications.	
USEPA, Region 9: Wetland Program Development Grants	Assistance for public agencies and non-governmental organizations to improve their ability to protect and improve wetlands and related aquatic resources in the Pacific Southwest Region	$1.6 M available funding for 2013/2014. Award range: $50 K to $350 K. EPA funding max = 75%.	Currently not accepting applications.	Suzanne Marr marr.suzanne@epa.gov

Table L-13. Grant Funding Matrix Programs, USBR WaterSMART

Program	Brief Description	Key Points	Key Application Dates	Contact Info
USBR WaterSMART (Sustain and Manage America's Resources for Tomorrow)				
WaterSMART – Water and Efficiency Grants	Projects should seek to conserve and use water more efficiently, increase the use of renewable energy, protect endangered species, or facilitate water markets.	Reclamation provides 50/50 cost-shared funding on a competitive basis to non-federal partners that wish to implement water conservation and efficiency projects. Irrigation and water districts, Tribes, states, and others with water or power delivery authority apply for funding of projects that can be completed in 2 to 3 years.	Continuously soliciting programs to carry out the program objectives.	http://www.usbr.gov/WaterSMART/grants.html http://www.usbr.gov/WaterSMART/docs/WaterSMART-thee-year-progress-report.pdf
WaterSMART – System Optimization Review (SOR) Grants	For studies to evaluate means of saving water via conservation and to develop a plan that includes elements of water conservation, delivery, water management, water basin, water marketing and preventing conflicts over water.		Continuously soliciting programs to carry out the program objectives.	
WaterSMART – Advanced Water Treatment and Pilot and Demonstration Grants	For pilot or demonstration projects that test the viability of advanced water treatment technologies.		Currently not accepting applications.	
WaterSMART – Grants to Develop Climate Analysis Tools	For projects focused on information gaps detailed in joint USBR and USACE report titled "Addressing Climate Change in Long-Term Water Resources Planning and Management: User Needs for Improving Tools and Information" (Section 3).		Currently not accepting applications.	
Water Conservation Field Services program	For water conservation and efficiency.	$100 K max in federal funding per project.	Currently not accepting applications.	
USBR, Title XVI	Recycled water feasibility investigations, preliminary engineering studies and research projects. Brackish water desalination is also considered.	$126 M as stated in ARRA.		http://www.usbr.gov/lc/socal/titlexvi.html Dennis Wolfe, Area Engineer, at dwolfe@usbr.gov or by phone at 951-695-5310

Section M.
Technical Analysis

Section M. Technical Analysis

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Section M. Technical Analysis

This section provides a discussion of:

- The technical information sources and/or data sets used to develop the water management needs in the IRWM Plan, explaining why this technical information is representative or adequate for developing the IRWM Plan
- How the technical information represents the current conditions, the scope of historic highs and lows, or the best forecast for future years, etc.
- Data gaps where additional monitoring or studies are needed, and how the Plan will help bridge these data gaps

This section does not include the description of all technical analysis, information, and literature undertaken and reviewed in the IRWM Plan development, knowing that certain data sets used in the IRWM Plan are from studies, historical records, monitoring activities, or ongoing investigations. The distinction is the need for this section to fully develop the technical basis for its conclusions on the need for water resources management actions, including implementation of projects and programs.

The November 2012 State Guidelines require summary information such as what the particular technical analysis does to support the required management actions and the level of certainty (or uncertainty) involved in the analysis. More importantly, any data used in the findings of needed management actions is required to be current and complete to the maximum extent practical. Data gaps where additional monitoring or planning studies can further substantiate the need for management actions are described, where and if possible. In addition, methodologies utilized for the technical analysis are described within each technical document, where available. Primary data sources (e.g., rainfall, stream flows, etc.) stemming from data collection and reporting efforts are described in **Section K – Data Management**.

M.1 Technical Information Sources and Data Used

This section is based on much of the work and presentation of material in other sections of the IRWM Plan. Most important is the general format of the IRWM Plan and the need to describe the various sources of technical information by Sub-Region. **Section E – Goals and Objectives**, provides the definition and list of the Sub-Region Priorities. These priorities target the specific water resources action needs of each Sub-Region based on conclusions made by stakeholders and technical experts in each region following several outreach efforts. The Sub-Regions are described in detail by watershed in **Section C – Region Description** and **Section D – Water**

Supply, Demand, and Water Budget. Throughout the IRWM Plan, there are key references to the differentiators that exist between the Sub-Regions, most importantly in **Section P – Climate Change** where vulnerabilities to climate change are broken down by Sub-Region.

The organization of technical information sources includes the title of the source, the website where the source can be located (as of January 2014), the information used from each source, and where applicable, the Sub-Region benefitting from the source. The list of sources is organized by regional sources and then by Sub-Region sources in alphabetical order.

The criterion for selecting each source is its applicability in current-day conditions and the availability of the source information through the internet to ensure the ease in accessibility to the reader. In cases where no direct internet link is available, the value of the resource to describing the management needs of the IRWM plan may outweigh the need for an internet address. In addition, all hyperlinks are subject to change over time. The resource list will be updated with each five year update of the IRWM Plan to maintain a current resource list with useable hyperlinks.

M.1.1 Resource Documents

- ✓ San Luis Obispo County (SLOC), 2012 Master Water Report Volume I
  http://www.slocountywater.org/site/Frequent%20Downloads/Master%20Water%20Plan/pdf/Vol_I_MWR%20final.pdf
  - Provides the latest background information on water resources management efforts taking place by Water Planning Area
  - Includes a full description of current data collection efforts throughout the county
- ✓ San Luis Obispo County, 2012 SLOC Master Water Report Volume II
  http://www.slocountywater.org/site/Frequent%20Downloads/Master%20Water%20Plan/pdf/Vol_II_MWR%20final.pdf
  - Provides a detailed description of each groundwater basin by WPA, who is using the basin, the approximate storage capacity, and ongoing challenges facing the basin, including groundwater management activities
  - Overview of surface water supplies, contract types, surface water reservoirs, and other supply sources such recycled water and desalinization
  - Creates a detailed accounting of all water supplies and demands for each WPA, including an understanding of the various water supply agencies and the rural and ag water sectors. In many cases assumptions had to be made due to insufficient data and resources to fully study certain water and land use categories
  - Water quality challenges are described with each WPA
  - Provides the criteria used to determine whether a supply shortfall exists and how well the region's Water Management Strategies address the shortfall
  - Considers the feasibility of groundwater recharge/banking

- ✓ San Luis Obispo County, 2012 SLOC Master Water Report Volume III
  http://www.slocountywater.org/site/Frequent%20Downloads/Master%20Water%20Plan/pdf/Vol_III_MWR%20final.pdf
  - Provides an understanding of the relationship for the Master Water Report to various other water resources planning documents
    Challenges in coordinating the Master Water Report with the IRWM planning process are mentioned including the ability of the District to manage both documents
- ✓ San Luis Obispo County (SLOC) Investigation (Volumes I and II). Bulletin 18. 1958. California Department of Water Resources
  - Provides the first estimate of San Luis Obispo groundwater basin storage and safe yield
- ✓ San Luis Obispo County Groundwater Basins, California's Groundwater, Bulletin 118 Update 2003. 2003. California Department of Water Resources
  http://www.water.ca.gov/groundwater/bulletin118/bulletin118update2003.cfm
  - Provides a comprehensive overview of statewide groundwater resources
  - Discusses the need and urgency in conducting groundwater management
  - Provides the roles of the state and federal agencies in groundwater management
  - Includes an exhaustive inventory of the state's groundwater information
- ✓ San Luis Obispo County, Groundwater Monitoring Program Evaluation, SLOC, California, May 2008. 2008. Cleath & Associates, 2008
  - Provides the adequacy and level of effort to develop a groundwater monitoring program for IRWM region
- ✓ Groundwater Flow Model Conversion and Urban Area Yield Update, July 2009. 2009. Cleath-Harris Geologists
  - Provides an updated groundwater flow model for use in simulating and understanding the sustainable yield of groundwater for urban communities reliant on groundwater as source of drinking water
- ✓ Water Use Estimates for Private Domestic Wells, July 2009. 2009. Cleath-Harris Geologists
  - Provides a method for calculating water demands for the rural areas of the IRWM region to generate an overall water supply need (i.e., including ag and urban) in the region
- ✓ San Luis Obispo County 2010-2012 Biennial Resource Summary Report. 2008. SLOC Resource Management System, SLOC Planning and Building Department
  http://www.slocounty.ca.gov/Assets/PL/RMS/2010-2012_RMS.pdf
  - Provides information to guide decisions about balancing land development with the resources necessary to sustain such development
  - Data collected through the system is used to identify resource problems and recommending solutions

- ✓ Central Coast, Assessment of Nitrate Contamination in Ground Water Basins of the Central Coast Region - Preliminary Working Draft, December 1995. 1995. RWQCB
  - Provides the sources of nitrate contamination and groundwater basins at risk of continued contamination from farming activities and private septic disposal systems
- ✓ Central Coast Region – Basin Plan (with on-line updates). 2006. RWQCB
  http://www.swrcb.ca.gov/rwqcb3/publications_forms/publications/basin_plan/index.shtml
  - Provides a source of information regarding how the quality of surface water and groundwater should be managed
  - Identifies quantitative water quality standards to meet through programs and other described actions and an implementation plan
  - Includes waste discharge permitting and wastewater treatment effluent standards.
  - Includes identified uses of inland surface waters
  - Describes regulatory monitoring and assessment programs in the Central Coast region
- ✓ San Luis Obispo County Hydrologic Report water years 2001-02 and 2002-03, May 2005. 2005. SLOC Public Works
  http://www.slocountywater.org/site/Water%20Resources/Reports/pdf/Hydrologic%20Report%202002.pdf
  - Includes a summary of hydrologic conditions for 2001-02 and 2002-03
  - Provides historical references to hydrologic parameters including rainfall, evaporation, stream flow, groundwater elevations, and reservoirs, which forms the basis of resource management conditions
- ✓ SLOC 2007 IRWM Plan. 2007. SLOC
  http://www.slocountywater.org/site/Frequent%20Downloads/Integrated%20Regional%20Water%20Management%20Plan/
  - Provides the historical reference (or baseline) in the development of current needs not addressed over the past 6 years
  - Forms the much of the backbone of defining the needs of projects and programs
- ✓ SLOC General Plan, April 2007. 2007. SLOC
  http://www.slocounty.ca.gov/Assets/PL/Elements/COSE.pdf
  - Policies (i.e., Conservation Element) of the General Plan set goals and requirements of urban water resources needs and management goals within the SLO County region
- ✓ SLOC Regional Watershed Planning, 2013. 2013. SLOC
- ✓ SLOC Salt and Nutrient Management and Recycled Water Planning, 2013. 2013. SLOC (?) These two studies have not been produced and issued as of yet, have they? Another chapter shows the SNMP being issued in 2014.
- ✓ SLOC Agricultural Demand Inventory
- ✓ SLOC Data Enhancement Plan
- ✓ SLOC Flood Management Plan
- ✓ SLOC Regional Permit Program

- ✓ SLOC Storm Water Management Plan
  http://www.slocounty.ca.gov/PW/Flood_Control-Stormwater/SWMP.htm
  - Includes mandatory requirements in storm water quality, permitting, and reporting.
  - Provides potential solutions to the storm water quality management needs in the SLO IRWM region
  - Defines methods for selecting Best Management Practices and related implementation programs for improving storm water quality
- ✓ SLOC, On-line Contaminant Site Database (Geotracker). State Water Resources Control Board
  http://geotracker.waterboards.ca.gov/sites_by_gwbasin.asp
  - A database which provides data sets in establishing needs related to groundwater cleanup programs in the IRWM region
  - Data is found by address and facility type for known contaminant locations
- ✓ Water Balance Study for the Northern Cities Area, April 2007. 2007. Todd Engineers
  http://www.pismobeach.org/DocumentView.aspx?DID=249
  - Establishes a water balance used to define water supply management needs for:
    - City of Pismo Beach
    - City of Grover Beach
    - City of Arroyo Grande
    - Oceano Community Services District
- ✓ STORET and Legacy Data Center (LDC). U.S. Environmental Protection Agency
  http://www.epa.gov/storet/
  - Provides raw data sets for water quality, biological, and physical data
- ✓ On-line Ground Water Level Database. USGS
  http://water.usgs.gov/ogw/data.html
  - Provides raw data sets for groundwater levels, aquifers, water use, groundwater quality, local groundwater data, and other sources of water

M.1.2 North Coast

- ✓ Morro Bay 2007 Nitrate Study
  - A study completed to evaluate the impacts of fertilizers, sewer exfiltration, animal operations, and private septic systems on groundwater aquifers used for drinking water supply wells
  - Speaks to the need to implement monitoring and management programs in the small coastal basins. The main source of nitrate is identified as coming from vegetable farming operations in the lower Morro Valley
- ✓ Cayucos Area Water Organization, 2007 Water Management Plan Update
  - Most recent master plan for the community of Cayucos identifying needed replacement and rehabilitation of aging capital facilities

- ✓ Cambria CSD, 2008 Water Master Plan EIR
  - Most recent master plan for the community of Cambria identifying needed replacement and rehabilitation of aging capital facilities
- ✓ North Coast Groundwater, 2009 Cleath-Harris Geologists Groundwater Studies
  - Much of the current groundwater understanding and references used in understanding the needs of smaller North Coast groundwater basins stem from these studies as a source for aquifer descriptions and storage capacity for small coastal groundwater basins
- ✓ Cambria CSD 2010 UWMP. 2012 http://www.cambriacsd.org/Library/PDFs/REPORTS/URBAN%20WATER%20MGMT%20PLAN/2012%2002%2023%20Final%20CCSD%20public%202010%20UWMP%20update.pdf
  - The required content of the UWMP makes this resource an extremely useful document in developing the water supply sustainability and water budget information for the Cambria region
- ✓ Cambria 2012 Consumer Confidence Report http://www.cambriacsd.org/Library/PDFs/WATER%20WASTEWATER/Consumer%20Confidence%20Reports/CCR%202012.pdf
  - Provides water quality data from northernmost water districts using groundwater as primary source of drinking water supply
- ✓ Cayucos - County Service Area 10/10A Water Quality Report. 2008. SLOC http://www.slocounty.ca.gov/Assets/PW/WQL+Annual+Reports/2008/Cayucos_2008.pdf
  - Provides water quality data from local water districts using surface water as primary source of drinking water supply
- ✓ Los Osos, Sea Water Intrusion Assessment and Lower Aquifer Source Investigation of the Los Osos Valley Ground Water Basin (Volumes I and II), October 2005. 2005. Cleath & Associates http://www.waterboards.ca.gov/rwqcb3/water_issues/programs/los_osos/docs/master_docs/2005_07_17_sea_water_intrusion_assessment.pdf
  - Provides a good first reference document in considering sea water intrusion in combination with a lower aquifer recharge investigation
- ✓ Morro Bay (City of) 2010 UWMP. June 2011. CH2M-Hill http://www.water.ca.gov/urbanwatermanagement/2010uwmps/Morro%20Bay,%20City%20of/MorroBay_2010_UWMP.pdf
  - The required content of the UWMP makes this resource a useful document in developing the water supply sustainability and water budget information for the City of Morro Bay region
- ✓ Los Osos , Public Draft Review Basin Plan for the Los Osos Groundwater Basin. August 2013 http://www.slocountywater.org/site/Water%20Resources/Reports/pdf/Basin%20Plan%20Public%20Review%20Draft%208.1.2013.pdf
  - The Los Osos groundwater basin is a good example where both water quality

degradation by nitrate and seawater intrusion are occurring simultaneously, expressing the urgency in project solutions to sustain the health of the basin

- ✓ Cambria, Water Master Plan, Program Environmental Impact Report, prepared for Cambria Community Services District, July 2008. 2008. RBF Consulting 2008
  http://www.cambriacsd.org/Library/PDFs/PROJECTS/RODEO%20GRDS%20PUMP%20STATION/Rodeo%20Public%20Review%20IS%20MND.pdf
  - Provides useful information of the sensitivity of what goes into an Environmental Impact Report for the North Coast Region in implementing water supply system improvements, including flooding and local environmental issues
- ✓ San Simeon CSD November 2007 Water System Master Plan and Wastewater Collection System Evaluation. 2007
  http://www.sansimeoncsd.com/PDFs/SSCSD_Master_Plan_12-7-07.pdf
  - A study including wastewater as a managed water resource and the integration with recycled water for the San Simeon area (also a Disadvantaged Community)
- ✓ Morro Bay (City of) Ashurst Well Field Nitrate Study for the City of Morro Bay, May 2009. 2009. Cleath-Harris Geologists
  - A study looking at impacts of pumping from coastal groundwater basins and how contaminants, including salt water, can be drawn in under peak season pumping conditions
- ✓ Los OsosTask 3 Los Osos Upper Aquifer Water Quality Characterization, June 2006. 2006. Cleath & Associates
  - Study closely looks at the understanding of drinking water supply aquifers
- ✓ Los Osos Nitrate Monitoring Program, October 2006 Ground Water Monitoring, December 2006. 2006. Cleath & Associates
  - Similar to City of Morro study in identifying causes of nitrate contamination

M.1.3 South County

- ✓ Avila Valley MWC 2008 Consumer Confidence Report
  http://avilabeachcsd.org/water-supply/water-quality
  - Provides water quality data from southern water districts using local and State surface water supplies as primary source of drinking water supply
  - Reports are not available on-line with US EPA
- ✓ Northern Cities Management Area (NCMA) 2010 Annual Report
  http://pismobeach.granicus.com/MetaViewer.php?meta_id=47009&view=&showpdf=1
  - Provides Cities of Arroyo Grande, Grover Beach and Pismo Beach, and the Oceano Community Services District reporting on water supply and demands
  - Current and future management activities in groundwater resources
  - Defines needs through hydrologic setting and political relationships

- ✓ Nipomo CSD 2009 Waterline Intertie Project Narrative Report
  http://ncsd.ca.gov/Library/Supplemental_Water/BOYLE%20ENGINEERING/Aug%202009%20WIP%20Narrative%20online%20version_reduced.pdf
  - Documents how a community, under California State Superior Court Order, implemented a management action to reduce reliance on groundwater by constructing a waterline project to ensure that the annual average recharge of the groundwater basin exceeds annual consumption
- ✓ Arroyo (City of) Grande 2010 Final Draft UWMP
  http://www.arroyogrande.org/static/notices/public-notices/general/01/05/2012/2010-urban-water-management-plan-final-draft.pdf
  - City of Arroyo Grande depends on local surface water and groundwater resources and implements active groundwater recharge projects
  - The required content of the UWMP makes this resource an extremely useful document in developing the water supply sustainability and water budget information for the City of Arroyo Grande as well as identify the need for additional supplies
- ✓ Pismo (City of) Beach 2010 UWMP
  http://www.water.ca.gov/urbanwatermanagement/2010uwmps/Pismo%20Beach,%20City%20of/2010UWMP_FINALSept.pdf
  - City of Pismo Beach depends on local surface water, groundwater, and State Water resources and implements active groundwater recharge projects
  - The city continues to seek supplement water supplies in the region, including recycled water, cloud seeding, and desalinized water
  - The required content of the UWMP makes this resource an extremely useful document in developing the water supply sustainability and water budget information for the City of Pismo Beach as well as identify the need for additional supplies
- ✓ Nipomo CSD 2010 Final Draft UWMP
  http://www.water.ca.gov/urbanwatermanagement/2010uwmps/Nipomo%20Community%20Services%20District/NCSD%202010%20UWMP_Final.pdf
  - Nipomo CSD depends on entirely on local groundwater supplies from the adjudicated Santa Maria groundwater basin
  - The County has declared a Level of Severity III for Nipomo CSD's water supply, meaning demands exceed supply and water supplies are not sustainable
  - The required content of the UWMP makes this resource an extremely useful document in developing the water supply sustainability and water budget information for the Nipomo CSD as well as identify the need for additional supplies
- ✓ Grover Beach (City of) Public Works Documents
  http://www.grover.org/index.aspx?NID=215
  - A website providing various source documents on water and wastewater in the community of City of Grover

- ✓ Price Canyon, Infrastructure and Phasing of Development into Price Canyon, Spanish Springs Specific Plan. Chapter 5. June 2013. City of Pismo Beach
  http://www.pismobeach.org/DocumentCenter/Home/View/9324
  - Provides the utility needs for expansion of development in Price Canyon
  - Quantifies overall demands and supplies for both domestic and agricultural irrigation, as well as wastewater collection, treatment and disposal
- ✓ Nipomo Mesa Management Area, 1st and 5th Annual Report. Calendar Year 2008 and Year 2012. NMMA Technical Group
  http://ncsd.ca.gov/Library/NMMA%20Technical%20Group/2008%20ANNUAL%20REPORT.pdf
  http://ncsd.ca.gov/Library/NMMA%20Technical%20Group/5th%20Annual%20Report%20-%20Calendar%20Year%202012.pdf
  - Provides an annual assessment and baseline (2009 report) of the hydrologic condition for the NMMA based on an analysis of data monitoring program accruing and interpreted each year
  - Goal of each management area is to promote monitoring and management practices so that present and future water demands are satisfied without causing long-term damage to the underlying groundwater resource
  - Data management programs needs are well documented along with the sources of data from outside agencies and interested stakeholders
  - Addresses past and newly developed recommendations along with the implementation schedule based on future budgets, feasibility, and priority
- ✓ Woodlands Mutual Water Company 2012 Consumer Confidence Report
  http://woodlandsmwc.com/Library/Documents/WMWC%20CCR%202012.pdf
  - Provides water quality data for small drinking water supply system receiving groundwater supplies through local wells
- ✓ Grover Beach (City of) 2005 UWMP
  http://www.water.ca.gov/urbanwatermanagement/2010uwmps/Grover%20Beach,%20City%20of/DocumentView.pdf
  - City of Grover Beach depends on local surface and groundwater resources.
  - Recycled water supplies are included in their planned facilities
  - Downstream releases are considered to maintain stream flows and groundwater recharge downstream
  - The required content of the UWMP makes this resource an extremely useful document in developing the water supply sustainability and water budget information for the City of Grover Beach as well as identify the need for additional supplies
- ✓ Avila Beach CSD 2008 Municipal Services Review
  http://www.slolafco.com/SOI_Updates/Final_SOI-MSR_ABCSD_2008.pdf
  - Provides information Avila Beach CSD's service capabilities in the context of being able to serve the Sphere of Influence of its jurisdiction
  - Includes similar information as UWMP with additional focus on growth and services

for growth

- ✓ Avila Beach CSD 2010 Sewer System Management Plan (SSMP)
  http://avilabeachcsd.org/site/wp-content/uploads/2013/09/2013-09-10-ABCSD-Final-SSMP-RPT-Rev-2.pdf
  - Provides the regulatory background and requirements for the CSD's collection, treatment, and disposal of wastewater
  - Includes rehabilitation and replacement plans as future projects to improve their water quality effluent discharges
- ✓ Cal Poly 2007 Master Plan and EIR
  http://afd.calpoly.edu/facilities/masterplan/plan/es.pdf
  - provides principles and guidelines for the physical development of Cal Poly so that the University can sustain its distinctive mission as a polytechnic university into the 21st century
- ✓ Nipomo CSD, Sphere of Influence and Municipal Service Review. 2010
  http://www.slolafco.com/SOI_Updates/All_Public_Review_Draft.pdf
  - Provides information Nipomo CSD's service capabilities in the context of being able to serve the Sphere of Influence of its jurisdiction
  - Includes similar information as UWMP with additional focus on growth and services for growth
- ✓ Nipomo Water Resource Related Reports Website
  http://ncsd.ca.gov/cm/Resources/Reports%20by%20Subject.html#Master
  - Provides an abundance of factual master planning and groundwater data for establishing water resource management needs in the Nipomo region
- ✓ Pismo Creek Watershed, Hydrology and Geology Assessment of the Pismo Creek Watershed, SLOC, California, August 2008. 2008. Balance Hydrologics, Inc.
  http://www.balancehydro.com/pdf/207133HydPisCr08.pdf
  - Provides a detailed characterization of the hydrogeologic processes in the Pismo Creek watershed and where fish and other aquatic species may be affected by these processes
- ✓ Pismo-Guadalupe Area, Sea-Water Intrusion: Pismo-Guadalupe Area, Bulletin No. 63-3, February 1970. 1970. California Department of Water Resources
  http://www.water.ca.gov/waterdatalibrary/docs/historic/Bulletins/Bulletin_63/Bulletin_63__1970.pdf
  - Initially believed to be sea-water intrusion, this study concluded that natural salinity of the geologic environment was the cause
  - Did conclude that additional groundwater pumping could bring subsurface saline water inland
  - Created first sentry monitoring wells for assessing the movement of sea water intrusion
- ✓ Arroyo Grande-Nipomo Mesa Area Water Resources, Southern District Report. 2002. California Department of Water Resources
  http://www.dpla.water.ca.gov/sd/water_quality/arroyo_grande/arroyo_grande-nipomo_mesa.html

- Provide information on the water resources of the Arroyo Grande-Nipoma area
- DWR conducted this study under an agreement with SLO County

✓ Nipomo Community Services District Water and Sewer Master Plan, December 2007. 2007. Cannon Associates
http://ncsd.ca.gov/Library/Master%20Plans/2007/FINAL%20REPORT.pdf

- Provides a regional study and Water Supply Alternatives Analysis for the Southland Wastewater Treatment Facility Master Plan and the Sanitary Sewer Overflow Regulations
- Includes a wide ranging list of project ideas and concepts from water recycling to desalinization, water tank mixing, and conversion of well motors from electric to natural gas

✓ Arroyo Grande (City of) Consumer Confidence Reports
http://www.arroyogrande.org/static/uploads/pdfs/document-center/city-departments/public-works/consumer_confidence_report_2012.pdf

- Provides water quality data for small drinking water supply system receiving local surface water (Lopez Lake) and groundwater supplies through local wells

✓ Pismo (City of) 2006/07 through 2015/16 Ten-Year Capital Program and Major Expenditure
http://ca-pismobeach.civicplus.com/DocumentCenter/Home/View/185

- Provides 10 year outlook on solutions to water resources challenges facing the City of Pismo Beach
- Includes costs of capital projects

✓ Edna, Draft San Luis-Edna Valley Ground Water Study. 1997. DWR

- Provides hydrogeologic description of San Luis-Edna Valley area.

✓ Arroyo Grande/Nipomo Mesa Study. 2002. DWR
http://www.water.ca.gov/groundwater/data_and_monitoring/southern_region/GroundwaterQuality/arroyo_grande/arroyo_grande-nipomo_mesa.html

- Provides hydrogeologic description of water resources in the Arroyo Grande-Nipomo Mesa area
- Portions underlie the now adjudicated Santa Maria Basin

✓ Edna, Consumer Confidence Report, Edna Water System. Golden State Water Company
http://www.gswater.com/wp-content/uploads/2013/06/Water-Quality-2013-Edna-Road.pdf

- Provides water quality data for small drinking water supply system receiving groundwater supplies through local wells

✓ Nipomo, Consumer Confidence Reports, Nipomo Water System. Golden State Water Company
http://www.gswater.com/nipomoccr/

- Provides water quality data for small drinking water supply system receiving groundwater supplies through local wells

✓ Santa Maria Valley, Evaluation of Ground Water Quality in the Santa Maria Valley,

California. 1977. Hughes, Jerry L. USGS. Water Resources Investigations 76-128
http://pubs.er.usgs.gov/publication/wri76128Cached/

- Provides initial hydrogeologic evaluation of Santa Maria Valley

✓ Santa Maria Valley , Development of a Numerical Ground Water Flow Model and Assessment of Ground-Water Basin Yield - Santa Maria Valley Ground-Water Basin. 2008. Luhdorff and Scalmanini
http://www.water.ca.gov/irwm/grants/docs/Archives/Prop84/Submitted_Applications/P84_Round2_Implementation/Cachuma%20RCD%20(201312340020)/Attachment%203.%20(cont)%20-%20Att03_IG2_WorkPlan_App03_02_1of1.pdf

- Provides the geologic conditions, full description and condition of the Santa Maria Groundwater Basin
- Includes the 2011 Annual Report of Hydrogeologic Conditions, Water Requirements, Supplies and Disposition for the Santa Maria Valley Management Area

✓ Nipomo, S.S. Papadopulos & Associates, 2004. Nipomo Mesa Resource Capacity Study, March 2004
http://ncsd.ca.gov/Library/Groundwater%20Information/PAPADOPULOS%20REPORT.pdf

- Provides the estimated groundwater capacity beneath Nipomo Mesa, a groundwater basin in overdraft
- Findings indicate Level of Severity III-existing demand equals or exceeds the dependable supply

✓ Cuyama Valley, Singer, J. A. and W. V. Swarzenski, 1970. Pumpage and Ground-Water Storage Depletion in Cuyama Valley, California 1947-66. U.S.G.S. Water-Supply Paper 1110-B
http://www.countyofsb.org/pwd/water/downloads/USGS%20OFR%201970%20TEXT.pdf

- Provides an early study of water level declines in the Cuyama Valley groundwater basin

✓ Zone 3, 2010 UWMP. 2011. SLOC
http://www.water.ca.gov/urbanwatermanagement/2010uwmps/San%20Luis%20Opisbo%20County/Zone%203%20Urban%20Water%20Management%20Plan%202010%20Update.pdf

- Zone 3 provides water to 5 urban service areas in the South County region. The required content of the UWMP makes this resource an extremely useful document in developing the water supply sustainability and water budget information for the Zone 3 region

M.1.4 North County

✓ Paso Robles 2010 Groundwater Basin Water Balance Review and Update
http://www.slocountywater.org/site/Water%20Resources/Reports/pdf/Paso%20Robles%20Groundwater%20Basin%20Water%20Balance%20Review%20and%20Update.pdf

- Provides the water balance for the Paso Robles Groundwater Basin and the Atascadero Subbasin from 1998 to 2009
- Projected water balance provides forecasting from 2010 to 2025

- Provides definitions to overdraft conditions and natural processes taking place

✓ Atascadero Mutual Water Company 2005 UWMP
http://www.amwc.us/PDFFilesOther/Conservation/Urban%20Water%20Master%20Plan%202005.pdf

- Atascadero MWC depends on groundwater resources from the Atascadero Sub-Basin of the Paso Basin and underflow from the Salinas River (considered as groundwater)
- Includes some consideration for alternative supplies, for example, Lake Nacimiento.
- The required content of the UWMP makes this resource an extremely useful document in developing the water supply sustainability and water budget information for the City of Atascadero as well as identify the need for additional supplies
- Could not locate a 2010 UWMP

✓ Atascadero (City of) Sphere of Influence Municipal Service Review
http://www.slolafco.com/SOI_Updates/Final%20Adopted_ATAS_SOI-MSR.pdf

- Provides comprehensive background for City of Atascadero water and wastewater resources and current and future capacity to meet water and wastewater demands

✓ Camp Roberts Joint Land Use Study, May 2013
http://www.google.com/url?sa=t&rct=j&q=&esrc=s&frm=1&source=web&cd=8&ved=0CFoQFjAH&url=http%3A%2F%2Fwww.camprobertsjlus.com%2Fresources%2Flibrary%2Fdoc_download%2F5-camp-roberts-jlus-public-draft-may-2013.html&ei=UR5cUoyABMGCjAKu94HYBA&usg=AFQjCNEaHx3rdag_sER-6P5P4jWMaiqeng&sig2=ls8ZjPo4suVXxMk7K-_rzw&bvm=bv.53899372,d.cGE

- Provides a comprehensive evaluation of water resources, environmental and climate change variables for the Camp Roberts area

✓ Shandon, 2008 Water Quality Report, County Service Area #16, Shandon. 2008. SLOC. Public Works Department
http://www.slocounty.ca.gov/Assets/PW/WQL+Annual+Reports/2008/Shandon+CCR+2009.pdf

- Provides supply quality from a small groundwater system in the Paso Robles Groundwater Basin
- Includes operations and inspections of water system, and needed improvements for fireflows
- Updated reports including further solutions to reducing groundwater use not found

✓ Santa Margarita, County Service Area #23 2008 Water Quality Report. 2008. SLOC. Public Works Department
http://www.slocounty.ca.gov/Assets/PW/WQL+Annual+Reports/2008/MRG_2008.pdf

- Provides supply quality from a small groundwater system in the Santa Margarita Groundwater Basin
- Includes operations and inspections of water system, and needed improvements for fireflows
- Updated reports including further solutions to reducing groundwater use not found

✓ Templeton, Revised Report, Water Quality Modeling of the Salinas River Underflow and Proposed Waste Discharge Requirements in Support of the Selby Percolation Pond

Facility Expansion: prepared for Templeton Community Services District, January 2007. 2007. Fugro West

- Provides water quality assessment of wastewater discharges to the Salinas River and its potential impact on the underflow well system of Templeton CSD

✓ San Miguel, April 2013 Water Study for the San Miguel Community Plan Update. Fugro
http://www.slocounty.ca.gov/Assets/PL/San+Miguel+Community+Plan+Update/waterstudy.pdf

- Combines historic water use information from available reports and assesses the projected water demand with available groundwater supplies
- Identifies needed system improvements to both supply and distribution
- Considers supplemental water supplies in the region

✓ Paso Robles Groundwater Subbasin Water Banking Feasibility Study, Final Report: prepared for SLOC Flood Control and Water Conservation District, April 2008. 2008. GEI Consultants, Fugro West, and Cleath and Associates
http://www.prcity.com/government/departments/publicworks/water/pdf/GBMP/reports/WaterBankingFeasibilityStudyApr08.pdf

- Provides a study which stems from the 2007 SLO IRWM Plan to consider opportunities for banking of groundwater in the Paso Robles basin
- Includes a comprehensive investigation of banking alternatives and management actions

✓ Shandon Community Plan, March 2012
http://www.slocounty.ca.gov/Assets/PL/Draft+Plans/Shandon+Community+Plan+Draft+-+March+2012/Chapter+4.pdf

- Provides an environmental discussion of the protection of natural and cultural resources and energy conservation

✓ San Miguel CSD, 2011 Consumer Confidence Report
http://www.sanmiguelcsd.org/pdf/2011%20San%20Miguel%20CCR%20Report%20Finalized.pdf

- Provides supply quality from a small groundwater system in Paso Robles Groundwater Basin
- Includes operations and inspections of water system, and needed improvements for fireflows

✓ Templeton CSD 2013 Consumer Confidence Report. 2013
http://www.templetoncsd.org/DocumentCenter/View/33

- Provides supply quality from a small groundwater system
- Includes a source assessment summary for each groundwater well

✓ Paso Robles (City of) Annual Monitoring Report for Calendar Year 2009
http://www.prcity.com/government/departments/publicworks/water/pdf/BasinAnnualMonitoringRPT2009.pdf

- A groundwater monitoring report submitted to the Paso Robles Groundwater Basin - Groundwater Advisory Committee in February 2011

✓ Paso Robles (City of), 2012 Annual Water Quality Report http://www.prcity.com/government/departments/publicworks/water/pdf/WaterQualityReport.pdf

- Provides a comprehensive understanding of the City of Paso Robles groundwater supplies, including Salinas River underdrains
- Identifies groundwater issues and need for supplemental water supplies
- Lists contaminants that may be present in water supplies

✓ Paso Robles 2010 UWMP
http://www.prcity.com/government/departments/publicworks/water/pdf/UWMP_2010_FINAL_June2011.pdf

- City of Paso Robles depends on groundwater resources including Salinas River underdrains
- Recycled water supplies are included in their planned facilities along with improvements to the wastewater treatment plant to reduce salt loading
- City is progressing with a surface water treatment plant using 4,000 AFY of Nacimiento water
- The required content of the UWMP makes this resource an extremely useful document in developing the water supply sustainability and water budget information for the City of Paso Robles as well as identify the need for additional supplies

✓ Paso Robles Groundwater Basin Management Plan, March 2011
http://www.prcity.com/government/departments/publicworks/water/groundwater.asp
http://www.prcity.com/government/departments/publicworks/water/pdf/GBMP/plan/PasoBasin_FinalGMP.pdf

- Provides comprehensive hydrogeologic understanding of the Paso Basin and Basin Management Objectives to ensure the needs of the basin are addressed and monitored over time
- First website includes important additional studies related to the Paso Basin

✓ San Miguel Municipal Services Review September 2013
http://www.slolafco.com/SOI_Updates/NoCo_2013/Public_Review_Draft_Chapter_4_SMCSD_MSR.pdf

- Provides water and wastewater utilities assessment for existing and planned growth
- Associates land use with increases in water resources utilities

✓ Santa Margarita Water Master Plan, 2003 CSA 23. 2004. SLOC Public Works Department
http://www.slocountywater.org/site/County%20Service%20Areas/CSA%2023/pdf/Santa%20Margarita%20Water%20System%20Master%20Plan%202003.pdf

- Provides a good source of needed upgrades to a small 40 year old groundwater system with under sized pipes and insufficient fire flows
- Consideration for supplemental water supply solution including the Nacimiento Project and tank renovation

✓ Shandon Community Plan Chapter 7 – Infrastructure and Utilities for CSA 16, Community of Shandon, Draft
http://www.slocounty.ca.gov/Assets/PL/Draft+Plans/Shandon+Community+Plan+Draft+-+March+2012/Chapter+7.pdf

- Provides a summary of the master plans for water and sewer and the 2012 assessment of the water system needed of a small groundwater system
- Includes the planning to hold on to and utilize the 100 AFY State Water Project supply

✓ Heritage Ranch Community Services District Website
http://www.heritageranchcsd.com/water.html

- Provides a summary of the current conditions of the small water systems reliant on Lake Nacimiento, the only source of supply

✓ Resource Investigation of Low and Moderate-Temperature. 1983. Campion, L.F., R.H. Chapman, G.W. Chase, and L.G. Youngs

- Federal document not available

✓ Geothermal Areas in Paso Robles, California: California Division of Mines and Geology, Open File Report 83-11 SAC.

- Federal document not available

✓ Santa Margarita, Basic Geology of the Santa Margarita Area, SLOC, California, Bulletin 199, California Division of Mines and Geology, Sacramento, California. 1976. Hart, E.W.
http://archive.org/stream/margaritalogyofs00hartrich#page/14/mode/2up

- Provides a detailed understanding of the hydrogeology of the Santa Margarita Valley groundwater basin and Rinconada earthquake fault

✓ Atascadero (City of) Adopted Sphere of Influence Update Municipal Service Review. September 2011
http://www.slolafco.com/SOI_Updates/Final%20Adopted_ATAS_SOI-MSR.pdf

- Provides elements of a UWMP in describing the adequacy of the current water, wastewater and storm drain services
- Includes Atascadero Mutual Water Company water system description of groundwater from wells and underflow drains beneath the Salinas River

✓ Atascadero Mutual Water Company 2012 Consumer Confidence Report
http://www.amwc.us/PDFFilesOther/CCR/2012_CCR.pdf

- Provides a characterization of the water quality and water conservation programs

✓ Santa Margarita Ranch Agricultural Residential Cluster Subdivision Project and Future Development Program EIR. February 2008
http://www.slocounty.ca.gov/Assets/PL/Draft+EIR+Notice+of+Availability/2008/Santa+Margarita+Ranch+-+Comments+due+03-28-08.pdf

- Provides a characterization of an Ag-Res development project and describes environmental considerations
- Report is an update to an initial EIR and address water and wastewater impacts from the Ag-Res private septic and well systems
- Includes vineyards and associated water demands as part of the development plan

✓ SunPower - California Valley Solar Ranch Website
http://www.slocounty.ca.gov/planning/environmental/EnvironmentalNotices/sunpower.htm

- Provides a website to public information on the construction of the 250 megawatt photovoltaic solar power plant on the Carrizo Plain
- Includes the final EIR and latest monitoring reports

✓ Santa Margarita Technical Memorandum, Groundwater Resources of CSA 23, October 2004

http://www.slocountywater.org/site/County%20Service%20Areas/CSA%2023/pdf/CSA%2023%20Todd%20Technical%20Memol.pdf

- Provides a comprehensive understanding of CSA 23, the small town of Santa Margarita
- Includes hydrogeology, water demands and supplies, and impacts from the proposed Santa Margarita Ranch development
- Provides recommendations for monitoring of data from test wells designed for conversion to production wells

✓ Topaz Solar Farm (First Solar) Website

http://www.slocounty.ca.gov/planning/environmental/EnvironmentalNotices/optisoloar.htm

- Provides a website to public information on the construction of the 550 megawatt photovoltaic solar power plant on the Carrizo Plain
- Includes the final EIR and latest monitoring reports

M.2 Incorporate and Consider Proposition 50 Studies

The four studies completed in 2008 specifically addressed regional data gaps and supported the overall SLO Region IRWM Plan goals, objectives, and strategies, and improved the IRWM Plan itself. These projects included the following:

- Data Enhancement Plan
- Flood Management Plan
- Groundwater Banking Plan
- Regional Permitting Plan

Section A – Introduction, Table A-2 provides a shortlist of the elements a plan must address, per the 2012 Guidelines. **Appendix Q – State Guideline Requirement Tables** provides the more detailed listing of the specific pass/fail requirements contained within the plan and a listing or key to where each of these elements can be found for this IRWM Plan. Locations are indicated by both section and page number where these elements are treated.

M.2.1 Data Enhancement Plan

The Data Enhancement Plan was a regional water monitoring program designed to provide data for planning, design, and operational purposes, yet it was also designed to be flexible and to change over time. This is not necessarily contradictory. Rather, it implies that regional water monitoring program data will be frequently interpreted to identify monitoring sites that might be dropped from the network or sampled less frequently, as well as identifying spatial gaps or the need for more frequent data collection. The design also recognizes that there will continue to be improvements in instrumentation that will allow for more in-situ monitoring and the collection of more data by remote sensing. New technologies will be incorporated into the regional water monitoring program when they are ready for operational deployment.

M.2.2 Flood Management Plan

The Flood Management Plan was developed as a guide to implementing flood control projects. The objective of the guide was to identify several of the most significant constraints affecting the ability to implement flood control projects in the SLO Region and to propose methods and strategies to address the challenges. As with most problems, and especially with flooding, stakeholder involvement is essential. Therefore, the target audience for the report was composed of the individual citizens and communities affected by flooding problems. The intent of the plan was to provide guidance in the process of implementing such methods and strategies to address the flooding problems.

M.2.3 Groundwater Banking Plan

The Groundwater Banking Plan explored the feasibility of banking water in the Paso Robles Groundwater Basin (Basin) for the benefit of County residents. This was considered a high-priority study with much potential because the Basin is the largest in the County and the Coastal Branch of the State Water Project (SWP) enters the County adjacent to the Basin. The potential benefits associated with a groundwater banking program included:

- Improving local groundwater conditions within the Basin
- Increasing dry-year water supply reliability for local water users and possibly the residents of the County and the Central Coast
- Improving local groundwater quality in the Basin
- Providing greater flexibility of water resources management in the County and the Central Coast
- Reducing the County’s dependence on imported water supplies in below-normal years

M.2.4 Regional Permitting Plan

The Regional Permitting Plan developed an approach to managing the multitude of permits from different agencies at different levels of government required by the County for carrying out each of its projects. It establishes an orderly set of uniform conditions for projects in order to reduce processing time and increase consistency and effectiveness. It progresses towards a self-monitored permit using internet access for permitting agencies to monitor compliance by the County. The goal of this plan was to eventually have the County issue its own permits, only requiring auditing by the agencies normally entrusted with the permitting authority. The process described in the plan would reduce redundancy and provide a higher quality and more efficient investment of resources. The plan lays out the steps to:

- Organize consistent conditions from various agencies by project type and resource area
- Develop a single, comprehensive permit that is recognized by permitting agencies
- Designate one permitting agency to provide oversight and reporting responsibilities over each project
- Create and utilize a web portal into their electronic permit monitoring system to allow self-management by the County, with auditing abilities by any permitting agency

M.2.5 Integrating Proposition 50 Studies into the IRWM Plan

Information developed in these four studies was incorporated into the relevant sections during the SLO IRWM Plan Update process. The information developed in these studies affect, and were considered while updating, the plan standards as depicted in **Figure M-1**.

Figure M-1. IRWM Plan Sections Incorporating Proposition 50 Studies

M.3 Relating Technical Sources to IRWM Goals

The bulleted description statements are provided to speak to how the technical source helps in defining the management needs of the IRWM region (i.e., not how the source was used in developing the IRWM Plan).[1]

A table is used as a means of relating each source with the five IRWM Plan Goals by identifying which Goals are addressed by each source document and to what degree of adequacy. Each of the listed sources includes a green or yellow dot signifying a high or low degree of adequacy, respectively.

M.3.1 Relevance of Technical Sources

Table M-1 includes each of the technical source titles and provides the relevance of the document to each of the IRWM Goals. The relevance is measured by how the technical information contained in the source document (or website) represents and characterizes the IRWM region's needs. The following Relevance Factors are used as a basis for why the source is used in the IRWM Plan:

- Current conditions
- Historic highs and lows
- Forecasts for future years
- Public involvement and visibility
- Scientific methods and models
- Responses to direct Goal-related concerns (e.g., UWMPs)

The value listed in the table is based on which of the IRWM Goals the source best characterizes to allow for a conclusion of need, as defined in the IRWM Plan. In some cases the value relates to the usefulness of the information, or approach to presenting information to an IRWM Goal. For example, a water district's Water Quality Consumer Confidence Report is a means of understanding the current conditions of water supply and its treated water quality for a community. The fact that this information is sent to each of the water district's customers, in a format to be read by the layperson, and includes educational material, makes it applicable to both the Water Supply Goal and the Water Resources Management and Communications Goal. If the water district is also reporting on groundwater conditions in the report, the Groundwater Management Goal is also included.

[1] The IRWM Plan acknowledges that many of these same sources have been used in developing the IRWM Plan including additional sources listed in **Section R - Bibliography.**

For purposes of the IRWM Plan, the values inform the reader of the sources containing one or more of the above listed Relevance Factors. The value 1 indicates a single factor is included for the goal, and the value 2 represents more than one factor is included.[2] An "x" indicates that there is a level of uncertainty as to its relationship with the goal, and a closer examination of the source material is needed.

[2] An actual count of Relevance Factors was not completed; rather, it is an estimate based on the PMT's understanding of the document and its intended purpose.

Table M-1.Technical Source Information for Defining IRWM Management Needs, Continued

Table M-1. Technical Source Information for Defining IRWM Management Needs

Report Name	**IRWM Goals**				
	Water Supply	**Ecosystem and Watershed Restoration**	**Groundwater Monitoring and Management**	**Flood Management**	**Water Resources Management and Communications**
Regional					
1. San Luis Obispo County (SLOC), 2012 Master Water Report Volume I	2		2		1
2. San Luis Obispo County, 2012 SLOC Master Water Report Volume II	2	1	2	1	1
3. San Luis Obispo County, 2012 SLOC Master Water Report Volume III	1				2
4. San Luis Obispo County (SLOC) Investigation (Volumes I and II). Bulletin 18. 1958. California Department of Water Resources			x		
5. San Luis Obispo County Groundwater Basins, California's Groundwater, Bulletin 118 Update 2003. 2003. California Department of Water Resources	1	1	2		1
6. San Luis Obispo County, Groundwater Monitoring Program Evaluation, SLOC, California, May 2008. 2008. Cleath & Associates, 2008			2		
7. Groundwater Flow Model Conversion and Urban Area Yield Update, July 2009. 2009. Cleath-Harris Geologists			2		
8. Water Use Estimates for Private Domestic Wells, July 2009. 2009. Cleath-Harris Geologists	2				
9. San Luis Obispo County 2010-2012 Biennial Resource Summary Report. 2008. SLOC Resource Management System, SLOC Planning and Building Department	2	1	2		2
10. Central Coast, Assessment of Nitrate Contamination in Ground Water Basins of the Central Coast Region - Preliminary Working Draft, December 1995. 1995. RWQCB	1	1	2		1
11. Central Coast Region – Basin Plan (with	1	2	1		1

Table M-1.Technical Source Information for Defining IRWM Management Needs, Continued

Report Name	IRWM Goals				
	Water Supply	Ecosystem and Watershed Restoration	Groundwater Monitoring and Management	Flood Management	Water Resources Management and Communications
on-line updates). 2006. RWQCB					
12. San Luis Obispo County Hydrologic Report water years 2001-02 and 2002-03, May 2005. 2005. SLOC Public Works	1	2	1	2	1
13. SLOC 2007 IRWM Plan. 2007. SLOC	2	2	1	1	1
14. SLOC General Plan, April 2007. 2007. SLOC	1	1	1	1	1
15. SLOC Regional Watershed Planning, 2013. 2013. SLOC	1	2	1	1	2
16. SLOC Salt and Nutrient Management and Recycled Water Planning, 2013. 2013. SLOC	1	1	2		1
17. SLOC Agricultural Demand Inventory	2				
18. SLOC Data Enhancement Plan	1	1	1	1	1
19. SLOC Flood Management Plan				2	
20. SLOC Regional Permit Program		x			
21. SLOC Storm water Management Plan				2	1
22. SLOC, On-line Contaminant Site Database(Geotracker). State Water Resources Control Board	1		2		
23. Water Balance Study for the Northern Cities Area, April 2007. 2007. Todd Engineers	2				
24. STORET and Legacy Data Center (LDC). U.S. Environmental Protection Agency	1		2		
25. On-line Ground Water Level Database. USGS			2		
North Coast					
26. Morro Bay 2007 Nitrate Study	2		2		
27. Cayucos Area Water Organization, 2007 Water Management Plan Update	2		1		

Table M-1.Technical Source Information for Defining IRWM Management Needs, Continued

Report Name	IRWM Goals				
	Water Supply	Ecosystem and Watershed Restoration	Groundwater Monitoring and Management	Flood Management	Water Resources Management and Communications
28. Cambria CSD, 2008 Water Master Plan EIR	2		1		
29. North Coast Groundwater, 2009 Cleath-Harris Geologists Groundwater Studies			2		
30. Cambria CSD 2010 UWMP. 2012	2		2		2
31. Cambria 2012 Consumer Confidence Report	2				2
32. Cayucos - County Service Area 10/10A Water Quality Report. 2008. SLOC	2				2
33. Los Osos, Sea Water Intrusion Assessment and Lower Aquifer Source Investigation of the Los Osos Valley Ground Water Basin (Volumes I and II), October 2005. 2005. Cleath & Associates	2	1	2		
34. Morro Bay (City of) 2010 UWMP. June 2011. CH2M-Hill	2		2		2
35. Los Osos , Public Draft Review Basin Plan for the Los Osos Groundwater Basin. August 2013	1		2		1
36. Cambria, Water Master Plan, Program Environmental Impact Report, prepared for Cambria Community Services District, July 2008. 2008. RBF Consulting 2008	2	1	1		
37. San Simeon CSD November 2007 Water System Master Plan and Wastewater Collection System Evaluation. 2007	2	1	1		
38. Morro Bay (City of) Ashurst Well Field Nitrate Study for the City of Morro Bay, May 2009. 2009. Cleath-Harris Geologists	1		2		
39. Los OsosTask 3 Los Osos Upper Aquifer Water Quality Characterization, June 2006. 2006. Cleath & Associates	1		2		
40. Los Osos Nitrate Monitoring Program, October 2006 Ground Water Monitoring, December 2006. 2006. Cleath & Associates	1		2		

Table M-1.Technical Source Information for Defining IRWM Management Needs, Continued

Report Name	IRWM Goals				
	Water Supply	Ecosystem and Watershed Restoration	Groundwater Monitoring and Management	Flood Management	Water Resources Management and Communications
North County					
41. Paso Robles 2010 Groundwater Basin Water Balance Review and Update			2		1
42. Atascadero Mutual Water Company 2005 UWMP	2		2		2
43. Atascadero (City of) Sphere of Influence Municipal Service Review	2		1	1	
44. Camp Roberts Joint Land Use Study, May 2013	1	1	1	1	
45. Shandon, 2008 Water Quality Report, County Service Area #16, Shandon. 2008. SLOC. Public Works Department	2		1		2
46. Santa Margarita, County Service Area #23 2008 Water Quality Report. 2008. SLOC. Public Works Department	2		1		1
47. Templeton, Revised Report, Water Quality Modeling of the Salinas River Underflow and Proposed Waste Discharge Requirements in Support of the Selby Percolation Pond Facility Expansion: prepared for Templeton Community Services District, January 2007. 2007. Fugro West	2	1	2		
48. San Miguel, April 2013 Water Study for the San Miguel Community Plan Update. Fugro	2		2		
49. Paso Robles Groundwater Subbasin Water Banking Feasibility Study, Final Report: prepared for SLOC Flood Control and Water Conservation District, April 2008. 2008. GEI Consultants, Fugro West, and Cleath and Associates	2		2		
50. Shandon Community Plan, March 2012	1	1	1	1	1
51. San Miguel CSD, 2011 Consumer Confidence Report	2		1		2

Table M-1.Technical Source Information for Defining IRWM Management Needs, Continued

Report Name	IRWM Goals				
	Water Supply	Ecosystem and Watershed Restoration	Groundwater Monitoring and Management	Flood Management	Water Resources Management and Communications
52. Templeton CSD 2013 Consumer Confidence Report. 2013	2		1		2
53. Paso Robles (City of) Annual Monitoring Report for Calendar Year 2009	2		1		2
54. Paso Robles (City of), 2012 Annual Water Quality Report	2		1		2
55. Paso Robles 2010 UWMP	2		2		2
56. Paso Robles Groundwater Basin Management Plan, March 2011	1		2		2
57. San Miguel Municipal Services Review September 2013	2		1	1	
58. Santa Margarita Water Master Plan, 2003 CSA 23. 2004. SLOC Public Works Department	2		1		
59. Shandon Community Plan Chapter 7 – Infrastructure and Utilities for CSA 16, Community of Shandon, Draft	2		1		
60. Heritage Ranch Community Services District Website	2		2		
61. Resource Investigation of Low and Moderate-Temperature. 1983. Campion, L.F., R.H. Chapman, G.W. Chase, and L.G. Youngs	x				
62. Geothermal Areas in Paso Robles, California: California Division of Mines and Geology, Open File Report 83-11 SAC.	2		1		
63. Santa Margarita, Basic Geology of the Santa Margarita Area, SLOC, California, Bulletin 199, California Division of Mines and Geology, Sacramento, California. 1976. Hart, E.W.			2		
64. Atascadero (City of) Adopted Sphere of Influence Update Municipal Service Review. September 2011	1		1	1	

Table M-1.Technical Source Information for Defining IRWM Management Needs, Continued

Report Name	IRWM Goals				
	Water Supply	Ecosystem and Watershed Restoration	Groundwater Monitoring and Management	Flood Management	Water Resources Management and Communications
65. Atascadero Mutual Water Company 2012 Consumer Confidence Report	2		1		2
66. Santa Margarita Ranch Agricultural Residential Cluster Subdivision Project and Future Development Program EIR. February 2008	1	1	1		
67. SunPower - California Valley Solar Ranch Website		1			1
68. Santa Margarita Technical Memorandum, Groundwater Resources of CSA 23, October 2004	1		2		
69. Topaz Solar Farm (First Solar) Website		1			1
South County					
70. Avila Valley MWC 2008 Consumer Confidence Report	2		1		2
71. Northern Cities Management Area (NCMA) 2010 Annual Report	2		2		2
72. Nipomo CSD 2009 Waterline Intertie Project Narrative Report	1				
73. Arroyo (City of) Grande 2010 Final Draft UWMP	2		2		2
74. Pismo (City of) Beach 2010 UWMP	2		2		2
75. Nipomo CSD 2010 Final Draft UWMP	2		2		2
76. Grover Beach (City of) Public Works Documents	2		2	2	2
77. Price Canyon, Infrastructure and Phasing of Development into Price Canyon, Spanish Springs Specific Plan. Chapter 5. June 2013. City of Pismo Beach	1				
78. Nipomo Mesa Management Area, 1st and 5th Annual Report. Calendar Year 2008 and Year 2012. NMMA Technical Group	2		2		2

Table M-1.Technical Source Information for Defining IRWM Management Needs, Continued

Report Name	IRWM Goals				
	Water Supply	Ecosystem and Watershed Restoration	Groundwater Monitoring and Management	Flood Management	Water Resources Management and Communications
79. Woodlands Mutual Water Company 2012 Consumer Confidence Report	2		1		2
80. Grover Beach (City of) 2005 UWMP	2		2		2
81. Avila Beach CSD 2008 Municipal Services Review	2		1	1	1
82. Avila Beach CSD 2010 Sewer System Management Plan (SSMP)	1				1
83. Cal Poly 2007 Master Plan and EIR	2		1		1
84. Nipomo CSD, Sphere of Influence and Municipal Service Review. 2010	1		1	1	1
85. Nipomo Water Resource Related Reports Website	2		2	2	2
86. Pismo Creek Watershed, Hydrology and Geology Assessment of the Pismo Creek Watershed, SLOC, California, August 2008. 2008. Balance Hydrologics, Inc.		2	2	1	
87. Pismo-Guadalupe Area, Sea-Water Intrusion: Pismo-Guadalupe Area, Bulletin No. 63-3, February 1970. 1970. California Department of Water Resources	1		2		
88. Arroyo Grande-Nipomo Mesa Area Water Resources, Southern District Report. 2002. California Department of Water Resources	1		2		
89. Nipomo Community Services District Water and Sewer Master Plan, December 2007. 2007. Cannon Associates	2		2		
90. Arroyo Grande (City of) Consumer Confidence Reports	2		1		2
91. Pismo (City of) 2006/07 through 2015/16 Ten-Year Capital Program and Major Expenditure	2				
92. Edna, Draft San Luis-Edna Valley Ground Water Study. 1997. DWR			2		

Table M-1.Technical Source Information for Defining IRWM Management Needs, Continued

Report Name	IRWM Goals				
	Water Supply	Ecosystem and Watershed Restoration	Groundwater Monitoring and Management	Flood Management	Water Resources Management and Communications
93. Arroyo Grande/Nipomo Mesa Study. 2002. DWR			2		
94. Edna, Consumer Confidence Report, Edna Water System. Golden State Water Company	1		1		1
95. Nipomo, Consumer Confidence Reports, Nipomo Water System. Golden State Water Company	2		1		2
96. Santa Maria Valley, Evaluation of Ground Water Quality in the Santa Maria Valley, California. 1977. Hughes, Jerry L. USGS. Water Resources Investigations 76-128	2	1	2		
97. Santa Maria Valley , Development of a Numerical Ground Water Flow Model and Assessment of Ground-Water Basin Yield - Santa Maria Valley Ground-Water Basin. 2008. Luhdorr and Scalmanini			2		
98. Nipomo, S.S. Papadopulos & Associates, 2004. Nipomo Mesa Resource Capacity Study, March 2004	2		2		
99. Cuyama Valley, Singer, J. A. and W. V. Swarzenski, 1970. Pumpage and Ground-Water Storage Depletion in Cuyama Valley, California 1947-66. U.S.G.S. Water-Supply Paper 1110-B			2		
100. Zone 3, 2010 UWMP. 2011 (Zone 3 is in the South County)	2		2		2

M.3.2 Emphasis of Source Priorities and Data Gaps

From **Table M-1**, the Water Supply and Groundwater Management Goals visually appear (see **Figure M-2**) to have the highest number of source documents, with the Ecosystem and Restoration and Flood Management Goals with the least number. The reason for this imbalance is two-fold. The former is because water supply and groundwater management are tied together for the majority of SLO communities, and have historically had the highest priority in terms of concerns in the past, present, and future.

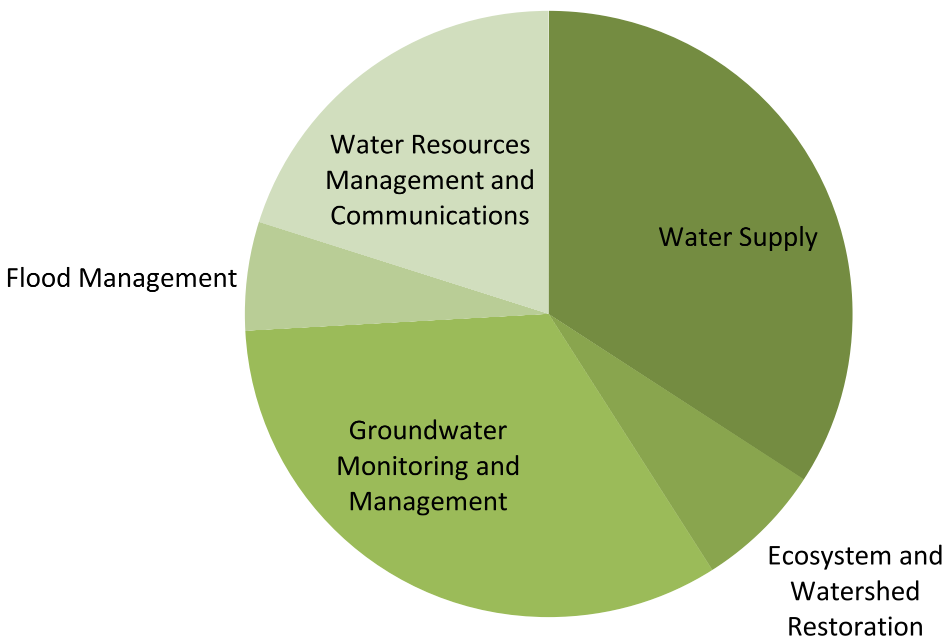

Figure M-2. Source Breakdown by IRWM Goal

The second reason is because the latter set of goals does not have the regional scale of the former. Flood Management and Ecosystem Restoration concerns center mostly along the coastal regions creating a higher degree of concern and importance than in the inland areas. To improve and fill any data gaps in the latter, the IRWM Plan's described needs for monitoring and reporting in **Section K – Data Management** and **Section J – Plan Performance and Monitoring** target improved monitoring of hydrology, climate change, and improvements based on implementation of Ecosystem Restoration and Flood Management projects or programs.

M.4 Project Specific Technical Source Information

As part of the project development and selection process, supporting documentation is necessary in developing the project need, benefit, and cost, as well as comparisons with alternative projects. **Table M-2** summarizes just some of the technical source documents used for each of IRWM Plan's projects and programs (i.e., unpublished agency reports and studies are not included).

Table M-2. Project Specific Planning Source Documents

Project Code	Project Title	Project Type	Local Technical Source Documents
MLTP_ECO1	Livestock & Land Program	Educational Program	Paso Robles Groundwater Basin Management Plan
MLTP_WMT2	LID Pilot Program	Educational Program with Installation Drainage Devices to Optimize Irrigation and Groundwater Recharge	San Luis Obispo County 2010-2012 Biennial Resource Summary Report
NCNT_ECO1	North County Fertilizer Regions_ Precision Agriculture	Education Program with Changes in Fertilizing Practice	San Luis Obispo County 2010-2012 Biennial Resource Summary Report
NCNT_ECO2	Attiyeh Ranch Conservation Easement	Conservation Easement for the Protection of Lands in Perpetuity	San Luis Obispo County 2010-2012 Biennial Resource Summary Report
NCNT_GWM1	Upper Salinas River Basin Water Conservation/Conjunctive Use Project	Improve quality and increase use of treated wastewater to augment and create sustainable water supply	San Luis Obispo County 2010-2012 Biennial Resource Summary Report
NCNT_WMT1	Community Based Social Marketing	Educational Program	San Luis Obispo County 2010-2012 Biennial Resource Summary Report
NCNT_WMT2	Improving On Farm Water Management Through Demonstration, Research & Outreach of Precision Agricultural Best Management Practices	Education Program with Reductions in Irrigation Water Use	San Luis Obispo County 2010-2012 Biennial Resource Summary Report
NCNT_WSP1	City of Paso Robles Lake Nacimiento Water Treatment Plant Construction	New Water Treatment Plant	San Luis Obispo County 2010-2012 Biennial Resource Summary Report
NCNT_WSP2	San Miguel Critical Water System Improvements	System Improvements Including Backup New Generators	San Luis Obispo County 2010-2012 Biennial Resource Summary Report
NCST_GWM1	8th Street Upper Aquifer Well and Nitrate Removal Facility	New Treatment and Supply Well Facilities	Central Coast, Assessment of Nitrate Contamination in Ground Water Basins of the Central Coast Region
NCST_FLD1	Los Padres CCC Center - Stormwater LID Treatment Project	Education and Improved Ecosystem	SLOC Storm Water Management Plan
SCNT_FLD2	Oceano Drainage Improvement Project - Hwy 1 & 13th Street	Drainage Project with Groundwater Recharge	SLOC Storm Water Management Plan
SCNT_WMT1	Lopez Water Treatment Plant Membrane Rack Addition	Water Treatment Plant Expansion	County Service Area 10/10A Water Quality Report
SCNT_WSP2	Recycle Water Distribution System Expansion	Recycled Water System Expansion	2012 SLOC Master Water Report Volume II
SCNT_WSP4	Pismo Beach Recycled Water Project	Recycled Water System Expansion	Pismo (City of) Beach 2010 UWMP

Section N.

Relation to Local Water and Land Use Planning

Section N. Relation to Local Water and Land Use Planning

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Section N. Relation to Local Water and Land Use Planning

Water and land use are inextricably linked. The IRWM Plan integrates land use planning strategies into the strategic mix for water resource management and relies on close collaboration and coordination with the region's land use planning agencies. The IRWM Plan reflects and embraces many of the Ahwahnee Water Principles for Efficient Land Use developed by the Local Government Commission (See **Appendix T – Awahnee Water Principles, A Blueprint for Regional Sustainability**[1]). These principles offer suggestions for additional water resource management strategies that local governments and water/wastewater resource managers can structure within their ongoing strategies to improve the sustainability of the region's water resources.

The cities, counties, water and wastewater agencies, and other stakeholders in the region have been involved in many planning efforts to develop goals and plans related to land use and water management issues. The planning documents created from these efforts serve as an important foundation for the IRWM Plan. The IRWM Plan has integrated the goals, objectives, and programs contained in these documents to ensure that it is consistent with local issues and needs. Also, as local plans are updated, or new plans are developed, the District participates in a review capacity to ensure incorporation of the IRWM Plan into the planning documents.

This section focuses on how the IRWM Plan relates to planning documents and programs established by local agencies. The following chapters are included:

> **N.1 IRWM Plan Relationship to Planning Documents** – includes a comprehensive list of the most current local water and land use plans referenced in the IRWM Plan development, and provides a qualitative description of the relationship between the local planning documents and the IRWM Goals and Objectives, and Water Management Strategies.
>
> **N.2 Plan Linkages with Local Water and Land Use Planning Studies** – includes a discussion of linkages between the IRWM Plan and local planning documents, state senate bills, and state required Urban Water Management Plans.

[1] Also found at:<http://www.lgc.org/wordpress/docs/resources/water/lgc_water_guide.pdf>

N.3 Examples of Local Needs Incorporated in the IRWM Planning Goals – includes examples where local planning documents and policies satisfy the IRWM Planning Goals.

N.4 Planning Documents Addressing Data Gaps in the IRWM Plan – includes existing and proposed planning documents prepared by others and presented through the WRAC to specifically address data gaps found in the IRWM Plan throughout its implementation.

N.5 Coordination with Land Use Decision Makers – includes the relationship between the IRWM Plan and its consistency with local land use plans and its support through local decisions.

N.6 IRWM Dynamics with Local Planning and Land Use Agencies – describes the IRWM Plan as an extension to local land use plans in an effort to resolve potential conflicts through consensus-based solutions between RWMG and local water planning leaders.

N.7 Issues and Relationships between Local Land Use Planning Entities and Water Management in the Context of IRWM Plan – describes where greater collaboration can take place using the IRWM Plan as a means to creating a more holistic approach to managing water resources in the San Luis Obispo County Region.

N.1 IRWM PLAN RELATIONSHIP TO PLANNING DOCUMENTS

The IRWM Plan was developed in coordination with local agencies and the planning documents produced for the region in setting water and land use policies. These include General Plans, Urban Water Management Plans, Water and Wastewater Master Plans, Groundwater Studies and Plans, Flood Management/Drainage Studies and Plans, and Storm Water Management Plans covering a number of areas such as land use planning, recycled water, groundwater management, water resources, and environmental enhancement. (Were the Local Area Plans <e.g., Nacimiento Area Plan> consulted as well? If not, why not? Was this overlooked?) The relevance of each document to the IRWM Plan is discussed below and summarized in **Table N-1**. Coordination and collaboration occurred through meetings, workshops, and personal communications (See **Section B – Governance, Stakeholder Involvement, and Outreach**) with agencies and entities identified in this table to understand their various efforts, planning goals and objectives, and proposed water management strategies. The IRWM Plan is inclusive of local planning efforts to ensure the capture of documents, efforts, and projects to be included in the Plan's implementation. Water management strategies employed within these plans are shown in **Table N-2** (i.e., checked strategies imply how the document relates to the IRWM Plan, and may not be fully comprehensive of the listed document).

Table N-1. Major Planning Documents Utilized for IRWM Planning

Document Title/Description	Pub. Date	Agency/ Entity	Relation to IRWM Plan
General and Community Plans			
City of San Luis Obispo Annual Report on the General Plan http://slocity.org/communitydevelopment/Long%20Range/Annual%20Reports/2012%20General%20Plan%20Annual%20Report.pdf	2012	City of San Luis Obispo	Provides list of Cities' policies, goals and actions for water and land use, water conservation, recycled water, flood control, habitat protection and open space preservation
City of Pismo Beach General Plan and Local Coastal Plan http://ca-pismobeach.civicplus.com/DocumentCenter/View/247	2013	City of Pismo Beach	
City of Paso Robles, General Plan http://www.prcity.com/government/departments/commdev/planning/general-plan-final.asp	2003	City of Paso Robles	
City of Atascadero General Plan http://www.atascadero.org/files/CD/General%20Plan/Published%20version%20no%20markup%20+%20maps%20-%20GP%202025%20Draft%20Amendment%202004-1%202-17-04.wmf.pdf	2002	City of Atascadero	
City of Arroyo Grande General Plan http://www.arroyogrande.org/departments/community-development/planning-division/general-plan/	No Date	City of Arroyo Grande	
City of Morro Bay General Plan and Local Coastal Plan http://www.morro-bay.ca.us/index.aspx?NID=574	1988	City of Morro Bay	
City of Grover Beach General Plan, Housing Element http://www.grover.org/DocumentCenter/Home/View/49	2010	City of Grover Beach	
County of SLO Area Plan http://www.slocounty.ca.gov/Assets/PL/Area+Plans/San+Luis+Obispo+Inland+Area+Plan.pdf	2009	County of San Luis Obispo	Provides list of Counties' policies, goals and actions for land use, water conservation, water reclamation, flood control, habitat protection and open space preservation; includes community and special planning studies.
County of SLO Agriculture Element http://www.slocounty.ca.gov/Assets/PL/Elements/Ag_Element.pdf	2010		
County of SLO Coastal Plan Policies http://www.slocounty.ca.gov/Assets/PL/Elements/Coastal+Plan+Policies.pdf	2007		
County of SLO Conservation and Open Space Element http://www.slocounty.ca.gov/Assets/PL/Elements/COSE.pdf	2010		
San Miguel Community Plan http://www.slocounty.ca.gov/planning/sanmiguel.htm	2013		
Oceano Revitalization Plan http://www.slocounty.ca.gov/Assets/PL/Draft+Plans/OceanoRevit.pdf	2013		
Templeton Community Plan http://www.slocounty.ca.gov/Assets/PL/Draft+Plans/Templeton.pdf	2013 Public Draft		
Urban Water Management Plans			
City of Arroyo Grande UWMP http://www.arroyogrande.org/static/notices/public-notices/general/01/05/2012/2010-urban-water-management-plan-final-draft.pdf	2010	City of Arroyo Grande	Provides understanding of Arroyo Grande urban water needs, management, and planning objectives
City of Paso Robles UWMP http://www.prcity.com/government/departments/publicworks/water/pdf/UWMP_2010_FINAL_June2011.pdf	2010	City of Paso Robles	Provides understanding of Paso Robles urban water needs, management, and planning objectives

Table N-1. Major Planning Documents Utilized for IRWM Planning, Continued

Document Title/Description	Pub. Date	Agency/ Entity	Relation to IRWM Plan
City of Grover Beach UWMP http://www.water.ca.gov/urbanwatermanagement/2010uwmps/Grover%20Beach,%20City%20of/item5_Attachment3_UWMP_2010_UPDATE%5B1%5D.pdf	2010	City of Grover Beach	Provides understanding of Grover Beach urban water needs, management, and planning objectives
City of Morro Bay UWMP http://www.water.ca.gov/urbanwatermanagement/2010uwmps/Morro%20Bay,%20City%20of/MorroBay_2010_UWMP.pdf	2010	City of Morro Bay	Provides understanding of Morro Bay urban water needs, management, and planning objectives
City of Pismo Beach UWMP http://www.water.ca.gov/urbanwatermanagement/2010uwmps/Pismo%20Beach,%20City%20of/2010UWMP_FINALSept.pdf	2010	City of Pismo Beach	Provides understanding of Pismo Beach urban water needs, management, and planning objectives
City of San Luis Obispo UWMP http://www.water.ca.gov/urbanwatermanagement/2010uwmps/San%20Luis%20Obispo,%20City%20of/2010%20UWMP%20Compiled.pdf		City of San Luis Obispo	Provides understanding San Luis Obispo urban water needs, management, and planning objectives
County of SLO Flood Control and Water Conservation, Zone 3, UWMP http://www.water.ca.gov/urbanwatermanagement/2010uwmps/San%20Luis%20Opisbo%20County/Zone%203%20Urban%20Water%20Management%20Plan%202010%20Update.pdf	2010	County of San Luis Obispo	Provides understanding of San Luis Obispo County water needs and management strategies
Los Osos CSD UWMP http://www.losososcsd.org/Library/Document%20Library/Urban%20Water%20Management%20Plan%20-%20December%202000.pdf	2000	Los Osos CSD	Provides understanding of Los Osos urban water needs, management, and planning objectives
Water and Wastewater Master Plans			
San Luis Obispo County Master Water Report http://www.slocountywater.org/site/Frequent%20Downloads/Master%20Water%20Plan/	2012	County of San Luis Obispo	Provides comprehensive understanding of the water supply needs of the county and an implementation plan for meeting those needs
City of Arroyo Grande Water System Master Plan http://expectwsc.com/project/city-of-arroyo-grande-water-and-sewer-master-plan-updates/	2011	City of Arroyo Grande	Provides understanding of the water supply needs of the Arroyo Grande and an implementation plan for meeting those needs. Link to summary only.
City of Arroyo Grande Wastewater System Master Plan http://www.arroyogrande.org/static/uploads/pdfs/document-center/planning-documents/wastewater_master_plan.pdf	2012	City of Arroyo Grande	Provides plan for wastewater treatment, effluent management and recycled water for City of Arroyo Grande.
CSA 10A Cayucos Water System Master Plan http://www.slocountywater.org/site/County%20Service%20Areas/CSA%2010-10A/pdf/Water%20System%20Master%20Plan.pdf	2003	CSA 10A	Provides understanding of the water supply needs of CSA 10A and an implementation plan for meeting those needs
Santa Margarita CSA 23 Water System Master Plan http://www.slocountywater.org/site/County%20Service%20Areas/CSA%2023/pdf/Santa%20Margarita%20Water%20System%20Master%20Plan%202003.pdf	2003	CSA 23	Provides understanding of the water supply needs of CSA 23 and an implementation plan for meeting those needs
Los Osos Water Master Plan	2002	Los Osos CSD	Provides understanding of the water supply needs of Los Osos and an implementation plan for meeting those needs
Atascadero Water System Master Plan Final Report	1993	Atascadero Mutual Water Company	Provides understanding of the water supply needs of Atascadero and an implementation plan for meeting those needs

Table N-1. Major Planning Documents Utilized for IRWM Planning, Continued

Document Title/Description	Pub. Date	Agency/ Entity	Relation to IRWM Plan
City of Paso Robles Water Resources Plan Integration and Capital Improvement Program http://www.prcity.com/government/departments/publicworks/pdf/WtrResPlanInteg-CIPFeb07.pdf	2007	City of Paso Robles	Provides understanding of the water supply needs of Paso Robles and an implementation plan for meeting those needs
City of Pismo Beach Water Master Plan	2004	City of Pismo Beach	Provides understanding of the water supply needs of Pismo Beach and an implementation plan for meeting those needs
City of Pismo Beach Wastewater Collection System Master Plan http://www.pismobeach.org/DocumentCenter/Home/View/351	2000	City of Pismo Beach	Provides understanding of the collection system conditions, needs and an implementation plan for meeting those needs for Pismo Beach
City of Pismo Beach Wastewater Treatment Plant Master Plan	2000	City of Pismo Beach	Provides plan for wastewater treatment, effluent management and recycled water for the Pismo Beach.
Groundwater Studies and Plans			
North Coast Groundwater, 2009 Cleath-Harris Geologists Groundwater Studies	2009	City of San Luis Obispo	Provides understanding of small north coast groundwater basin and basin yields.
Paso Robles 2010 Groundwater Basin Water Balance Review and Update http://www.countyofsb.org/pwd/water/downloads/USGS%20OFR%201970%20TEXT.pdf	2002	City of Paso Robles	Provides the water balance for the Paso Robles Groundwater Basin and the Atascadero Subbasin from 1998 to 2009. Projected water balance provides forecasting from 2010 to 2025. Provides definitions to overdraft conditions and natural processes taking place.
Groundwater Banking Plan, Paso Robles Groundwater Subbasin Water Banking Feasibility Study http://www.prcity.com/government/departments/publicworks/water/pdf/GBMP/reports/WaterBankingFeasibilityStudyApr08.pdf	2009	District	Explored the feasibility of banking water in the Paso Robles Groundwater Basin for the benefit of County residents
Nipomo Mesa Resource Capacity Study http://ncsd.ca.gov/Library/Groundwater%20Information/PAPADOPULOS%20REPORT.pdf	2004	Nipomo CSD	Provides understanding of Nipomo Mesa groundwater sub-basin issues and management plans for the groundwater basin
Los Osos, Sea Water Intrusion Assessment and Lower Aquifer Source Investigation of the Los Osos Valley Ground Water Basin http://www.waterboards.ca.gov/rwqcb3/water_issues/programs/los_osos/docs/master_docs/2005_07_17_sea_water_intrusion_assessment.pdf	2005	Los Osos CSD	Provides understanding of Los Osos groundwater issues related to sea water intrusion in the groundwater basin
Los Osos , Public Draft Review Basin Plan for the Los Osos Groundwater Basin http://www.slocountywater.org/site/Water%20Resources/Reports/pdf/Basin%20Plan%20Public%20Review%20Draft%208.1.2013.pdf	2013	Los Osos CSD	Provides understanding of Los Osos groundwater basin
Paso Robles Groundwater Basin Management Plan http://www.prcity.com/government/departments/publicworks/water/pdf/GBMP/plan/PasoBasin_FinalGMP.pdf	2011	City of Paso Robles	Provides understanding and Basin Management Objectives of Paso Robles groundwater basin
Santa Margarita Technical Memorandum, Groundwater Resources of CSA 23 http://www.slocountywater.org/site/County%20Service%20Areas/CSA%2023/pdf/CSA%2023%20Todd%20Technical%20MemoI.pdf	2004	CSA 23	Provides a comprehensive understanding of CSA 23, the small town of Santa Margarita, and includes hydrogeology, water demands and supplies, and impacts from the proposed Santa Margarita Ranch development.

Table N-1. Major Planning Documents Utilized for IRWM Planning, Continued

Document Title/Description	Pub. Date	Agency/ Entity	Relation to IRWM Plan
Flood Management/Drainage Studies and Plans http://www.slocountywater.org/site/Water%20Resources/Reports/			
San Luis Obispo County Drainage Community Studies http://www.slocountydrainagestudies.org/	2007	District	Primary website for County drainage studies (may be duplicative of below studies)
Cambria Drainage and Flood Control Study http://www.slocountywater.org/site/Water%20Resources/Reports/pdf/Cambria%20Drainage%20and%20Flood%20Control%20Study,%20Feb%202004.pdf	2004	Cambria CSD[2]	Provides understanding of the flood and drainage conditions in the Cambria area
Cayucos Drainage and Flood Control Study http://www.slocountywater.org/site/Water%20Resources/Reports/pdf/Cayucos%20Drainage%20and%20Flood%20Control%20Study,%20Jan%202004.pdf	2004	Cayucos CSA[1]	Provides understanding of the flood and drainage conditions in the Cayucos area
Nipomo Drainage and Flood Control Study http://www.slocountywater.org/site/Water%20Resources/Reports/pdf/Nipomo%20Drainage%20and%20Flood%20Control%20Study,%20Feb%202004.pdf	2004	Nipomo CSD[1]	Provides understanding of the flood and drainage conditions in the Nipomo area
San Miguel Drainage and Flood Control Study http://www.slocountywater.org/site/Water%20Resources/Reports/pdf/San%20Miguel%20Drainage%20and%20Flood%20Control%20Study,%20Dec%202003.pdf	2003	San Miguel CSD[1]	Provides understanding of the flood and drainage conditions in the San Miguel area
Santa Margarita Drainage and Flood Control Study http://www.slocountywater.org/site/Water%20Resources/Reports/pdf/Santa%20Margarita%20Drainage%20and%20Flood%20Control%20Study,%20Feb%202004.pdf	2004	Santa Margarita CSA[1]	Provides understanding of the flood and drainage conditions in the Santa Margarita area
Los Osos Drainage Study http://www.slocountydrainagestudies.org/Los%20Osos/index.htm		Los Osos CSD	Provides understanding of the flood and drainage conditions in the Los Osos area
Oceano Drainage Study http://www.slocountydrainagestudies.org/Oceano/index.htm	?	?	?
City of Pismo Beach Drainage Master Plan, Draft	2002	City of Pismo Beach	Provides understanding of the flood and drainage conditions in the Pismo Beach area
Storm Water Management Plans			
County of San Luis Obispo Storm Water Management Program, National Pollutant Discharge Elimination System Phase II http://www.slocounty.ca.gov/Assets/PW/stormwater/SWMPRev3.pdf	2006	County of San Luis Obispo	Provides comprehensive understanding of compliance measures to meet Environmental Protection Agency waste discharge requirements, associating land use with runoff, storm water conditions, and management options in the County

[2] In response to questions raised by several citizens who experienced flood damage to their homes and businesses during the unusually heavy rainfall period of March 2001, the County Board of Supervisors approved funding for Drainage and Flood Control Studies for the communities of Cambria, Cayucos, Nipomo, Oceano, San Miguel, and Santa Margarita. The goals of the studies were intended to quantify the extent of drainage and flooding problems of each of these communities, to generate recommendations for solutions for the drainage problems, to identify environmental permitting requirements, to provide planning level cost estimates, and to outline a plan for funding and implementation of the proposed solutions.

Table N-1. Major Planning Documents Utilized for IRWM Planning, Continued

Document Title/Description	Pub. Date	Agency/ Entity	Relation to IRWM Plan
San Luis Obispo Guide to Implementing Flood Control Projects http://www.slocountywater.org/site/Hydraulic%20Planning/pdf/Guide%20to%20Implementing%20Flood%20Control%20Projects.pdf	2009	District	Provides guidance in the process of implementing methods and strategies to address the IRWM region's flooding problems
City of Paso Robles Storm Water Management Program http://www.prcity.com/government/departments/publicworks/stormwater/swmp.asp	2003	City of Paso Robles	Provides understanding of the storm water management program and resources for public outreach and guidance in the City of Paso Robles
City of San Luis Obispo Storm Water Management Program http://www.slocity.org/publicworks/stormwater/1intro.asp		City of San Luis Obispo	Provides understanding of the storm water management program and resources for public outreach and guidance in the City of San Luis Obispo
City of Atascadero Storm Water Management Program http://www.atascadero.org/index.php?option=com_content&view=article&id=854&Itemid=1684		City of Atascadero	Provides understanding of the storm water management program and resources for public outreach and guidance in the City of Atascadero
City of Morro Bay Storm Water Management Program http://www.morro-bay.ca.us/index.aspx?NID=257	August 2003	City of Morro Bay	Provides understanding of the storm water management program and resources for public outreach and guidance in the City of Morro Bay
City of Arroyo Grande Storm Water Management Program http://www.arroyogrande.org/sustainability/stormwater-management/		City of Arroyo Grande	Provides understanding of the storm water management program and resources for public outreach and guidance in the City of Arroyo Grande
City of Pismo Beach Storm Water Management Program http://www.pismobeach.org/index.aspx?NID=505		City of Pismo Beach	Provides understanding of the storm water management program and resources for public outreach and guidance in the City of Pismo Beach
Other Studies			
Data Enhancement Plan http://www.slocountywater.org/site/Frequent%20Downloads/Integrated%20Regional%20Water%20Management%20Plan/Data%20Enhancement/pdf/Data%20Enhancement%20Plan.pdf	2008	District	A regional water monitoring program designed to provide data for water supply and land use planning, design of infrastructure, and operations for flood control and water supply
Regional Permitting Plan	2008	District	Developed an approach to managing the multitude of permits from different agencies at different levels of government required by the County for carrying out each of its projects
SLOC Regional Watershed Planning	2013	District	Known areas of impairment and data gaps are identified and serve as the starting point for the future WMP: Phase II (watershed management plan development and implementation)
Regional Recycled Water Strategic Planning	2014	District	Provides an inventory and strategic feasibility evaluation for water reuse in San Luis Obispo County.
San Antonio and Nacimiento Rivers Watershed Management Plan http://www.mcwra.co.monterey.ca.us/Agency_data/Nacitone%20Study%20Group/Nacitone_Watershed_Plan.pdf	2008	SWRCB and Monterey County	Developed as a watershed management plan, provides methods to ensure high quality water draining into Nacimiento Reservoir treated and used as drinking water in SLO County.

Table N-2. IRWM Plan Water Management Strategies Contained in Planning Documents

Planning Document Title and Website (if applicable)	Ecosystem Restoration	Habitat Protection	Water Supply Reliability	Flood Management	Groundwater Management	Recreation & Public Access	Storm Water Management	Water Conservation	Water Quality Protection	Salt and Salinity Management	Water Recycling	Wetlands Enhancement	Conjunctive Use	Desalination	Imported Water	Land Use Planning	NPS Pollution Control	Surface Storage	Watershed Planning	Water and Wastewater Treatment	Water Transfers/Exchanges	Water System Optimization	Addresses Climate Change
General Plans																							
City of San Luis Obispo Annual Report on the General Plan	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓					✓	✓			✓			
City of Pismo Beach General Plan and Local Coastal Plan	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓					✓	✓			✓			
City of Paso Robles, General Plan	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓					✓	✓			✓			
City of Atascadero General Plan	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓					✓	✓			✓			
City of Arroyo Grande General Plan	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓					✓	✓			✓			
City of Morro Bay General Plan and Local Coastal Plan	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓				✓	✓		✓	✓			
City of Grover Beach General Plan, Housing Element			✓	✓		✓	✓	✓	✓	✓	✓					✓	✓			✓			
County of SLO General Plan - Inland	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓		
County of SLO Agriculture Element	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
County of SLO Coastal Plan Policies and Open Space Element	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓					✓	✓						
County of San Luis Obispo Conservation and Open Space Element	✓	✓	✓			✓	✓	✓	✓	✓	✓					✓	✓						
Urban Water Management Plans																							
City of Arroyo Grande UWMP			✓		✓			✓	✓				✓							✓			
City of Paso Robles UWMP			✓		✓			✓	✓		✓		✓							✓			
City of Grover Beach UWMP			✓		✓			✓	✓				✓							✓			
City of Morro Bay UWMP			✓		✓			✓	✓		✓		✓	✓						✓			
City of Pismo Beach UWMP			✓		✓			✓	✓		✓		✓							✓			
City of San Luis Obispo UWMP			✓		✓			✓	✓		✓		✓							✓			
County of San Luis Obispo Flood Control and Water Conservation, Zone 3, UWMP			✓		✓			✓	✓				✓							✓			
Los Osos CSD UWMP			✓		✓			✓	✓				✓							✓			
Water and Wastewater Master Plans																							
San Luis Obispo County Master Water Report	✓	✓	✓		✓			✓	✓		✓	✓	✓				✓			✓			
City of Arroyo Grande Water System Master Plan			✓		✓			✓	✓		✓		✓							✓	✓		
City of Arroyo Grande Wastewater System Master Plan			✓		✓			✓	✓		✓		✓							✓	✓		
CSA 10A Cayucos Water System Master Plan			✓		✓			✓	✓		✓		✓							✓	✓		
Santa Margarita CSA 23 Water System Master Plan			✓		✓			✓	✓		✓		✓							✓	✓		
Los Osos Water Master Plan			✓		✓			✓	✓		✓		✓							✓	✓		
Atascadero Water System Master Plan Final Report			✓		✓			✓	✓		✓		✓							✓	✓		
City of Paso Robles Water Resources Plan Integration and Capital Improvement Program			✓		✓			✓	✓		✓		✓							✓	✓		
City of Pismo Beach Water Master Plan			✓		✓			✓	✓		✓		✓							✓	✓		
City of Pismo Beach Wastewater Collection System Master Plan					✓				✓		✓									✓			

Table N-2. IRWM Plan Water Management Strategies Contained in Planning Documents, Continued

Planning Document Title and Website (if applicable)	Ecosystem Restoration	Habitat Protection	Water Supply Reliability	Flood Management	Groundwater Management	Recreation & Public Access	Storm Water Management	Water Conservation	Water Quality Protection	Salt and Salinity Management	Water Recycling	Wetlands Enhancement	Conjunctive Use	Desalination	Imported Water	Land Use Planning	NPS Pollution Control	Surface Storage	Watershed Planning	Water and Wastewater Treatment	Water Transfers/Exchanges	Water System Optimization	Addresses Climate Change
City of Pismo Beach Wastewater Treatment Plant Master Plan			✓		✓				✓		✓									✓			
Groundwater Studies and Plans																							
North Coast Groundwater, 2009 Cleath-Harris Geologists Groundwater Studies			✓		✓				✓				✓										
Paso Robles 2010 Groundwater Basin Water Balance Review and Update			✓		✓				✓				✓										
Nipomo Mesa Resource Capacity Study			✓		✓				✓				✓								✓		
Los Osos, Sea Water Intrusion Assessment and Lower Aquifer Source Investigation of the Los Osos Valley Ground Water Basin			✓		✓				✓				✓										
Los Osos , Public Draft Review Basin Plan for the Los Osos Groundwater Basin			✓		✓				✓				✓										
Paso Robles Groundwater Basin Management Plan			✓		✓				✓				✓										
Paso Robles Groundwater Subbasin Water Banking Feasibility Study			✓		✓				✓				✓										
Paso Robles Groundwater Subbasin Water Banking Feasibility Study			✓		✓				✓				✓										
Santa Margarita Technical Memorandum, Groundwater Resources of CSA 23			✓		✓				✓				✓										
Flood Management/Drainage Studies and Plans																							
Cambria Drainage and Flood Control Study				✓			✓		✓							✓	✓		✓				
Cayucos Drainage and Flood Control Study				✓			✓		✓							✓	✓		✓				
Oceano Drainage and Flood Control Study				✓			✓		✓							✓	✓		✓				
Nipomo Drainage and Flood Control Study				✓			✓		✓							✓	✓		✓				
San Miguel Drainage and Flood Control Study				✓			✓		✓							✓	✓		✓				
Santa Margarita Drainage and Flood Control Study				✓			✓		✓							✓	✓		✓				
Los Osos Drainage Study				✓			✓		✓							✓	✓		✓				
City of Pismo Beach Drainage Master Plan, Draft				✓			✓		✓							✓	✓		✓				
Storm Water Management Plans																							
County of San Luis Obispo Storm Water Management Plan							✓		✓							✓	✓		✓				
San Luis Obispo Guide to Implementing Flood Control Projects							✓		✓							✓	✓		✓				
City of Paso Robles Storm Water Management Program,							✓		✓							✓	✓		✓				
City of San Luis Obispo Storm Water Management Program							✓		✓							✓	✓		✓				
City of Atascadero Storm Water Management Program							✓		✓							✓	✓		✓				
City of Morro Bay Storm Water							✓		✓							✓	✓		✓				

Table N-2. IRWM Plan Water Management Strategies Contained in Planning Documents, Continued

Planning Document Title and Website (if applicable)	Ecosystem Restoration	Habitat Protection	Water Supply Reliability	Flood Management	Groundwater Management	Recreation & Public Access	Storm Water Management	Water Conservation	Water Quality Protection	Salt and Salinity Management	Water Recycling	Wetlands Enhancement	Conjunctive Use	Desalination	Imported Water	Land Use Planning	NPS Pollution Control	Surface Storage	Watershed Planning	Water and Wastewater Treatment	Water Transfers/Exchanges	Water System Optimization	Addresses Climate Change
Management Program, Draft																							
City of Arroyo Grande Storm Water Management Program							✓		✓							✓	✓		✓				
County of San Luis Obispo Storm Water Management Plan							✓		✓							✓	✓		✓				
Other Studies																							
SLOC Data Enhancement Plan	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SLOC Regional Permitting Plan	✓	✓							✓			✓				✓			✓				
SLOC Regional Watershed Planning (see comments in table above)	✓	✓	✓		✓	✓			✓			✓				✓			✓				✓
Regional Recycled Water Strategic Planning (see comments in table above)										✓	✓												
San Antonio and Nacimiento Rivers Watershed Management Plan	✓	✓			✓	✓			✓			✓				✓			✓				✓

N.2 Plan Linkages with Local Water and Land Use Planning Studies

N.2.1 Linkages with General Plans

The County of San Luis Obispo and the incorporated cities of Paso Robles, Atascadero, Morro Bay, San Luis Obispo, Pismo Beach, Arroyo Grande, and Grover Beach each maintain General Plans as required by State planning and zoning law. The County's General Plan addresses all unincorporated communities in the County, including the urbanized areas of Cambria, Cayucos, Los Osos, San Miguel, Templeton, Creston, Santa Margarita, Shandon, Oceano, and Nipomo. Within County-controlled areas, the County General Plan relies on the Resource Management System (RMS)[3] to determine the appropriate timing and location for new development. While all development must be consistent with General Plan policies, the RMS provides further guidance and control over new land uses from the perspective of resource availability. The

[3] The Resource Management System contains "triggers" to implement certain actions such as conservation or construction measures to avoid or correct resource deficiencies. These triggers are designated as Levels of Severity I, II and III, and are tied to generalized time frames to construct improvements or to enhance declining resources.
<http://www.slocounty.ca.gov/planning/General_Plan__Ordinances_and_Elements/Plans_in_Process_and_Draft_Plans/stratgrowth.htm>.

RMS tracks the availability of water, the status of water delivery systems, and the condition of wastewater systems and availability of wastewater treatment.

N.2.2 Linkages with Senate Bill 610 and 221

Within the incorporated cities, the availability of water, the condition of water supply systems, and the condition of wastewater treatment systems is generally tracked separately by the various utility departments. Similar to the County, all new development of a certain size (don't be general – specify the exact size) is required to comply with Senate Bill (SB) 610 and SB 221. Water Supply Assessments completed under SB 610 must be furnished to local governments for inclusion in any environmental documentation for certain projects (as defined in California Water Code 10912 [a]) subject to the California Environmental Quality Act (CEQA). In many cases, Water Supply Assessments reference the IRWM Plan as a resource document for determination of water supply sustainability. Under the same code, a separate action, SB 221, requires an affirmative written verification of sufficient water supply (water supply verification), in addition to local jurisdiction "will serve" letter permitting programs.

> *"SB 610 and SB 221 are companion measures which seek to promote more collaborative planning between local water suppliers and cities and counties." (State Water Code 10912)*

SB 221 is intended to ensure that collaboration on finding needed water supplies to serve a new subdivision of 500 units or more occurs when it should, before construction begins. On a long-term planning basis, most jurisdictions have based their future plans on identified sources for water and wastewater service. For example, the City of Morro Bay has incorporated water supply issues into the General Plan process by adopting their Water Management Plan (WMP) as a component of the Local Coastal Plan. No development can proceed without being first accommodated in the Water Management Plan.

N.2.3 Linkages with Local Government Coordination and Water Resources Policies

The IRWM Plan has been coordinated with local government General Plans and through the stakeholder involvement of the cities and others represented within the WRAC and the RWMG. General Plans provide land use, environmental, and economic information associated with the use, need, quantity, quality, and management of water resources within each city (or community). General Plans also project and plan for growth and estimate the demand for additional water resources to accommodate the growth. The water supply elements of local planning documents listed above have been considered and have helped to shape the water resources management needs identified in this IRWM Plan for the cities and communities of the IRWM planning region.

N.2.4 Linkages with Urban Water Management Plans

The IRWM Plan has been coordinated with various Urban Water Management Plans (UWMPs) that have been developed by cities and communities in the San Luis Obispo County region consistent with State of California requirements. UWMPs take into account city and county population growth projections developed at the local level and link these directly to the assessment of water supply needs. The UWMPs rely in part on other planning documents such as General Plans and land use plans to provide these projections. The projected water demands from the UWMPs are utilized in the IRWM Plan to determine regional water supply needs. UWMPs also take into account local conservation and recycled water planning and provide a greater understanding of water needs and issues faced by local water agencies and communities.

Because of the UWMP's importance, updates to the IRWM Plan take place in parallel with the mandatory five year update requirement of the UWMP. This provides consistency, accuracy and commensurate sharing of the region's changing demographics, water use, and changing hydrology and groundwater conditions.

N.3 EXAMPLES OF LOCAL NEEDS INCORPORATED IN THE IRWM PLANNING GOALS

To assist in development of the IRWM Plan, the General Plans of the region were reviewed. The IRWM Plan goals: 1) Water Supply; 2) Ecosystem, and Watershed Restoration; 3) Groundwater Monitoring and Management; 4) Flood Management; and 5) Water Resources Management and Communications are consistent with the local planning and policy needs expressed in the General Plans as discussed below.

Water Supply Goal

The IRWM Plan Water Supply goal contains objectives of maximizing the use of existing resources through interagency coordination, meeting future water demand through water recycling and desalination, improving water system elements, and promoting water conservation. These objectives are consistent with many planning goals included in the General Plans. All General Plans are required to describe plans for future growth and recognize the need for a reliable water supply to support the projected growth. Water conservation is emphasized in all of the General Plans as an important strategy for meeting water supply.

Ecosystem and Watershed Restoration Goal

The IRWM Plan objectives under the ecosystem goal are consistent with provisions listed in all of the General Plans regarding habitat restoration and open space. Other General Plans call for actions consistent with IRWM Plan projects such as wetland restoration programs and removal of non-native plants.

Groundwater Monitoring and Management Goal

The IRWM Plan objectives of developing management plans and monitoring groundwater basins in the region and evaluating and considering groundwater banking programs have already been satisfied for many areas in the San Luis Obispo County Region as demonstrated by the groundwater plans listed in **Table N-1**.

Flood Management Goal

Flood Management is recognized as a high priority item by several General Plans consistent with the IRWM Plan objectives. Goals, actions, and policies consistent with other IRWM Plan Flood Protection objectives such as integrating ecosystem enhancement, drainage control, and natural recharge into development projects can be found in all sections of the General Plans that discuss flood control.

Water Resources Management and Communications

As General Plans and resource planning documents are updated in the future, alignment with the IRWM Plan becomes mandatory by the DWR to participate in IRWM grant programs and to participate in the WRAC and RWMG regional policy discussions distilled in the IRWM Plan under each of the IRWM Goals and Objectives. Public outreach and disadvantaged community participation[4] (the use of EJ in this sentence does not come across clear – suggest re-writing. The footnoted link describes EJ, but the use of it in this sentence does not read well) takes place at every level of the decision-making process leading up to the IRWM Plan's adoption.

N.4 Planning Documents Addressing Data Gaps in the IRWM Plan

N.4.1 Proposition 50 Studies

The four studies listed below[5] (also included in **Table N-1**) completed in 2008 with funding through the Proposition 50 water bond measure, specifically addressed regional data gaps

[4] < http://www.energy.ca.gov/public_adviser/environmental_justice_faq.html>.
[5] See **Section A – Introduction**, *Incorporate and Consider Proposition 50 Studies*, for full description of studies.

identified in the 2007 IRWM Plan and supported the overall SLO County Region IRWM Plan goals, objectives, and strategies, to improve the IRWM Plan in its current update.

- Data Enhancement Plan
- Flood Management Plan
- Groundwater Banking Plan
- Regional Permitting Plan

Each of these plans considered local government input through the WRAC and through outreach to region stakeholders.

N.4.2 Proposition 84 Studies

These studies are in progress at this time, and a description of each will be provided when they are available near the completion (final draft state) of each study. These studies include:

- Paso Robles Groundwater Basin Salt and Nutrient Management Plan
- Paso Robles Groundwater Basin Model
- Santa Maria Valley Groundwater Basin Conceptual Model
- Regional Recycled Water Strategic Plan
- Watershed Management Plan

N.4.3 Other Plans

Other plans in the San Luis Obispo County region consist of plans to address water systems, wastewater systems, storm water, groundwater, and flood protection. Some of these plans have already taken steps to consolidate local planning efforts and address specific issues such as water supply, groundwater, wastewater, and habitat restoration on a sub-regional basis. In most cases, these are multi-agency efforts that involve the participation of a number of local and regional stakeholders; thus, these sub-regional plans have achieved certain levels of integration and stakeholder consensus and provide an important foundation for development of the IRWM Plan. Projects recommended in sub-regional plans have already been coordinated at the sub-regional level and can be considered excellent candidates for implementation of the IRWM Plan.

Substantial and prominently known areas within the IRWM Region are managed by the State of California, listed as follows:

- State Parks (Oceano Dunes State Vehicle Recreation Area, Pismo Beach, Montana de Oro, Morro Strand, and San Simeon state parks)
- California Department of Corrections (California Men's Colony)
- California Department of Mental Health (Atascadero State Hospital)
- State University (California Polytechnic State University)
- State Local College (Cuesta - both the main campus, and the North County campus)
- State DWR (land holdings and easements in the County associated with the SWP)
- California National Guard including Camp San Luis and Camp Roberts (under control of the CA National Guard, albeit it is owned by the US Army Corps of Engineers and managed under the US National Guard Bureau)

Within State-managed lands, water issues are handled differently depending on the size, location, and level of use associated with facility. The largest State facilities, in terms of water service and wastewater disposal needs, are the California Men's Colony and Cal Poly. Both are partners in the Whale Rock Commission, an agency formed (with the City of San Luis Obispo) to build and operate the Whale Rock Project, a water reservoir and water supply pipeline. Other State facilities purchase service from adjacent cities (such as Morro Bay State Parks) or operate small local systems. Operational plans, master plans, expansion plans (etc.) are generally not well-coordinated with City and County General Plans, unless the City, County, or other public agency provides services to the State-managed land/facility.

The federal government owns and/or manages several thousand acres within the region, including military land, the Los Padres National Forest, the Carizzo Plain Natural Area (Burea of Land Management), and the Salinas Dam and Reservoir (U.S. Army Corps of Engineers).

N.5 Coordination with Land Use Decision Makers

Development of the IRWM Plan was accomplished by coordinating its development efforts and final adoption through the County's WRAC. The purpose of the WRAC is to advise the County Board of Supervisors concerning all policy decisions relating to the water resources of the District, to recommend specific water resource programs, and to recommend methods of financing water resource programs. The WRAC consists of members representing every public water supply system in the region, plus members representing the public at large, agricultural interests, and environmental interests, and each Supervisor appoints a member to represent their supervisorial district. Members are appointed by the District's Board of Supervisors, with the WRAC serving as the formal water issue advisors to the Board.

There are seven incorporated cities and fifteen unincorporated communities in the San Luis IRWM Plan region as shown in **Table N-3** below. Most of the cities and communities participate directly in the WRAC as noted in the table. Those communities that do not participate directly have representation from other groups like the County Farm Bureau, agricultural and environmental stakeholders, and District staff. Through participation and representation in the WRAC, the cities and communities interests are well represented in the IRWM planning process.

The IRWM Plan will be used by local water resource planners and managers to inform planners and decision makers about regional plans and issues. The availability, or non-availability, of resources now and in the future is documented on a regional basis, to the degree that the information can be used as a foundation for General Plan development.

As IRWM Plan review and update cycles proceed, land use planning agencies can be engaged at ever more specific levels. It is envisioned that the IRWM Plan will continue to evolve as more information is generated, and as more agencies begin to take advantage of its regional approach to these issues.

Table N-3. San Luis Obispo Cities, Communities, and Supervisorial Districts

City and Community Names	Type of Entity			
	City	Community	Supervisorial District	WRAC Participation
1. Templeton		●		●
2. Nipomo		●		●
3. Rural El Pomar		●		
4. Rural Adelaida		●		
5. Paso Robles	●			●
6. Pismo Beach	●			●
7. Rural S. County		●		
8. San Miguel		●		
9. Heritage Ranch		●		●
10. Cambria		●		
11. Arroyo Grande	●			●
12. Atascadero	●			●
13. Rural Las Pilitas		●		
14. Rural Salinas R		●		●
15. Morro Bay	●			●
16. Grover Beach	●			●

Table N-3. San Luis Obispo Cities, Communities, and Supervisorial Districts

City and Community Names	Type of Entity			
	City	Community	Supervisorial District	WRAC Participation
17. Oceano		●		●
18. Rural Nacimiento		●		●
19. Cayucos		●		●
20. San Luis Obispo	●			●
21. Santa Margarita		●		●
22. Los Osos		●		●
23. District 1			●	●
24. District 2			●	●
25. District 3			●	●
26. District 4			●	●
27. District 5			●	●

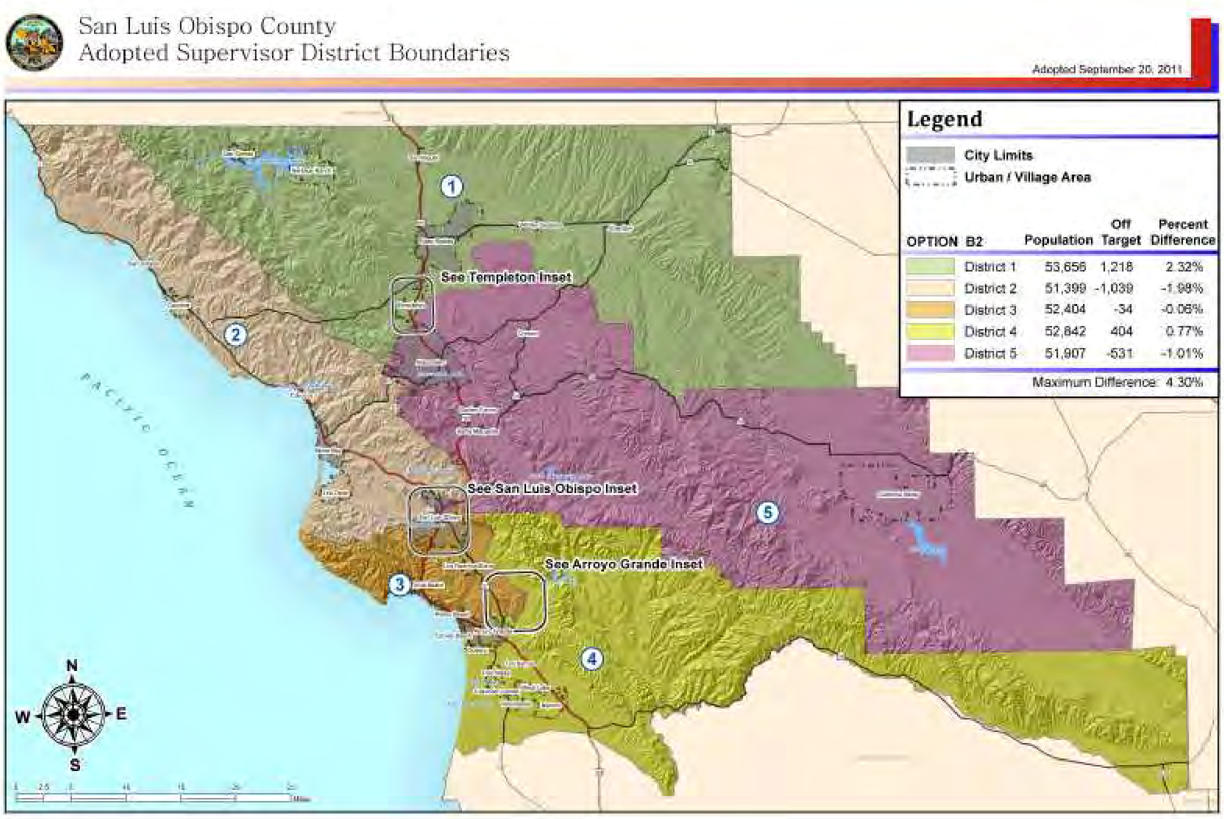

Figure N-1. Supervisorial District Map (without Insets)

Source:<http://www.slocounty.ca.gov/Assets/BOS/District+map.jpg>

Land use decision maker coordination and involvement with the IRWM Plan will ensure that regional priorities and efforts developed by the IRWM Plan are 1) consistent with local land use plans, and 2) will be supported through local decisions and updates to General Plans and Community Plans.

N.6 IRWM Dynamics with Local Planning and Land Use Agencies

The San Luis Obispo County IRWM Plan has been designed to combine and build upon the strategies and recommendations of local planning documents. As demonstrated by the consistency of the IRWM Plan with local plans and the implementation of projects that help achieve local objectives, the IRWM Plan has been developed as an extension to and integration of, rather than a substitution for, local planning efforts.

To avoid conflict with local efforts, stakeholder involvement has been and will continue to be an integral part of the IRWM planning process. Sub-Region stakeholder workshops provide a forum for interaction and collaboration and to allow the IRWM Plan to interface with local land use and water planning leaders. Such stakeholder involvement and participation ensures that local agency planning (and their respective goals and objectives) are represented and considered in the IRWM planning process. Local planning strategies are at the heart of this IRWM Plan and have played a dynamic role in its development.

N.6.1 Consensus with Local Stakeholders and Existing Planning Documents

The consensus-based approach used in the development of the San Luis Obispo County IRWM Plan Goals and Objectives is explained in **Section E – IRWM Goals and Objectives**. As summarized in **Table N-1**, the IRWM Plan has been built upon a number of previously completed planning documents with the role of the IRWM Plan being the consolidation of projects and programs within these documents at the Sub-Region level, which allows projects to be considered at a regional level through the stakeholder process and public RWMG workshops. In future updates to local plans an accounting takes place for the IRWM process and local impacts and benefits of regional project implementation.

Because of current levels of knowledge concerning the relationship between growth and water supply exhibited by local agencies, their planning staffs, and the public at large in the region, efforts to refine and strengthen existing General Plan growth and resource linkages to water resources management will continue. By providing a regional perspective on water supply, and also linking water quality, flood management, and environmental water needs to water planning efforts, the IRWM Plan functions as the foundational source for land use plans well into the foreseeable future.

As the focus shifts from developing new sources of water supply to consideration of groundwater monitoring and management, water quality, conjunctive use, conservation, and water reuse, the IRWM Plan will provide the regional perspective needed to avoid conflict and enhance sustainability of water in the region.

The projects included in the IRWM Plan programs effectively implement many of the local plans that are the projects' foundation. The IRWM Plan projects also implement many actions called for in the cities' and county's General Plans, such as reduction of groundwater overdraft, water conservation, water recycling, flood protection, habitat restoration, and open space creation. The local plans serving as the source document(s) for the IRWM Plan Final Project List are identified in **Table N-4**. The cited planning documents are also listed in **Table N-1**.

Table N-4. High-Ranking Projects Relationship to Planning Documents

Project Code	Project Title	Project Type	Planning Document Source(s)
MLTP_ECO1	Livestock & Land Program	Educational Program	County General Plan Conservation and Open Space Element; Agriculture Element
MLTP_WMT2	LID Pilot Program	Educational Program with Installation Drainage Devices to Optimize Irrigation and Groundwater Recharge	County General Plan Conservation and Open Space Element
NCNT_ECO1	North County Fertilizer Regions_ Precision Agriculture	Education Program with Changes in Fertilizing Practice	County General Plan Conservation and Open Space Element; Agriculture Element
NCNT_ECO2	Attiyeh Ranch Conservation Easement	Conservation Easement for the Protection of Lands in Perpetuity	County General Plan Conservation and Open Space Element
NCNT_GWM1	Upper Salinas River Basin Water Conservation/Conjunctive Use Project	Improve quality and increase use of treated wastewater to augment and create sustainable water supply	Templeton Community Plan, Templeton Water/Wastewater Master Plan
NCNT_WMT1	Community Based Social Marketing	Educational Program	County General Plan Conservation and Open Space Element
NCNT_WMT2	North County Precision Irrigation Research Program_ Precision Agriculture	Education Program with Reductions in Irrigation Water Use	County General Plan Conservation and Open Space Element; Agriculture Element
NCNT_WMT3	Tracking and Conserving Vineyard Irrigation Water in the Paso Robles Groundwater Basin	To be combined with Project 10 above.	County General Plan Conservation and Open Space Element; Agriculture Element
NCNT_WSP1	City of Paso Robles Lake Nacimiento Water Treatment Plant Construction	New Water Treatment Plant	City of Paso Robles, General Plan; City of Paso Robles UWMP; City of Paso Robles Water Resources Plan Integration and Capital Improvement Program; Paso Robles Groundwater Basin Management Plan
NCNT_WSP2	San Miguel Critical Water System Improvements	System Improvements Including Backup New Generators	San Miguel Community Plan (2013), Infrastructure and Utilities
NCST_GWM1	8th Street Upper Aquifer Well and Nitrate Removal Facility	New Treatment and Supply Well Facilities	Los Osos Water Master Plan; Los Osos, Sea Water Intrusion Assessment and Lower Aquifer Source Investigation of the Los Osos Valley Ground Water Basin; Los Osos , Public Draft Review Basin Plan for the Los Osos Groundwater Basin
NCST_FLD1	Los Padres CCC Center - Storm water LID Treatment Project	Education and Improved Ecosystem	County General Plan Conservation and Open Space Element
SCNT_FLD2	Oceano Drainage Improvement Project - Hwy 1 & 13th Street	Drainage Project with Groundwater Recharge	Oceano Revitalization Plan; Oceano Drainage Study
SCNT_WMT1	Lopez Water Treatment Plant Membrane Rack Addition	Water Treatment Plant Expansion	Zone 3 Urban Water Management Plan
SCNT_WSP2	Recycle Water Distribution System Expansion	Recycled Water System Expansion	City of San Luis Obispo Urban Water Management Plan; City of San Luis Obispo Annual Report on the General Plan

N.7 Issues and Relationships between Local Land Use Planning Entities and Water Management Entities in the Context of IRWMP

There are a number of areas in which greater collaboration and communication between and among water and land use planning entities can be facilitated through the established IRWM process. As there are a vast number of overlapping organizations and stakeholders that are currently engaged in the IRWM program and process, leveraging the extensive network and the information prepared in various IRWM plans and applications to create a more holistic and accurate picture of water and land in the region. Most obviously, the issues that rise to the greatest priority include those which are regulatory:

- AB 857 (2002) establishes three priorities that encourage all state agencies to promote infill development within existing communities, protect the state's most valuable environmental and agricultural resources, and encourage efficient development patterns overall;
- AB 32 (2006), Global Warming Solutions Act of 2006, establishes a target to reduce statewide carbon emissions to 1990 by the year 2020.
- AB 162 (2007) was passed as part of a package of six bills addressing flood risk management and flood protection in California. This bill specifically requires additional consideration of flood risk in local land use planning throughout California and named the Department of Water Resources (DWR) as a source for floodplain information and technical data that local governments will need to comply with AB 162.
- SB 375 (2008), Sustainable Communities and Climate Protection Act of 2008, sets emission reduction targets and incentives for local governments to support sustainable growth patterns;
- SB 732 (2008) provides a statutory framework to implement new programs under Proposition 84 and establishes the Strategic Growth Council to coordinate the program aimed at improved air, water and transportation;
- State Water Board’s 2009 Recycled Water Policy Update which was aimed at increasing the use of recycled water and implements state and federal water quality laws. The Recycled Water Policy requires that Salt and Nutrient Management Plans are completed by 2014 to facilitate basin-wide management of salts and nutrients from all sources in a manner that optimizes recycled water use while ensuring protection of groundwater supply and beneficial uses, agricultural beneficial uses, and human health. The Recycled Water Policy requires stakeholders to develop implementation plans to meet these objectives for salts and nutrients.

The IRWM has a role to play not only by providing a forum for dialogue, but also for solutions and solutions that are collectively oriented and beneficial for a number of agencies and stakeholders, if that makes sense. IRWM Plans, in an of themselves are tools that can be consulted for both educational purposes and/or implemented to ameliorate challenges in and around land and water use issues and/or conflicts. It is therefore, the intent of the IRWM Region to be more proactive with the region wide land use planning agencies and water use agencies to annually revisit the state of land use/water use nexus and document progress made to the land use/water use goals of strengthening relationships between land use and water use entities region wide by holding at least one land use/water use forum region wide on an annual basis. As the obstacles that we face in California become more interdependent and interwoven, so too will our solutions to challenges need to be more interwoven and collaborative. In addition, the goal of the region is to increase land use manager and or agent participation among stakeholders and also within the Cooperating Partners. By communicating more frequently and in a more nuanced way with the land use and water use managers region wide, better and potentially more sustainable solutions will be developed and implemented to reach the Region's IRWM Water Management Goals as well as the Plan Objectives and Sub-Region Priorities.

N.7.1 How the RWMG will Coordinate its Water Management Planning Activities

Since the first IRWM Plan in 2005, the need for clear concise communication between the RWMG and the local agencies and stakeholders is the foremost challenge of the IRWM Plan's update every 5 years. With constantly changing hydrology, growth, and water resource issues, with some changes resulting in local, state and/or federal legislation, each of the local agencies/stakeholders are being asked to make changes in their planning policies and heighten the importance of their technical reporting requirements to adhere to local, state, and federal policies and requirements; especially, those reporting requirement related to the IRWM Plan's success.

A short list of the IRWM Plan's needs and the methods of communication are presented in **Table N-5**. The needs are based on the IRWM Plan's content and it Goals and Objectives. The data monitoring and reporting measures being requested at the local level as part of the IRWM updates is a requirement of the IRWM Plan's implementation which cannot go ignored. This information becomes critical to the accurate reporting of benefits/impacts in the region, using the metrics described in the **Section J – Plan Performance and Monitoring**.

Table N-5. List of Standardized Needs and Methods

Needs	How Communicated	Methodologies Used
Watershed Information The 2014 IRWM Plan is the first to include data at the watershed level (See **Section C – Region Description**, and **Appendix N – San Luis Obispo County Watershed Management Planning Project Report**). As such, improvements in data collection and presentation are planned to occur over time, striving to make the subsequent updates more useful to the IRWM Plan's implementation.	The present study (**Appendix N**) was a significant effort completed by the Coastal San Luis and the Upper Salinas-Las Tablas Resource Conservation Districts. The RWMG is seeking opportunities to address supply or ecosystem data gaps, and updating of time sensitive data content. Updating needs to occur at the local level through electronic updates to tables provided by the District on behalf of the RWMG. Filling data gaps and updating changing information is a critical task for correct understanding of the region and constraints within each watershed.	Sub-Region water leaders share in the responsibility of data collection, management, and reporting. Most specifically, some data fields are set up to track and record changes in the watershed on an annual basis. The Watershed DMS presents the data versus time relationship to show physical benefits. Current reporting is generated by the DMS for select DMS fields. Fields containing updated information populate with each plan update.
Water Demand and Supply Data The state UWMP requirement of five year updates for applicable water agencies provides the best means of transferring updated demand and supply information, both past, present, and future. Agencies exempt from the UWMP requirement are also needed and pose difficult challenges to obtain this information.	Agencies exempt from the UWMP requirement need to respond to data requests every five years when demand and supply data is collected by the District. Reaching out to the smaller agencies has historically been difficult due to small staffing sizes of the agencies. Tabular data included in the DWR Approved UWMPs will be extracted from DWRs website copy of the UWMP. For requested data, update information should be clear and concise, and in the same standardized format as in **Section D**. Footnotes are permitted, but total demand and supply values should be completely filled-in, even if certain values are an estimate based on planning-level data.	Demand and Supply data is incorporated in **Section D – Water Supply, Demand, and Water Budget**. The tables are electronically generated using inputs to the IRWM DMS. QA/QC of the data should be done by the local agencies when the IRWM Plan Public Draft review period takes place. District staff, or its consultants, may interpolate and/or extrapolate values, if not provided.

Table N-5. List of Standardized Needs and Methods, Continued

Needs	How Communicated	Methodologies Used
Updating Sub-Region Priorities Sub-Region stakeholder outreach is planned to occur at a minimum of once every two years. At these outreach meeting, Sub-Region Priorities will be revisited to ensure that they reflect current water resource issues facing the region.	Sub-Region Priorities can be updated without re-adoption so long as they adhere to the IRWM Objectives. Workshop settings with a questionnaire on the most pressing water resource concerns worked for the 2014 IRWM Plan Update, and will likely be used in subsequent updates.	Sub-Region Priorities are listed based on the satisfying Objectives as shown in **Section E – Goals and Objectives**. The Priority Project List will be compared to the Sub-Region Priorities when a formal "call for projects" is made by the RWMG.
Coordination On Basin and/or Watershed Management Plans This includes Groundwater and Watershed Management Plans which have gone through a public process and are adopted by local land use agencies for local implementation.	Upon successful completion and adoption of a Groundwater/ Watershed Management Plan, the region is to provide an electronic copy of the adopted document, with scanned resolution(s) of adoption, to the RWMG for inclusion in the watershed and region DMS and IRWM library of reference documents.	Groundwater basin information will be extracted and included with the groundwater basin descriptions and quantified annual yields and storage potential included in **Section C – Region Description** and **Appendix L – Groundwater Basin Descriptions**. The overall health of the basin and watershed will be monitored over time as reporting on the management plans take place.
Coordinating on Monitoring and Reporting Objectives IRWM Plan monitoring and performance reporting on the IRWM Plan's implementation of policies, projects, and programs is an essential piece of the IRWM program requiring a significant effort for the region.	The RWMG is seeking coordination in the accurate reporting of project implementation and IRWM related activities occurring each year. The RWMG may provide assignments to local agencies for procuring the information in a timely manner to ensure compliance with the state IRWM reporting requirements.	All information will be compiled in the DMS with report features for tracking project implementation and program execution. Quantitative data showing physical benefits will be illustrated as part of the IRWM Plan's Performance Report.

Section O.
Planning Coordination

Section O. Planning Coordination

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Section O. Planning Coordination

The purpose of this section is to ensure an appropriate level of coordination with local, State, and federal agencies and stakeholders to minimize conflict within the region and to optimize the utilization of the region's water resources. In addition, the RWMG is ultimately responsible for representing the IRWM Plan to adjacent IRWM regions and in coordinating regional efforts that could have far-reaching benefits. As a resource document, the section includes a complete list of all public agencies representing the IRWM Region, and where they need to be included in any RWMG coordination effort. The end of the section contains existing agreements and coordination efforts taking place on a Water Planning Area level. Much of this information is summarized from the 2012 Master Water Report.

O.1 Coordinate Water Management Activities to Avoid Conflict

This section discusses and recognizes non-purveyor type entities (i.e. State agencies, agricultural groups, and environmental groups) that have a stake or role in water resources management/issues, such as the following (not listed in any order of importance) list of the more visible water resources related agencies and stakeholders:

- Individual Rural and Agricultural Residents/Water Users
- Resource Conservation Districts (RCDs)
- Central Coast Regional Water Quality Control Board (Region 3)
- State Water Resources Control Board
- State Department of Water Resources (DWR)
- Morro Bay Estuary Program
- Central Coast Vineyard Team
- San Luis Obispo County Farm Bureau
- Water Resources Advisory Committee (WRAC)
- Subcommittees and Working Groups of WRAC and RWMG
- Advisory Committees for our Wholesale Operations and Flood Control Zones
- Advisory Groups to the Board of Supervisors
- Morro Bay National Estuary Program Implementation committee,
- Arroyo Grande Creek MOU Group
- Santa Maria Basin Technical Groups
- Tribal Interests
- Others (that exist and may form over time)

It is important to understand their influence and involvement on water resources management efforts within the County, and that they have either contributed to the development of this IRWM Plan, or should be coordinated with in future efforts to better understand the conditions in different water planning areas and the benefits and impacts of proposed water management strategies.

The RWMG works toward bringing interested agencies and stakeholders to the project implementation process at an early stage when their involvement is beneficial and educational for both sides. Additionally, efforts under the purview of the IRWM Plan need to be able to show a direct benefit to the IRWM Plan's Goals and Objectives, and ultimately meet one or more of the Water Management Strategies used in this plan to measure and report success. Depending on the level of engagement with an agency, the outcome is to be recorded for reporting in the IRWM Plan Monitoring and Performance Report.

State and federal agencies have an important regulatory responsibility to the people of the state and country, respectively. Two of the more visible agencies and their responsibilities – the State Department of Water Resources and the State Water Resources Control Board – are summarized below as well as other agricultural and environmental agencies. These agencies are also discussed in later sections related to specific coordination efforts.

O.1.1 Water Resources Management Responsibilities of Two Primary State Agencies

The State DWR mission statement is "To manage the water resources of California in cooperation with other agencies, to benefit the State's people, and to protect, restore, and enhance the natural and human environments." DWR programs and roles include development and implementation of the California Water Plan, grant program administration, conservation and urban water management planning regulation, groundwater basin and watershed planning/management, State Water Project ownership and operation, and a number of other functions. Excerpts from the California Water Plan are utilized in the Water Management Strategies discussion of this MWR.

The State Water Resources Control Board's (SWRCB) mission is to preserve, enhance and restore the quality of California's water resources, and ensure their proper allocation and efficient use for the benefit of present and future generations. The various regional Water Boards regulate wastewater discharges to surface water (rivers, ocean, etc.) and to groundwater (via land). The regional Water Boards also regulate storm water discharges from construction, industrial, and municipal activities; discharges from irrigated agriculture; dredge and fill activities; the alteration of any federal water body under the 401 certification program; and a number of other activities with practices that could degrade water quality. Their programs also address water rights, grant program administration, and guidance to assist with these efforts. From the State Board web site; programs offered by the State and Regional Board include biosolids, dredge/fill (401) wetlands, irrigated lands, land disposal (landfills, waste piles), waste discharge requirements (non-Subchapter 15), NPDES Surface Water, recycled water, sanitary sewer overflows, stormwater, and timber harvest activities.

O.1.2 Agricultural Organizations

These include, among others, the San Luis Obispo Coastal and Upper Salinas-Las Tablas RCDs, University of California Davis Cooperative Extension, San Luis Obispo County Farm Bureau, San Luis Obispo Cattlemen's Association, Paso Robles Wine Country Alliance, Central Coast Vineyard Team and entities representing particular crop types – each have a variety of roles which may include conservation and water quality efforts, data collection, special studies, policy review, and overall stakeholder review of issues.

O.1.3 Environmental Organizations

These include, among others, Central Coast Salmon Enhancement, Sierra Club, Morro Bay National Estuary Program and Coast Keepers - each have a variety of roles, which may include conservation and water quality efforts, data collection, special studies, policy review, and overall stakeholder review of issues.

O.1.4 Pre-Project Coordination Efforts

The pre-project coordination effort takes the concept of early engagement with interested agencies and stakeholders to the point where the same agencies are involved in the project development and scoping phase. Early agency contact and awareness of the concept, project, or program provides improved consistency in the regulatory and environmental challenges of each.

O.1.5 Minimizing Conflict through Coordination Efforts

Achieving the proper timing in coordination is not always possible due to constraints, conflicts, and timing of precursor efforts (e.g., local agency decisions, formation of interest groups or management agencies, etc.) taking place in the region. Other efforts in coordination where the RWMG is aware of the need for coordination, but the timing to engage with certain agencies or interest groups is later instead of sooner. In these cases, the IRWM Plan's existing outreach program is the best means of keeping agencies and interest groups informed throughout the planning process leading up to the decision of implementation; typically occurring upon funding of the project or program.

O.2 ACTIVITY COORDINATION STRATEGY WITH ADJACENT REGIONS

As shown in **Figure O-1**, San Luis Obispo County is surrounded on three sides by active IRWM regions, including Monterey County to the north, Santa Barbara County to the south, and Kern and Kings counties to the east and northeast. The regions have regularly scheduled meetings and/or ad hoc meetings, depending on the subject matter. The RWMG is typically represented by the District in coordinating activities with neighboring IRWM regions and stakeholders.

Figure O-1. Regions Adjacent to San Luis Obispo County

Intra-Regional coordination occurred as early as 2005 within the funding area and included intra-regional conference calls and meetings to discuss water issues on a large hydrological scale as well as programmatic concerns and water issues. In 2009, a series of meetings and conference calls occurred between SLO and Santa Barbara County Regions. The purpose of these meetings was to discuss the successes and challenges Regions were having, to share resources and to talk about collaboration on potential projects in shared watersheds and groundwater basins. In 2010, the SLO County IRWM participated in a Central Coast Funding Area meeting that included all the Central Coast IRWM Regions as well as DWR. Regional Representatives attended and discussed funding for Prop 84 Round 1 and potential projects that Regions had. Subsequently, the Funding Area representatives had conference calls at semi-regular intervals to discuss IRWM Program developments, project progress and to share ideas on collaboration. SLO County is engaged with the Santa Barbara IRWM. SLO IRWM representatives are on Santa Barbara IRWM Region's stakeholder list and receive updates about IRWM programs and developments in their region and a Santa Barbara IRWM representative is also on the SLO Stakeholder list. San Luis Obispo, Santa Barbara and Ventura IRWM Regions coordinated on the nexus between IRWM & Water Planning & Land Use Issues. There was an Interregional Presentation to the Channel Counties AEP (Association of Environmental Planners) Board. See **Section C – Region Description** for other interregional coordination activities.

O.3 COORDINATION WITH STATE AND FEDERAL AGENCIES

Each of the projects and plan components in the IRWM Plan includes a significant amount of coordination with federal and State agencies. It is critical to the success of this IRWM Plan effort that the appropriate federal and State regulatory and jurisdictional agencies be actively involved as project implementation moves forward. Traditionally, participation of these agencies occurs on a project-specific basis, depending on the requirements and needs of each effort. In the integrated planning process however, the role of these agencies is now identified proactively, well prior to project design or implementation, and the potential involvement of each agency is determined and the agency notified of the relationship with the project.

The first form of involvement is to help coordinate and/or communicate the IRWM Plan to other stakeholders within the region. Another form of involvement is to assist in implementation of the IRWM Plan through facilitation or active project involvement. The final form of involvement is through granting of necessary regulatory approvals. In many cases, a given agency can become involved in IRWM Plan implementation in all three interactive forms of involvement.

This section describes the State and federal agencies active in the San Luis Obispo County region and identifies opportunities for their involvement and assistance in IRWM Plan implementation through coordination, communication, project implementation, and regulatory approval.

Table O-1 identifies State and federal agencies that are central to implementing the IRWM Plan. The table describes the jurisdictional authority or interest of each agency as well as coordination efforts either completed or planned. Coordination and involvement of these agencies with the IRWM Plan effort is imperative to the successful implementation of the plan.

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Table O-1. Federal and State Agencies

Agency	Jurisdiction/Interest	Coordination/Interaction
Federal		
U.S. Army Corps of Engineers (USACE)	Protection, preservation, and enhancement of waters of the U.S.	Potential technical resource on the Flood Management Plan and Wetland and Vernal Pool Mapping Project; potential federal sponsor of the Zones 1/1A and 9 Flood Projects; and manage Salinas Dam and Reservoir. Potential grants for Los Osos Wastewater Project.
NOAA National Marine Fisheries Service	Protection, preservation, and enhancement of fisheries, endangered species and habitat	Participation through Morro Bay Estuary Comprehensive Conservation and Management Plan and permitting authority for projects discharging to Morro Bay.
U.S. Fish and Wildlife Service	Protection, preservation, and enhancement of fisheries, endangered species and habitat	Permitting authority for projects discharging to creeks or impacting fisheries
U.S. Bureau of Reclamation (USBR)	Manage, develop, and protect water and related resources in an environmentally and economically sound manner.	Potential funding source for the Desalination Study and the Morro Bay Desalination Facility Upgrade
U.S. Environmental Protection Agency	Responsible for protecting human health and the environment. Develops and enforces regulations, provides funding assistance, and performs environmental research and education. Manages Superfund program and cleanup of contaminated sites.	Permitting authority over the Reclaimed Mines project. 30-year extended funding for SRF program.
United States Department of Agriculture Natural Resources Conservation Service (NRCS)	Manage natural resource conservation programs that provide environmental, societal, financial, and technical benefits. Provide assistance to private landowners and managers. (Non-regulatory agency)	Potential technical resource for the Agriculture and Open Space Element and potential funding source for soil erosion projects.
United States Bureau of Land Management	Administers America's public lands	Manages the region's Carizzo Plain Natural Area and potential technical resource on the Agriculture and Open Element and Conservation Element Projects

Table O-1. Federal and State Agencies, Continued

Agency	Jurisdiction/Interest	Coordination/Interaction
United States Army	Primary responsibility for land-based U.S. military operations.	Camp Roberts is managed by the California National Guard
United States Forest Service	Manages the national forests.	Manages the Los Padres National Forest and potential technical resource on the Agriculture and Open Element and Conservation Element Projects
United States Geologic Society	A scientific agency of the United States government. The scientists of the USGS study the landscape of the United States, its natural resources, and the natural hazards that threaten it.	Potential technical resource for IRWMP implementation and prepared the IRWMP reference document - Hydrogeology, Water Quality, Water Budgets, and Simulated Responses to Hydrologic Changes in Santa Rosa and San Simeon Creek Ground-Water Basins, USGS Report 98-4061
State		
California State Water Resources Control Board	Preserve, enhance and restore the quality of California's water resources, and ensure their proper allocation and efficient use for the benefit of present and future generations	Planned collaboration on SWAMP and GAMA, permitting and financing coordination. Existing permitting coordination, Low-Interest loan on the Los Osos Project, and IRWM grants
California Department of Water Resources	Manages the water resources of California in cooperation with other agencies to benefit the State's people, and to protect, restore, and enhance the natural and human environments. Operates and maintains the State Water Project, including the California Aqueduct; provides dam safety and flood control services, assists local water districts in water management and conservation activities, promotes recreational opportunities, and plans for future statewide water needs.	Coordination through Proposition 50 Planning Grant
Central Coast RWQCB	Protection and management of surface water and groundwater.	Regulatory oversight of the TMDL and CCAMP programs and permitting agency for all IRWMP implementation projects that could impact surface water and groundwater

Table O-1. Federal and State Agencies, Continued

Agency	Jurisdiction/Interest	Coordination/Interaction
California Coastal Commission	Protection, preservation, and management of the California Coast and resources.	Regulatory oversight of Coastal Zone development issues and permitting agency for all IRWMP implementation projects located within the Coastal Zone, including the Los Osos Wastewater Project
California Department of Fish and Wildlife	Protection, preservation, and enhancement of endangered species and habitat.	Permitting of IRWMP implementation projects potentially impacting streambeds, including Zone 1/1A and 9 Flood Control Projects
California Department of Parks & Recreation	Protection, preservation, and management of the State's parks.	Potential technical resource on the Agriculture and Open Element and Conservation Element Projects and management of regional State Parks (Oceano Dunes State Vehicle Recreation Area, Pismo Beach, Montana de Oro, Morro Strand, and San Simeon State Parks)
California Department of Corrections & Rehabilitation	Management of the State's correctional facilities.	Management of the region's State correctional facilities (California Men's Colony and El Paso de Robles); agency responsible for implementation of the IRWMP Project - California Men's Colony wastewater treatment plant; and partner in the Whale Rock Project
California Department of Mental Health	Management of the State's Mental Health facilities.	Management of the region's mental health facility – Atascadero State Hospital
California State Universities	Management of the State's University System.	Management of the region's State university - California Polytechnic State University); technical resource for water use and water resource planning; prepared the Water Uses and Alternatives for San Luis Obispo County, City and Regional Planning Department; and partner in the Whale Rock Project
California National Guard		Manages Camp Roberts and Camp San Luis Obispo

O.3.1 State and Federal Agencies Approvals

Most of the IRWM implementation projects will require some State and/or federal regulatory approval or oversight. Participation by these regulatory agencies at an early stage helps to streamline the process. Several actions can be taken to streamline regulatory and permitting processes for the IRWM projects. These may include preliminary consultations with regulatory agencies and joint workshops between the appropriate regulatory representatives and the project sponsors. Such coordination facilitates the permitting and regulatory decision process by identifying action items to be addressed by project sponsors. Such involvement by federal, State, and local agencies assist the IRWMP implementation to be more efficient.

Table O-2 lists the State and federal permits and approvals that will be required for the high-ranking implementation projects. Several of the project sponsors are already working with the appropriate regulatory agencies and working through the permitting process. As demonstrated in the table, these water-related projects must satisfy significant regulatory permitting requirements. The two flood projects, Zone 1/1A and Zone 9 Projects, and the Los Osos Wastewater Project have the most numerous permits required from both federal and State agencies. These projects could benefit the most from early consultations with regulatory agencies. Such coordination would facilitate the permitting and regulatory decision process by identifying action items to be addressed by project sponsors and will assist the implementation of high priority IRWMP projects.

O.4 PROJECT COORDINATION WITH FEDERAL AND STATE AGENCIES

Table O-3 identifies areas where federal and state agency (or other agencies) may be able to assist in communication or cooperation, or implementation of projects and programs, or where state or federal regulatory decisions are required before implementing the projects or programs. As discussed above, agency coordination should take place at all levels in the initial phases of each project to establish the role of each agency and heighten the awareness of the project's purpose, benefits, and potential impacts. A conservative schedule of meetings with the respective agencies should be incorporated into the overall project schedule during initial planning, design, and final project completion. Local contact information for each agency can be obtained on-line or provided by the District.

Table O-2. Potential Permits and/or Approvals for IRWMP Implementation Projects

Agency/Organization	Permit or Approval	Action Requiring Permit/Consultation
U.S. Army Corps of Engineers	Federal Clean Water Act Section 404 Permit	Impacts to wetlands and/or waters of the United States
U.S. Fish and Wildlife Service; National Marine Fisheries Service	Consultation and Coordination under Federal Endangered Species Act; Biological Opinion and Incidental Take Permit	Construction where federally listed species may be present, operations of some facilities
California Coastal Commission	Coastal Development Permits	Projects within California Coastal Zone
California Department of Fish and Wildlife	1602 Streambed Alteration Agreement	Substantial alteration of bed, bank or channel of a river, stream or lake
California Department of Health Services	Title 22 Report Approval	Recycled Water treatment and delivery, Wellhead treatment; Desalination
California OSHA Mining and Tunneling Unit	Mining and Tunneling Permit	Trenches or excavations deeper than 5 feet
Caltrans	Encroachment Permits	Construction under California State Highways
Central Coast Regional Water Quality Control Board	401 Certification or Waiver; Low Threat Discharge Permit; Title 22 Report Approval; Report of Waste Discharge	Potential for water quality impairment from sediment discharge to waterways during construction, dewatering, and disposal at construction sites; consultation with DHS on Title 22 Report, water recycling, desalination
State Water Resources Control Board	NPDES General Construction Stormwater Permit; water rights permitting.	Construction and grading of areas greater than 1 acre and authorization to divert surface waters.

Table O-3. Project Coordination with Federal and State Agencies

Project No.	Project Code	Projects	U.S. Army Corps of Engineers	U.S. Fish and Wildlife Service; National Marine Fisheries Service	California Coastal Commission	California Department of Fish and Wildlife	California Department of Health Services	California OSHA Mining and Tunneling Unit	Caltrans	Central Coast Regional Water Quality Control Board	State Water Resources Control Board
1	MLTP_ECO1	Livestock & Land Program									
2	MLTP_WMT2	LID Pilot Program									
3	NCNT_ECO1	North County Fertilizer Regions_ Precision Agriculture									
4	NCNT_ECO2	Attiyeh Ranch Conservation Easement									
5	NCNT_GWM1	Upper Salinas River Basin Water Conservation/Conjunctive Use									
6	NCNT_WMT1	Community Based Social Marketing									
7	NCNT_WMT2	Improving On Farm Water Management Through Demonstration, R & O of Precision Agricultural BMPs									
8	NCNT_WSP1	City of Paso Robles Lake Nacimiento Water Treatment Plant Construction									
9	NCNT_WSP2	San Miguel Critical Water System Improvements									
10	NCST_GWM1	8th Street Upper Aquifer Well and Nitrate Removal Facility									
11	NCST_FLD1	Los Padres CCC Center - Stormwater LID Treatment									
12	SCNT_FLD2	Oceano Drainage Improvement Project - Hwy 1 & 13th Street									
13	SCNT_WMT1	Lopez Water Treatment Plant Membrane Rack Addition									
14	SCNT_WSP2	Recycle Water Distribution System Expansion									
15	SCNT_WSP4	Pismo Beach Recycled Water									

In 2008, the San Luis Obispo County Flood Control and Water Conservation District produced a Regional Permit Program utilizing funded provided by proposition 50 (Planning Grant Agreement No. 4600004505). The Regional Permit Program (RPP) sets out an approach to managing the multitude of Federal, State, and local regulatory permits required for carrying out IRWM projects. The RPP consists of two parts: an Environmental Management System (EMS), and a Regional Permit Plan. The EMS is an internal organization mechanism for managing individual local implementing agencies. Through the implementation of accepted environmental standards, the local agency can maintain a high level of environmental responsibility. The system defines how information is managed and communicated both internally and externally. The EMS tells the agency how to behave. This behavior sets the stage for improving the efficiency of project development, regulatory permitting, project implementation, and project operation.

The Regional Permit Plan begins with an orderly establishment of uniform conditions for projects in order to reduce processing time and increase consistency and effectiveness. It progresses towards a self-monitored permit using internet access for permitting agencies to monitor the compliance by the Department. Eventually, and this would likely require special legislation, the Plan would provide for approved agencies to issue its own "permits", subject to auditing by the agencies normally entrusted with the permitting authority.

In summary, the RPP envisions a regulatory compliance approach that requires the local agency to meet an acceptable environmental performance standard and, in turn, environmental regulatory agencies move to an oversight/monitoring role, through individual permits authorizing the RPP, or through inter-agency permits/agreements that place a single agency in the oversight role. If the RPP approach were to be implemented by State and Federal agencies, it would greatly assist in the efficient implementation of more IRWM Plan projects.

O.5 WATER SERVICE COOPERATIVE AGREEMENT AND OTHER COORDINATION EFFORTS

This section discusses the various cooperative agreements and other inter-agency coordination efforts related to water supply throughout the IRWM region. A brief overview of these agreements and efforts is provided, listed in order by WPA:

- WPA 3, 4 and 6 - Whale Rock Reservoir Water Supply
- WPA 4 - City of Morro Bay/Whale Rock Commission
- WPA 4 – Chorro Valley Water System

- WPA 5 – Los Osos Interlocutory Stipulated Judgment (ISJ)
- WPA 6 – Santa Margarita Lake/Salinas Reservoir
- WPA 6 and 7 - Lopez Lake Zone 3 Water Supply Project
- WPA 7 – Groundwater Management Agreement/Northern Cities Management Area
- WPA 7 – Nipomo Mesa Management Area (NMMA)
- WPA 4, 6, 13 and 14 - Nacimiento Water Supply Project
- WPA 13 and 14 - Paso Robles Groundwater Management Plan and Basin Agreement

O.5.1 WPA 3, 4 and 6 – Whale Rock Reservoir Water Supply

Whale Rock Reservoir is located on Old Creek Road approximately one-half mile east of the community of Cayucos. The project was planned, designed, and constructed under the supervision of the State Department of Water Resources. Construction took place between October 1958 and April 1961. The reservoir is jointly owned by the City of San Luis Obispo, the California Men's Colony (CMC), and Cal Poly. These three agencies, with the addition of a representative from the DWR, form the Whale Rock Commission, which is responsible for operational policy and administration of the reservoir and related facilities. Day-to-day operation is provided by the City of San Luis Obispo.

Several agreements establish policy for the operation of the Whale Rock system and actions of the member agencies. These agreements cover aspects such as distribution of capital costs for the project construction, operations and apportionment of operations costs, downstream water rights, fish and wildlife protection, and other items.

In April 1996, the downstream water rights agreement was amended and replaced with a new agreement, establishing water entitlements for adjacent and downstream water users. The downstream water users (Cayucos Area Water Organization or CAWO) affected by this agreement consist of three public water purveyors and the cemetery, plus two other rural/agricultural users, all in the Cayucos area. These agencies are the Paso Robles Beach Water Association, Morro Rock Mutual Water Company, County Service Area 10A, and Cayucos-Morro Bay Cemetery District.

O.5.2 WPA 4 - City of Morro Bay/Whale Rock Commission

A mutual aid agreement exists between the Whale Rock Commission and the City of Morro Bay, dated 2000, relative to water resources in the event of an emergency. The SWP shuts down for annual maintenance activities each fall/winter during which the City has used its alternative supplies. In 2008, the SWP shutdown took place also when groundwater quality issues were limiting the City’s use of well water. The shortfall was made up for through this agreement with

CMC to provide Morro Bay with water during that period. Treated Whale Rock water from CMC water treatment plant is conveyed to Morro Bay via the Chorro Valley Pipeline.

O.5.3 WPA 4 - Chorro Valley Water System

The Chorro Valley Water System includes these entities: CMC, Camp San Luis Obispo, Cuesta College, and San Luis Obispo County Operations Center/Office of Education. CMC operates a water treatment plant to provide potable water to CMC facilities and wheels water to Camp San Luis Obispo, Cuesta College, County Operations Center (which includes Fleet Services, Water Quality Lab, Juvenile Detention Center, County Jail, Office of Emergency Services), and County Office of Education. These entities have several inter- entity agreements relating to entitlements to their shared water supplies, which include Whale Rock Water, Chorro Reservoir, and State Water. Camp San Luis Obispo also has first rights to one on-site well (County Well No. 1).

O.5.4 WPA 5 – Los Osos Interlocutory Stipulated Judgment (ISJ)

The following three water purveyors serve the community of Los Osos:

- Los Osos Community Services District (Los Osos CSD)
- S & T Mutual Water Company (S&T MWC)
- Golden State Water Company (GSWC)

These three water agencies and overlying water users utilize the same groundwater basin in the Los Osos Valley. The three local water purveyors, along with the County of San Luis Obispo, are currently preparing a Basin Management Plan under a court-approved Interlocutory Stipulated Judgment (ISJ).

O.5.5 WPA 6 – Santa Margarita Lake/Salinas Reservoir

The Salinas Dam was built in 1941 by the War Department to supply water to Camp San Luis Obispo and, secondarily, to meet the water needs of the City of San Luis Obispo. The Salinas Reservoir (Santa Margarita Lake) captures water from a 112 square mile watershed and can currently store up to 23,843 acre-feet (AF). In 1947, the Salinas Dam and delivery system was transferred from the regular Army to the U.S. Army Corps of Engineers. Since 1965, the District has operated this water supply for the City under a lease from the U.S. Army Corps of Engineers. Water from the reservoir is pumped through the Cuesta Tunnel (a one mile long tunnel through the mountains of the Cuesta Ridge) and then flows by gravity to the City's Water Treatment Plant on Stenner Creek Road.

O.5.6 WPA 7 – Groundwater Management Agreement/Northern Cities Management Area

The Northern Cities (including the cities of Arroyo Grande, Grover Beach, and Pismo Beach, and the Oceano Community Services District) have a long history of cooperatively managing the groundwater underlying the Northern Cities area. The 1983 “Gentlemen’s Agreement,” as amended, was reaffirmed in a 2002 Agreement Regarding the Management of the Arroyo Grande Groundwater Basin (“2002 Groundwater Management Agreement”). The 2002 Groundwater Management Agreement was incorporated into the 2005 Stipulation, which was ultimately affirmed by the Court within the 2008 Judgment.

The 2002 Groundwater Management Agreement established a safe yield for the Arroyo Grande Groundwater Basin of 9,500 AFY. The safe yield included subdivisions for agricultural irrigation (5,300 AFY), subsurface flow to the ocean (200 AFY) and urban uses (4,000 AFY). It also provided that urban groundwater allocations can be increased when land within the incorporated boundaries is converted from agricultural uses to urban uses, referred to as an agricultural conversion credit, or “ag credit.” Accordingly, the Cities of Arroyo Grande and Grover Beach have increased their groundwater allocations through the conversion of agricultural uses to urban uses within their service areas.

In addition to the monitoring and reporting requirements described in the Stipulation, representatives from the NCMA frequently meet and coordinate with representatives from the Nipomo Mesa Management Area and the Santa Maria Valley Management Area (SMVMA) through the SMVMA’s Technical Subcommittee.

O.5.7 WPA 6 and 7 – Lopez Lake Zone 3 Water Supply Project

The District completed the Lopez Dam in 1968 to provide a reliable water supply for agricultural and municipal needs as well as flood protection for coastal communities. Allocations for Lopez water are based on a percentage of the safe yield of the reservoir, 8,730 AFY. Of that amount, 4,530 AFY are for pipeline deliveries and 4,200 AFY are reserved for downstream releases. The dam, terminal reservoir, treatment and conveyance facilities are a part of Flood Control Zone 3.

There are two reports under development that relate to Zone 3 operations and water supply management. The Arroyo Grande Habitat Conservation Plan addresses downstream releases and coordination of reservoir storage operations with ecosystem needs and water rights. Additionally, a study is being conducted to consider the feasibility of modifying the dam to augment capacity of the reservoir.

The agencies that contract for Lopez water in Zone 3 include the communities of Oceano, Grover Beach, Pismo Beach, Arroyo Grande, and County Service Area (CSA) 12 (including the Avila Beach area).

O.5.8 WPA 7 – Nipomo Mesa Management Area

The Nipomo Mesa Management Area (NMMA) is part of the Santa Maria Valley groundwater basin adjudicated area. Basin groundwater users in the NMMA include Golden State Water Company, Rural Water Company, Woodlands, ConocoPhillips, Nipomo Community Services District, Lucia Mar Unified School District, small public water systems (serving residential, industrial and nursery/greenhouse operations), and commercial, agricultural and residential overlying users.

The Nipomo Mesa area is currently in a certified Level of Severity III for water supply (resource capacity has been met or exceeded), as defined by San Luis Obispo County. The County's Level of Severity III led to the preparation of a water conservation ordinance (SLO County Code, Title 8 Chapter 8.92 became effective September 25, 2008).

The NMMA Technical Group has established a groundwater monitoring plan that uses coastal and inland key wells to assess the condition of the basin. The 2008 Annual Report indicates that a potentially severe water shortage condition exists. This condition calls for voluntary actions under a response plan, with recommendations to draft a Well Management Plan and a conceptual plan to identify specific actions to be taken (NMMA Technical Group, 2009). Efforts to better understand groundwater conditions in the NMMA continue, and in addition to the monitoring and reporting requirements described in the Stipulation, representatives from the NMMA frequently meet and coordinate with representatives from the Northern Cities Management Area and the SMVMA through the SMVMA's Technical Subcommittee.

O.5.9 WPA 4, 6, 13 and 14 - Nacimiento Water Supply Project

The Nacimiento Dam was constructed in 1957 by Monterey County Flood Control and Water Conservation District (now known as the Monterey County Water Resources Agency (MCWRA)). The dam and reservoir continue to be operated by MCWRA. The lake has a capacity of 377,900 acre feet and a surface area of 5,727 acres. Water is collected from a 324 square mile watershed that is comprised of grazing lands and rugged wilderness.

In 1959, the District secured the rights to 17,500 AFY from Lake Nacimiento, with 1,750 AFY reserved for lakeside users and the Heritage Ranch Community Services District (CSD). After a long series of studies and negotiations, the Nacimiento Water Project (NWP) was initiated. The

NWP is the single largest project that the District has ever undertaken. The total project cost, including design, construction, construction management, environmental permitting, and right-of-way, is approximately $176 million. Raw water deliveries recently began in 2010, with the City of San Luis Obispo taking first water deliveries at the Stenner Creek WTP.

Current NWP subscribers have contracted for a total of 9,655 AFY of the available

15,750 AFY, and include:

- WPA 4, CSA 10A (via exchange)
- WPA 6, City of San Luis Obispo
- WPA 13, Templeton CSD, Atascadero MWC
- WPA 14, City of Paso Robles

Heritage Ranch CSD's allocation of Nacimiento Reservoir water of 1,100 AFY is part of the 1,750 AFY reserved for County residents in the Lake Nacimiento area. It is sufficient to provide water for build-out demand, but the configuration of the delivery system (drawing from the river downstream of the Nacimiento Dam) leaves the Heritage Ranch CSD vulnerable to a cut off of its water supply in an extreme drought. Heritage Ranch CSD, under mandate by California Department of Public Health, is currently in the process of developing an emergency water supply project.

The County of San Luis Obispo and County of Monterey are currently in the process of reviewing water rights and operational issues of Nacimiento Dam under such drought conditions when the lake levels reach dead pool elevation (elevation at which water no longer can be released by gravity through the dam).

O.5.10 WPA 13 and 14 - Paso Robles Groundwater Management Plan and Basin Agreement

Paso Robles Groundwater Management Plan

The Paso Robles Basin Regional Groundwater Management Plan (Groundwater Management Plan) was prepared coincident with other ongoing studies to develop a stakeholder-driven voluntary plan to provide a framework for future groundwater management activities. This project was funded by a grant from the Local Groundwater Assistance Act of 2000 (California Water Code Section 10795 et seq.) to provide grants to public agencies to conduct groundwater studies or to carry out groundwater monitoring and management activities.

The purpose of the Groundwater Management Plan is to develop a common understanding of the groundwater issues and management opportunities in the Paso Robles Basin and identify and support projects such as conjunctive use, recycled wastewater, and demand management, which will improve groundwater management. Following development of the Groundwater Management Plan, the goal is to implement the activities identified in the plan to achieve the Basin Management Objectives that are identified in the plan.

The effects of these groundwater management activities are expected to result in changed groundwater conditions, which are monitored and reported to the agencies, interested parties, and stakeholders.

Paso Robles Groundwater Basin Agreement

The Agreement was entered into on August 19, 2005 by the District, several overlying landowners who have organized as the Paso Robles Imperiled Overlying Rights (PRIOR) group, and the City of Paso Robles and County Service Area No. 16 (collectively referred to as Municipal Users). Since 2005, additional overlying landowners and the San Miguel Community Services District, as a Municipal User, have also signed the Agreement. The Agreement requires the District to declare the Paso Robles Groundwater Basin to be in a state of overdraft, when appropriate, at which point a period of time is conferred to allow overlying landowners sufficient time to react to such a declaration. In the Agreement, the District serves as the technical advisor to both the Landowners and Municipal Users.

The Agreement recognizes the need for monitoring and appropriate management of the existing basin supplies and also recognizes that bringing additional water resources to the basin could delay or avoid entirely the Paso Robles Groundwater Basin becoming overdrafted in the future. The Agreement also recognizes signatories' desire to preserve their respective groundwater rights, notwithstanding implementation of any management measures, thereby providing the framework for cooperation among the Landowners and Municipal Users to participate in the development of a groundwater management plan.

San Luis Obispo Integrated Regional Water Management Plan

Section P.
Climate Change

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P.1 Introduction

Consistent with California state guidelines for Integrated Regional Water Management (IRWM) planning, Climate Change Analysis is now considered a critical component in the planning and implementation of water resources management projects and programs. The 2012 IRWM Guidelines require that IRWM Plans address both adaptation to the effects of climate change and mitigation of greenhouse gas (GHG) emissions resulting from IRWM project implementation. The IRWM Plan should discuss the potential effect of climate change and GHG on the IRWM region to identify the IRWM region's vulnerabilities to the effects of climate change, to provide a process that considers GHG emissions when choosing between project alternatives, and potential mitigation and adaptation responses.

In those IRWM Plan sections (**Section I – Plan Benefits and Impacts**) and appendices (**Appendix G**) evaluating benefits and impacts of designated high priority IRWM projects, a process is used to consider GHG emissions between possible project alternatives. The process includes a list of prioritized vulnerabilities based on the IRWM Region's vulnerability and the IRWM's project ranking and selection process. A component of the IRWM Plan's implementation of data management and monitoring ensures further data gathering and continuous analysis of climate change takes place in the future.

The purpose of this section is to:

1. **Educate the reader on the contributing factors and measurements of climate change** – a brief introduction to define the terminology used in the section and how each contributes to the understanding of climate change
2. **Describe how Climate Change Analysis is performed** – a discussion of the global models and downscaled data used in the analysis performed in the section's Climate Change Analysis
3. **Summarize the climate change results** – a summary of the Climate Change Analysis results breaking down the differences between the three Sub-Regions of the SLO IRWM Region

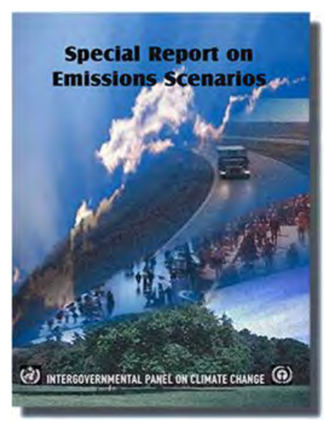
4. **Review and discuss the potential for increases in sea levels and risk of more frequent coastal flooding** – a brief overview of the impacts for sea-level rise and its potential to increase the risk for damage to coastal water supplies, property, and life
5. **Present a ranking of vulnerabilities associated each IRWM Plan Sub-Region** – a rating and explanation of vulnerabilities stemming from a thorough vulnerability assessment for each Sub-Region
6. **Provide a project ranking based on a Climate Change Adaptation analysis** – the potential for adaptation of each project based on its ability to address the regions' projected vulnerabilities

The scientific study for this section is derived from **Appendix R – Climate Change Analysis for San Luis Obispo IRWM Region** and various climate change related websites referred to in the appendix and in this section.

P.2 Climate Science and Making Climate Change Projections

Climate change is often described as a significant and lasting change in the weather patterns over extended periods of time ranging from decades to millions of years.

P.2.1 Use of Climate Models



In the early 1990s, the Intergovernmental Panel on Climate Change (IPCC)[1] developed long-term emissions scenarios that have been widely used in the analysis of possible climate change and its impacts, with suggested options to mitigate the impacts. In 1996, the IPCC made the decision to update the emission scenarios to account for the carbon intensity of the world's energy supply, to represent the significance of the income gap between developed and developing countries, and to include sulfur emissions as a climate changing variable. In 2000, the emission scenarios (SRES, 2000) were updated again to identify regions acknowledging agreement in the direction of future climate change as well as regions where projected changes were thought to be more uncertain. Information on the statistical significance of projected changes in relation to modeled natural climate variability was included.

[1] The Intergovernmental Panel on Climate Change (IPCC) is the leading international body for the assessment of climate change. <https://www.ipcc.ch/index.htm>

Emission scenarios are alternative "storylines" of how the future might unfold (scenarios) using driving forces such as population growth, land use change, technology, and industry and how they influence future emissions of GHG. The storylines help define future concentrations of GHG in the atmosphere, and how GHG impacts temperature and climate in the oceans and on the land surface. Unfortunately, as with any forecast modeling, the possibility that any single emissions path will occur as described by the scenarios is highly uncertain.

P.3 Climate Scenarios

The climate scenarios used in this Climate Change Analysis are defined in the Special Report on Emissions Scenarios (SRES, 2000). This report called for the use of multiple models while seeking input from the broadest community of experts and making scenario results available world-wide for review and comment. The SRES developed four storylines (**Figure P-1**) of how the world may move forward with climate change occurring.

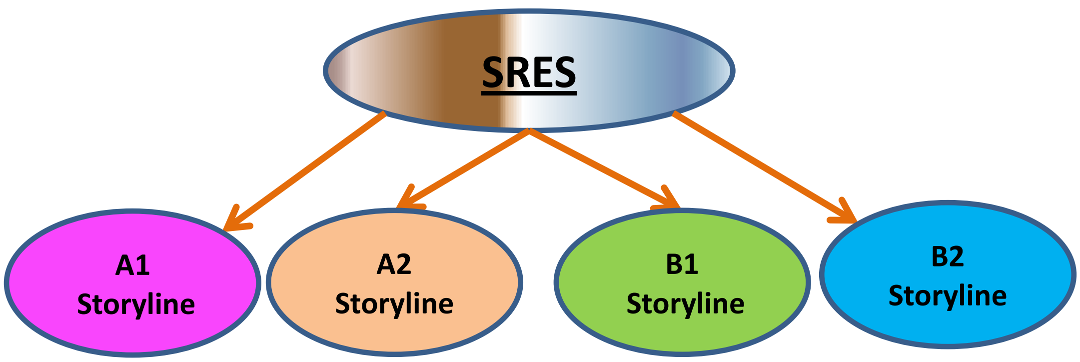


Figure P-1. SRES Storyline Schematic

The following description of the four storylines is taken from the IPCC website, <http://www.ipcc.ch/ipccreports/sres/emission/index.php?idp=3>:

> *The A1 storyline and scenario family describes a future world of very rapid economic growth, global population that peaks in mid-century and declines thereafter, and the rapid introduction of new and more efficient technologies. Major underlying themes are convergence among regions, capacity building, and increased cultural and social interactions, with a substantial reduction in regional differences in per capita income. The A1 scenario family develops into three groups that describe alternative directions of technological change in the energy system. The three A1 groups are distinguished by their technological emphasis:*

> *fossil intensive (A1FI), non-fossil energy sources (A1T), or a balance across all sources (A1B).*
>
> *The A2 storyline and scenario family describes a very heterogeneous world. The underlying theme is self-reliance and preservation of local identities. Fertility patterns across regions converge very slowly, which results in continuously increasing global population. Economic development is primarily regionally oriented and per capita economic growth and technological change are more fragmented and slower than in other storylines.*
>
> *The B1 storyline and scenario family describes a convergent world with the same global population that peaks in mid-century and declines thereafter, as in the A1 storyline, but with rapid changes in economic structures toward a service and information economy, with reductions in material intensity, and the introduction of clean and resource-efficient technologies. The emphasis is on global solutions to economic, social, and environmental sustainability, including improved equity, but without additional climate initiatives.*
>
> *The B2 storyline and scenario family describes a world in which the emphasis is on local solutions to economic, social, and environmental sustainability. It is a world with continuously increasing global population at a rate lower than A2, intermediate levels of economic development, and less rapid and more diverse technological change than in the B1 and A1 storylines. While the scenario is also oriented toward environmental protection and social equity, it focuses on local and regional levels.*

P.4 Preferred Model for IRWM Plan Climate Change Studies

A collaborative effort by the Geos Institute[2] and Local Government Commission[3] resulted in two valuable, regional climate change resources. The two reports were titled *Projected Future Climatic and Ecological Conditions in San Luis Obispo County (April 2010)* and *Integrated Climate Change Adaptation Planning in San Luis Obispo County (November 2010)*.

At the time, the 2010 study relied on three different models to represent one emission scenario. These include the CSIRO, Australian Model; HadCM, United Kingdom (UK) Model; and

[2] The Geos Institute is a nonprofit organization that uses science to help people predict, reduce, and prepare for climate change.< http://www.geosinstitute.org/>

[3] The Local Government Commission (LGC) is a California-based nonprofit organization fostering innovation in environmental sustainability, economic prosperity and social equity.<http://www.lgc.org/slo_stakeholder_mtg_052010>

MIROC, Japan Model. These models are built on slightly different input parameters making them differ in output. The UK Model provides the wettest output and the Japan Model the driest output.

These models were selected for the study because their output facilitated input to the MC1 vegetation model that was run for the study. The study states:

> *The MAPSS team selected CSIRO, MIROC, and HadCM from the suite of available models because their outputs are readily usable for the MC1 vegetation model, which provided us with projections for such variables as growing conditions for dominant types of vegetation, wildfire, and carbon storage in biomass.*

As a result, the study had to sacrifice the ability to make use of daily downscaled data since this data is not available for all three models; instead opting to focus on climate change impacts to growing conditions. For the IRWM Plan analysis, lack of daily data limits the computation of indices indicating certain local aspects of energy and agricultural water consumption (part of an adaptation analysis). In this analysis, completed for purposes of addressing both adaptation and mitigation of GHG emissions, the importance of daily downscaled data overrides the consideration to use the MC1 vegetation model. The preferred model, which includes daily downscaled data for all scenarios, is the National Oceanic and Atmospheric Administration's (NOAA) Geophysical Fluid Dynamics Laboratory (GFDL) model (results were released in 2007). The two GEOS 2010 reports; however, do form the basis for updating the climate change conditions and assessing climate change vulnerabilities in the IRWM Plan (see **Section P.10**).

P.4.1 Selected Model and Storyline for Climate Change Analysis

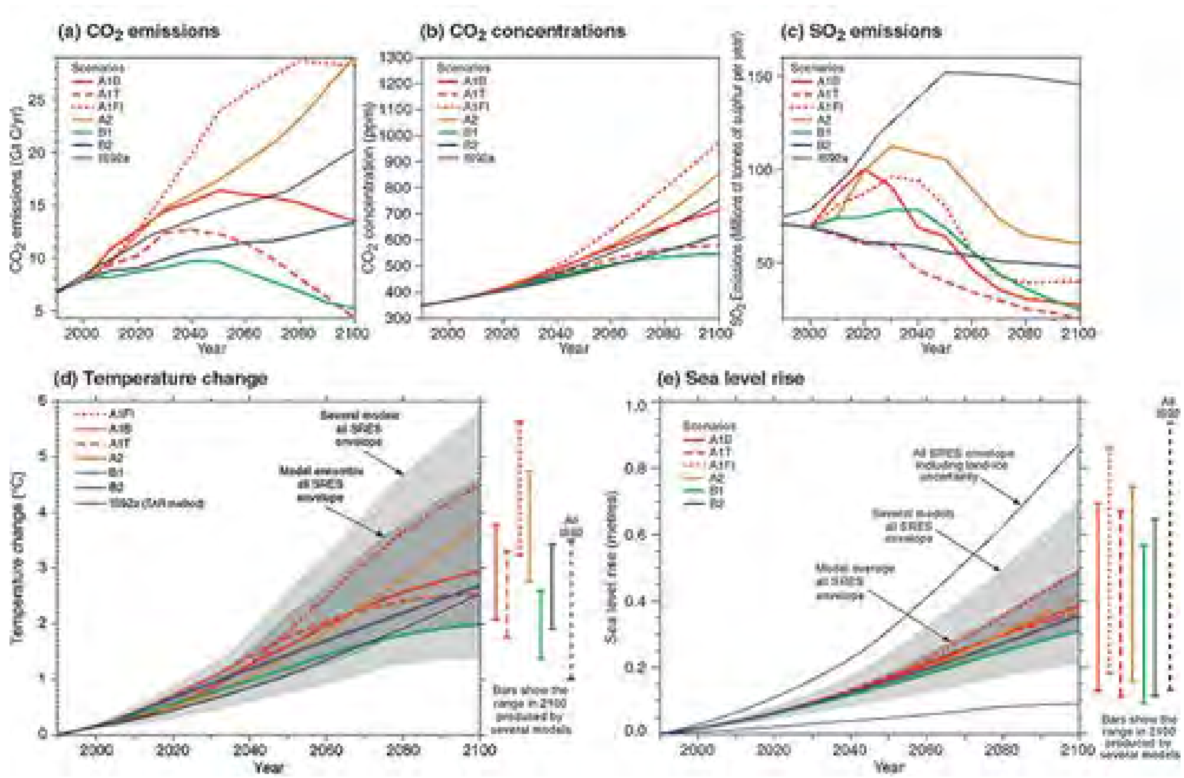
The decision to use NOAA model(s) for the climate change analysis for the SLOC IRWM Plan Update is based on the following:

- Downscaled data from the model is available at a resolution to differentiate between the potential impacts in the three Sub-Regions covered in the IRWM Plan
- Daily downscaled data is available for all emission scenarios to facilitate computing change in indices related to energy and water use
- The NOAA model(s) and approach has been utilized in three other region-developed IRWM Plans in the last 2 years (Imperial Region, Gateway Region, San Joaquin Region)

The preferred storyline (see A1 Storyline, **Figure P-1**) and scenario family applied in this section also differs from the 2010 Geos analysis by selecting the A1 storyline rather than the A2 storyline, described in the Geos and Local Government Commission's *Integrated Climate Change Adaptation Planning* report as the "business-as-usual" GHG emission scenario (referred to in past assessments by the IPCC as the IS92a Scenario published in both the 1990 (First Assessment Report [FAR]) and 1995 assessments (Second Assessment Report [SAR]). This change in storyline from the 2010 Geos analysis is a shift to a more optimistic growth scenario for the economy and a world which brings to bear technological solutions to reducing GHG starting mid-Century (2050).

Figure P-2 illustrates the differences in future emissions between the six scenarios (stemming from the four storylines described above by the 2007 IPCC assessment). Plots are briefly described as follows: (a) shows the CO2 emissions of the six SRES scenarios with IS92a for comparison purposes with the SAR; (b) shows projected CO2 concentrations; (c) shows anthropogenic (i.e., caused by man's activities) SO2 emissions; (d) and (e) show the projected temperature and sea-level responses, respectively. The "several models all SRES envelope" in (d) and (e) shows the temperature and sea-level rise, respectively, for a hierarchy of models, that together, are referred to as the simple climate model.

Focusing on the (a) plot and following the A1B line, the trace shows a relatively steep increase in carbon emissions in the first half the century to the mid-century mark (2050) and then a slow gradual decrease to 2100. Intuitively, this reflects the continued use of carbon fuels until green energy technology has evolved and is brought to bear on reducing the rate of emissions. However, the A1B temperature trace shown in the (d) plot is similar to all emission scenarios and continues to rise until the end of the century. As illustrated in **Figure P-3**, the A1B scenario is a balance between the more fossil fuel intensive scenario (A1F) and the non-fossil/green-energy scenario (A1T). The A1B scenario is selected for this analysis to represent the "most-likely" set of conditions for the IRWM Region looking out to 2100.



Source: IPCC Third Assessment Report

Figure P-2. Results of SRES Climate Change Scenarios

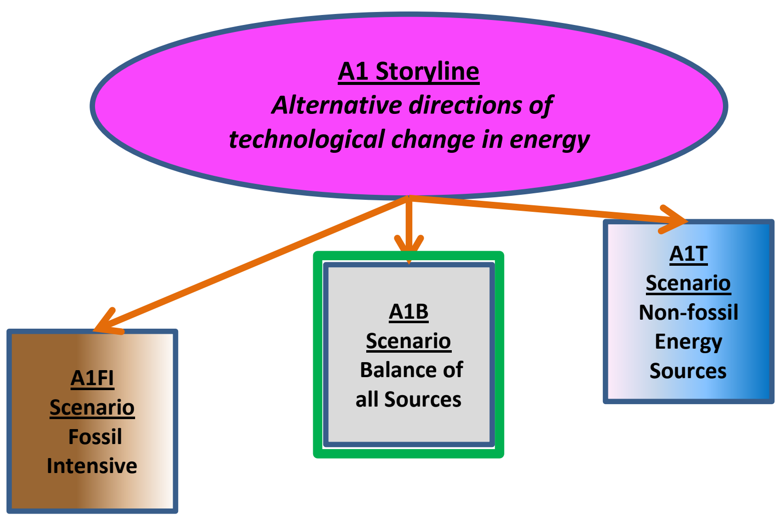


Figure P-3. A1 Storyline Scenarios

P.5 DOWNSCALING GLOBAL MODEL RESULTS

As noted above, downscaling of global data is important to a study looking at adaptation to the effects of climate change and project-specific mitigation for GHG emissions. Downscaling of global model results from the IPCC SRES scenarios refers to a process of taking the global model data on forecasted changes to climate variables (e.g., temperature and precipitation), and translating it to a finer spatial scale that is more meaningful in the context of local and regional impacts. Two general approaches are used in downscaling:

1. Dynamical, where a high resolution regional climate model with a better representation of local terrain simulates climate processes over the region of interest.
2. Statistical downscaling, where large-scale climate features are statistically related to fine-scale climate for the region.

The advantage of using dynamical downscaling is that a regional model can simulate fine-scale processes not anticipated with statistical methods. The disadvantage; however, is that the regional models are far more computationally intensive and that the end performance is highly dependent on the quality of the input data and how well regional climate influences are represented by the downscaling model. Statistical downscaling is less computationally intensive, and it is able to generate data that more closely mimics local climate variations. The main disadvantage is that statistical downscaling assumes that past relationships between regional and global climate results will continue to hold true in the future.

Global Climate simulations of future climate have been developed under the Coupled Model Inter-comparison Project (CMIP) Phase 3 conducted by the World Climate Research Programme (WCRP). The CMIP is an international effort to improve climate models by comparing multiple global model simulations to observations and to each other. The resolution of the global model is 200-300 Km^2 per grid cell (vs. cell size for a regional model is typically 15 Km^2 or finer). In the CMIP archive, simulated climate time series are presented for past (pre-2011), mid-century (2050) and end-century (2100) climate states, assuming various greenhouse gas emission scenarios.

P.5.1 Applying Global Models to SLO IRWM Region

For the SLO IRWM Region, the downscaled global datasets need to be applicable to the three Sub-Regions defined in the IRWM Plan (North Coast, North County, and South County). The Lawrence Livermore National Labs (LLNL)[4] hosts an archive of the simulations from Global

[4] See <http://gdo-dcp.ucllnl.org/downscaled_cmip_projections/dcpInterface.html#Welcome> for description and download of data.

Climate models from the CMIP Phase 3 effort and includes statistically-downscaled data for use in modeling smaller regions. The downscaling includes bias-corrected data to better match the magnitude of modeled precipitation and temperature to observed values in the local region. As described in **Section P.4.1**, simulations from NOAA's GFDL model runs for the A1B emissions scenario were used for the 2013/14 IRWM Plan Update analysis performed. The data grid over which the data request was made is illustrated in **Figure P-4** with the Sub-Region areas shaded to illustrate the resolution of coverage. By splitting the IRWM Region into its three Sub-Regions, the analysis shows more detail than prior efforts, to understand climate change impacts. The analysis assesses and prioritizes regional vulnerabilities prescribed by California Department of Water Resources (DWR) (**Section P.10**), while also developing a plan for future data gathering and analysis (**Section P.12**).

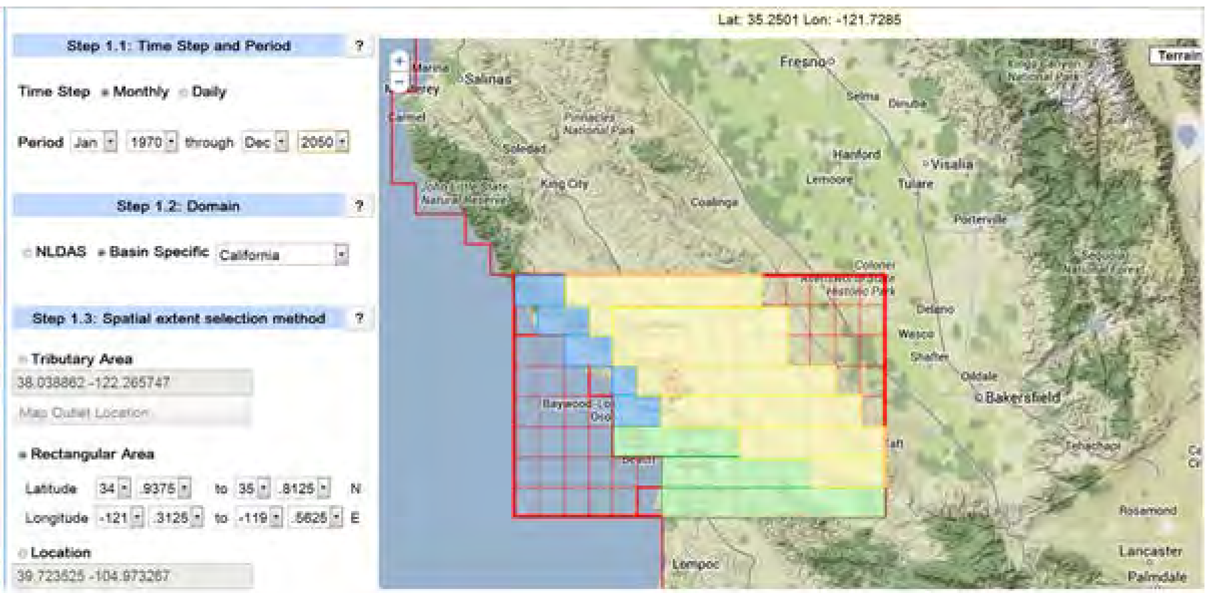


Figure P-4. Downscaled Region Model Grid Data Request for IRWM Region

P.6 APPROACH TO CLIMATE CHANGE ANALYSIS FOR SUB-REGIONS

Climate Change Analysis for the three Sub-Regions in the IRWM Plan requires sufficient time series data, both in resolution and in temporal span. The analysis requires monthly and daily time series data to characterize climate in the recent past (prior to 2011) and at mid-century (2050), approximately 40 years into the future. The use of mid-century as a future date ensures full coverage of the 20- to 25-year IRWM Planning horizon. The analysis takes the following steps:

1. Obtain 40 years of downscaled monthly and daily regional climate model time series for mid-century (future) conditions

2. Obtain 40 years of simulated monthly regional climate model time series for past (1971 to 2010) climate
3. Obtain 20 years of simulated daily regional climate model time series for past (1979 to 1999) climate
4. Analyze monthly time series and present results as seasonal changes in climate variables such as temperature and precipitation
5. Analyze daily time series and present daily results as seasonal changes in accumulated variables such as heating, cooling, and growing degree days

P.6.1 Metrics for Measuring Climate Change

Changes between historical and future global simulation results are summarized in terms of monthly and seasonal differences for precipitation, maximum temperature, minimum temperature, wind speed, evapotranspiration, and runoff. These changes are obtained by analyzing the monthly simulated data. Daily time series data is used to calculate the average seasonal change in growing degree days, heating degree days, cooling degree days, and days with precipitation of more than 1 inch. Both metric categories (i.e., monthly and seasonal) are used to quantitatively express change in the climate parameters and are described below.

P.6.1.1 Monthly Time Series Metrics

Precipitation – Average monthly rainfall amounts (inches and mm)

Maximum Temperature – Average monthly maximum daily temperatures °F (°C)

Minimum Temperature – Average monthly minimum daily temperatures °F (°C)

Wind Speed – Average monthly wind speed (m/s)

Evapotranspiration – Average monthly evapotranspiration rates (mm)

Runoff – Estimate average monthly runoff from rainfall (mm/month)

P.6.1.2 Daily Time Series Metrics

<u>Growing Degree Days</u>

Growing Degree Days (GDD) are associated with the regional climate and its ability to provide the optimal range in temperature for growing crops. While optimal growing conditions differ for each crop, growing conditions for all crops typically range between 46°F (8°C) for low growth and 90°F (32°C) for high growth.

On any given day of the year, if the daily mean temperature falls within this range (see figure below), the day is counted as a growing day and is weighted by how close the temperature falls to the high growth temperature. The weighting is accomplished by the formula: [5]

$$GDD = ((T_{Max} + T_{Min})/2 - T_{MinBase})_{Day\ 1} + ((T_{Max} + T_{Min})/2 - T_{MinBase})_{Day\ 2} + \ldots, \text{ where}$$

$T_{Max} = 90°F$ if $T_{Max} >= 90°F$, or

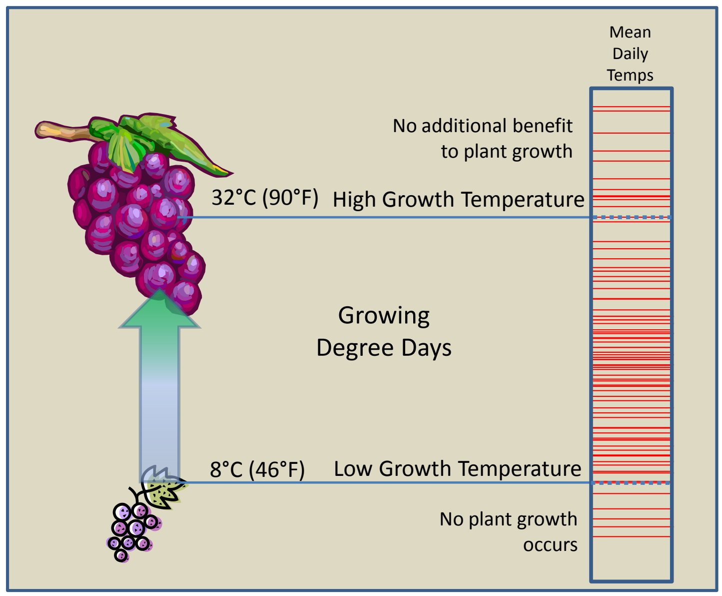
T_{Max} = Max Daily Temp

$T_{Min} = 46°F$ if $T_M =< 46°F$, or

T_{Min} = Min Daily Temp

$T_{MinBase} = 46°F$

If the daily mean temperature is greater than 90°F, the day is still counted as a growing day, but is only weighted up to the high growth temperature.[6] If the mean temperature falls below 46°F, the minimum base temperature, the day is not counted as a growing day. The sum of the differences in mean daily temperature (after above adjustment) for the period of simulation (20 years) equals the total number of GDDs, with the maximum number being 321,200 (20*365*(90-46) = 321,200 degree-days) GDDs.



As climate change affects temperature, the change in the number of growing degree days between forecasted and what is occurring present day becomes an important identifier (or metric) on the amount and impact of climate change.

[5] Recognizing there are many crop types being grown in the IRWM Region, the surrogate crop selected for the region in describing changes in growth patterns is vineyards. Optimum growth temperatures for other crop types may vary slightly from those shown.

[6] Note that a >90°F day is still considered a growth day since the heating and cooling temperature cycle falls within the growth range in the morning and early afternoon hours until a maximum temperature above the optimum growth range is reached.

Heating Degree Days

Days with a mean daily temperature below 65°F (18°C), the minimum base temperature, are considered to be Heating Degree Days (HDD) below which buildings need to be heated. The formula is similar to GDDs except the difference is calculated as follows:

$HDD = ((T_{Max} + T_{Min})/2 - T_{MinBase})_{Day\ 1} + ((T_{Max} + T_{Min})/2 - T_{MinBase})_{Day\ 2} + \ldots$, where

T_{Max} = Max Daily Temp

T_{Min} = Min Daily Temp

If $(T_{Max} + T_{Min})/2 > 65°F$ then $(T_{Max} + T_{Min})/2 = 65°F$

$T_{MinBase} = 65°F$

An increase in HDD implies more days where heating energy is expended.

Cooling Degree Days

Cooling Degree Days (CDD) occur when daily mean temperatures are above 75°F (24°C), the maximum base temperature, and buildings require air conditioning to cool temperatures. The formula is calculated as follows:

Cooling Degree Days (CDD) = $((T_{Max} + T_{Min})/2 - T_{MaxBase})_{Day\ 1} + ((T_{Max} + T_{Min})/2 - T_{MaxBase})_{Day\ 2} + \ldots$, where

T_{Max} = Max Daily Temp

T_{Min} = Min Daily Temp

If $(T_{Max} + T_{Min})/2 < 75°F$ then $(T_{Max} + T_{Min})/2 = 75°F$

$T_{MaxBase} = 75°F$

An increase in CDD implies more hot days where cooling energy is expended.

P.6.2 Conceptual Model Setup and Analysis

The analysis flow diagram shown in **Figure P-5** is illustrative of the processes and interactions taking place in the modeling of climate change. As shown in the figure, economic systems are the foundational stressors towards positive and negative changes in climate. The chosen model scenario (A1B) is closely defined by what the world economy may look like and what the human society will do about the changes taking place, and witnessed through temporal and volumetric changes in rainfall and stream/river hydrology, and in sea-level rise. The diagram indicates the feedback between each of the processes, and through each time step, a new equilibrium is reached producing the resultant set of new climate conditions.

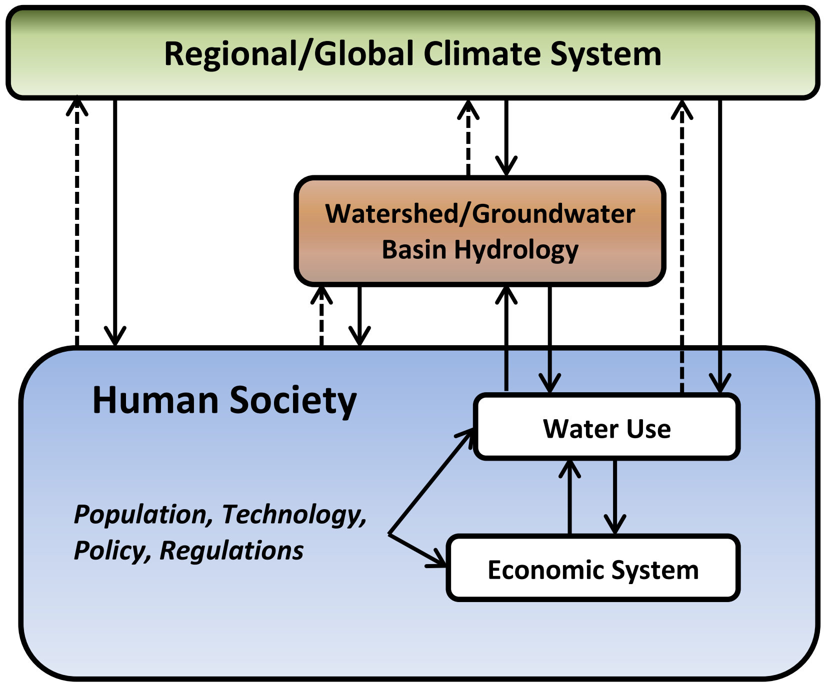


Figure P-5. Analysis Flow Diagram

Since this analysis is scoped to evaluate vulnerabilities in each of the three Sub-Regions shown in **Figure P-6**, the socio-economic and water-related drivers require quantification of what distinguishes one Sub-Region from the others before moving forward in the analysis. A general summary of the important distinguishing factors making each Sub-Region unique is summarized in **Table P-1**. The biggest driver in difference is the geographic proximity of the ocean, economic benefits from tourism, and, with the exception of the Santa Maria Groundwater Basin watershed, reliance on small watersheds and aquifers in the North Coast and South County Sub-Regions. The close contact of the Pacific Ocean with the western boundary of the two Sub-Regions generally provides cooler temperatures and higher rainfall amounts; whereas the North County Sub-Region (and inland portions of the South County Sub-Region), on average, has higher temperatures and less rainfall. The level of human ecosystem interaction is most significant in the amount of agricultural lands in the North County and South County Sub-Regions.

Urbanized land uses in the IRWM region exist in various degrees within each of the three Sub-Regions. In describing attribute differences between each Sub-Region, existing urban densities and projected planned growth as part of the adopted San Luis Obispo County General Plan, and local agency land use plans, are similar in how population and socio-economic growth and stability requirements are being met. It is widely known that most, if not all, urban areas continuously struggle with water supply, drainage, transportation, and environmental challenges regardless of their relative size, location, and local hydrology. Because of these similarities, the impacting drivers in urban areas resulting from changes in climate are not considered to be significantly different between the three IRWM Sub-Regions, and are not reflected in **Table P-1**.

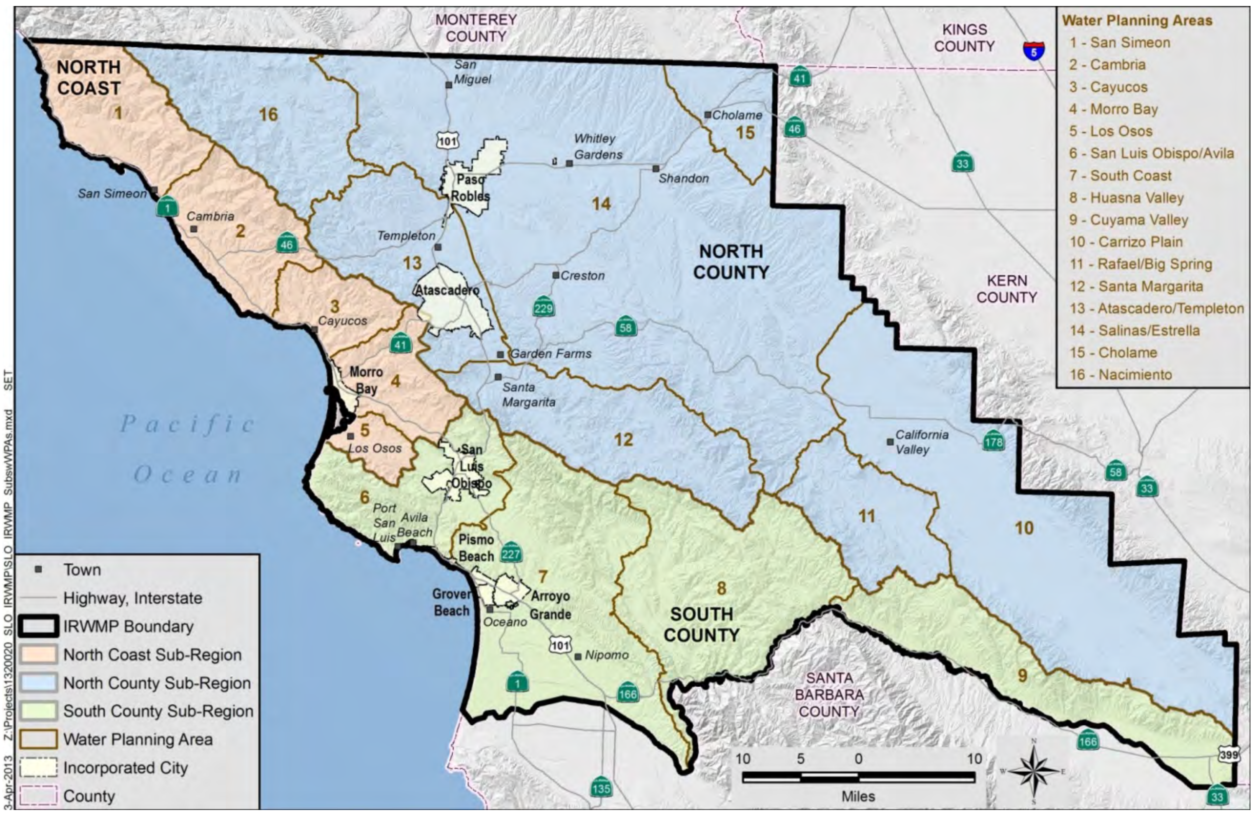


Figure P-6. IRWM Plan Sub-Region Map

Table P-1. Socio-Economic and Water Resources Considerations by Sub-Region

North Coast Sub-Region	• Sea-level rise along the coastline can significantly impact low-lying areas and groundwater supplies (often the primary source of drinking water) by saltwater intrusion • Small aquifers offer low aquifer storage capacity • Timing of rainfall and runoff is critical to recharging the region's smaller groundwater basins where groundwater storage is constrained by aquifer size and salt water intrusion (i.e., changes in rainfall patterns can cause a possible loss of natural recharge) • Local economies of communities (e.g., fishery and harbor industries), are reliant on coastal tourism requiring protection of ecosystems and infrastructure • Seawater intrusion and impacts of climate change and sea-level rise could impact Morro Bay National Estuary, a federally protected marine area with a variety of species, and other ecological preserve areas • California State Route Highway 1 coastal transportation route from approximately Carmel to the north, to San Simeon is sensitive to changing weather patterns causing slides and long-term road closures, shutting off north-bound and south-bound lanes for weeks, impacting primarily tourism
North County Sub-Region	• A larger wine and vineyard-based economy in the Paso Robles Groundwater Basin is sensitive to changing amounts of rainfall, and temperatures governing growing days and sensitive harvest periods • Agricultural water demands also have the potential to change (up or down) as a result of the need to change cropping patterns or cropping cycles to accommodate rainfall patterns • Local economies of communities (such as lake recreation and agricultural-related industries) are reliant on tourism requiring the ability to sustain the attractions and natural resources • Changes in the flow patterns of the Salinas River dictate the amount of irrigation water and natural recharge to the Paso Robles Groundwater Basin on an annual basis • The region contains critical ecosystems, such as 180,000-acre Carrizo Plain, one of the largest intact California grasslands, home to more endangered species than anywhere else in California, and home to Soda Lake, a sensitive ecosystem • State Water Project water is potentially available to increase imported surface water; however, these supplies are projected to have lower reliability with the potential for stressing local and regional groundwater resources and exacerbating salinity intrusion
South County Sub-Region	• A larger agricultural economy in the Santa Maria Groundwater Basin is sensitive to changing amounts of natural groundwater recharge and temperatures governing growing days • Agricultural water demands also have the potential to change (up or down) as a result of the need to change cropping patterns or cropping cycles to accommodate rainfall patterns • Local coastal economies of communities sustained by recreation and tourist-related industries are reliant on maintaining the attractive natural resources of beaches, estuaries, and woodlands • California State Water Project water contracts are available and being used to increase imported surface water; however, these supplies are projected to have lower reliability with the potential for stressing local and regional groundwater resources and exacerbating salinity intrusion • Seawater intrusion, sea-level rise, and impacts of climate change could impact the Guadalupe-Nipomo Dunes Wetland (and oil field), the largest coastal dune ecosystem in the Western U.S. with a variety of species, and other ecological preserve areas • Sea-level rise can significantly impact the coastal low lying urban areas at risk of flooding from the Arroyo Grande, Pismo Creek, and Meadow Creek watersheds; especially, during periods of coincident high tide and flooding resulting from increased rain storm intensity • Diablo Canyon Nuclear Power Plant uses seawater for cooling and can be impacted through coastal storms, flooding, and sea-level rise

P.7 Climate Change Analysis Results

The Climate Change Analysis is the execution of the model assuming the mid-century (2050) carbon production conditions of the A1B Scenario shown in **Figure P-2**, and running those conditions through 40 years of monthly hydrology and 20 years of daily hydrology to develop a statistical average of the various climate variables. In this way, the model results are presented so the mid-century results of climate variables are representative of an average over a hydrologic period of record to account for the naturally occurring dry- and wet-period hydrology.

Table P-2 below provides results of the Climate Change Analysis using monthly data aggregated to seasonal time periods for the mid-century (2050) point in time. The table and figures below illustrate the change in average seasonal amounts for each of the key climate variables defined above in **Section P.6.1.1.**

Table P-2. Projected Changes in Monthly Climate Metrics by Mid-Century (2050)

Variable	Sub-Regions	Change in Variables Projected by GFDL Medium Warming Scenario (A1B)				
		Winter	Spring	Summer	Fall	Annual
Precipitation (see note)	North Coast	7.2%	-26.2%	-38.5%	3.2%	-3.66%
	South County	7.0%	-27.5%	-32.5%	0.9%	-5.02%
	North County	6.9%	-27.2%	-41.0%	-1.4%	-5.15%
Maximum Temperature	North Coast	6.5%	4.2%	5.8%	5.6%	5.48%
	South County	6.6%	4.6%	6.1%	6.0%	5.81%
	North County	7.5%	4.5%	5.0%	5.9%	5.55%
Minimum Temperature	North Coast	18.8%	13.5%	9.8%	17.0%	13.91%
	South County	23.2%	14.1%	11.2%	18.8%	15.40%
	North County	49.9%	15.4%	12.1%	21.8%	17.76%
Wind Speed	North Coast	-0.1%	-1.8%	0.2%	1.2%	-0.25%
	South County	0.2%	-1.2%	-0.8%	0.7%	-0.32%
	North County	0.3%	-1.0%	-0.6%	0.8%	-0.21%
Evapotranspiration	North Coast	-3.6%	3.9%	7.0%	6.1%	4.79%
	South County	-1.8%	3.8%	7.1%	6.0%	4.90%
	North County	-4.0%	4.6%	6.2%	5.2%	4.37%
Runoff	North Coast	15.7%	-27.8%	-3.3%	-1.4%	-3.47%
	South County	12.8%	-33.7%	-4.4%	1.7%	-8.78%
	North County	16.2%	-27.8%	-3.2%	-0.5%	-3.70%

Note: Percentage amounts also provide the level of sensitivity of the current average amount to the model change (i.e., current small value amounts of rainfall in spring are more sensitive to change than larger values in winter.)

In the table above, the cells with green backgrounds indicate increases of 3 percent change for current seasonal average or more; red backgrounds indicate decreases of 3 percent or more; and white backgrounds indicate no significant change. The table values provide a sense of the order of magnitude of change projected in 2050 as a result of climate change assuming the A1B Scenario conditions of carbon productions shown in **Figure P-2.** Each of these key climate variables and the effects of climate change on the Sub-Regions are described in this section.

P.7.1 Precipitation Changes

Precipitation is a key indicator of climate change, both when (temporal) and how much (volume) rainfall occurs has a significant impact to the region's infrastructure and river systems in their capacity to convey flood waters and naturally recharge freshwater aquifers, respectively. The change in the above table showing rainfall percent changes occurring in winter and spring represent more rainfall in the winter and less rainfall in the spring. As noted in **Table P-2**, the order of magnitude in the change seen in spring stems from the small amount of rainfall that occurs during the spring months of the year. The approximate 0.4-inch seasonal average decrease in rainfall over the North County Sub-Region area in spring, with a current seasonal average rainfall of 1.6-inches, produces a 27 percent decrease; whereas, a 0.5-inch increase over the same area in winter, with a 6-inch average rainfall, produces a 6.9 percent increase.

Precipitation also drives many of the interactions taking place in the analysis flow diagram shown in **Figure P-5.** What is important to quantify from the results is the shift in rainfall from month to month, as shown for the North Coast Sub-Region in **Figure P-7.** The graph clearly shows a shift (overlying transparent green) in the average rainfall pattern where the future projected rainfall is less in the spring months (exposed red) and more in the late fall and winter months. **Figure P-8** provides a monthly average precipitation difference comparison of the three Sub-Regions. The bars aligned together for each month indicate that most of the change is taking place in the North Coast Sub-Region with a reduction in change moving inland from the ocean.

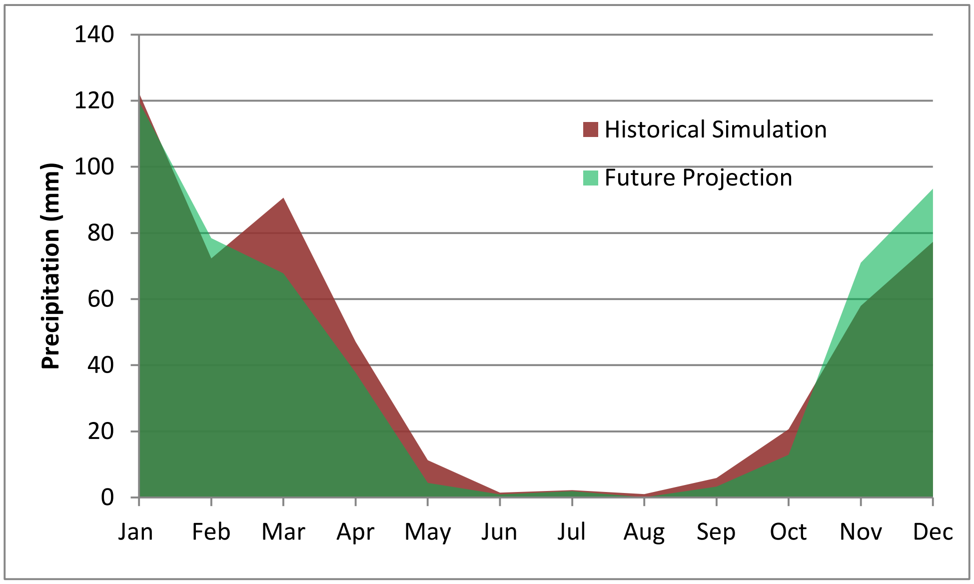


Figure P-7. Historical and Future Precipitation (North Coast)

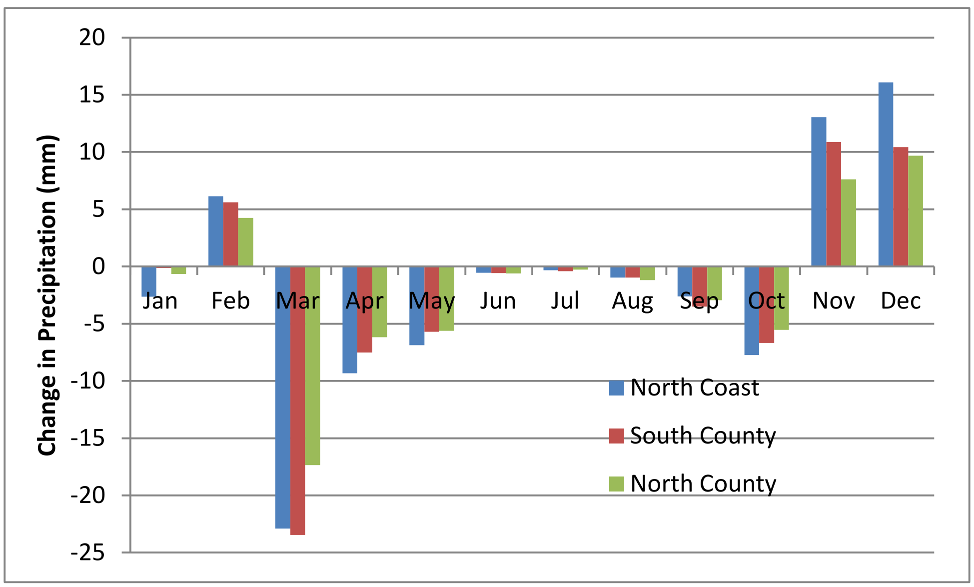


Figure P-8. Differences in Average Monthly Precipitation

P.7.2 Temperature Changes

Temperature drives how much water is needed to satisfy both human and natural water demands, and a shift in temperature can reduce or increase this need for water over the months of the year. An increase in temperature raises the amount of evapotranspiration from agricultural production and outdoor landscaping which, in turn, necessitates the application of additional irrigation water. **Figure P-9** and **Figure P-10** illustrate the increased shift in temperatures (transparent green on top of red) over the 12 months of the year for the North Coast and the North County (highest forecasted change) Sub-Regions with the differences resulting in the percent changes shown in **Table P-2**.

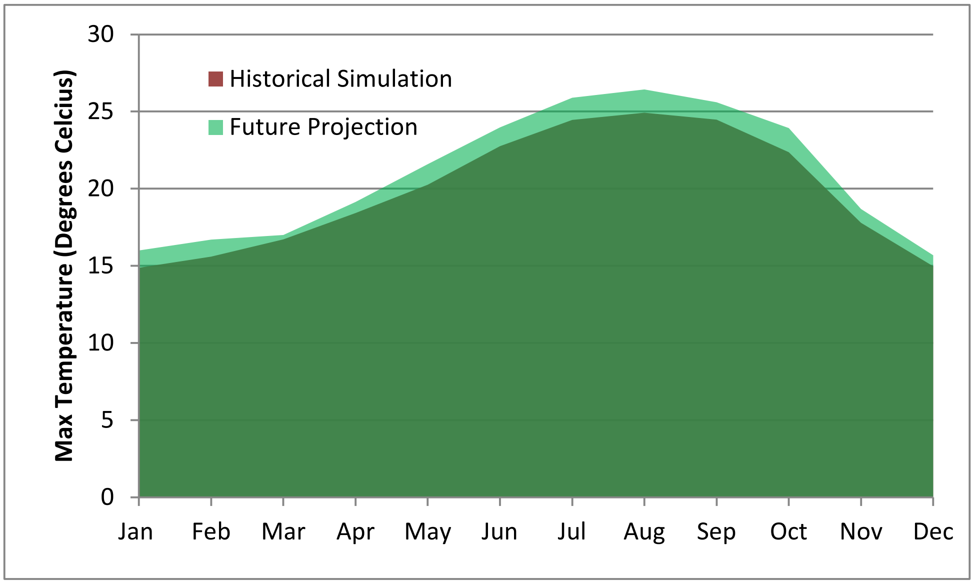


Figure P-9. Historical and Future Maximum Temperature (North Coast)

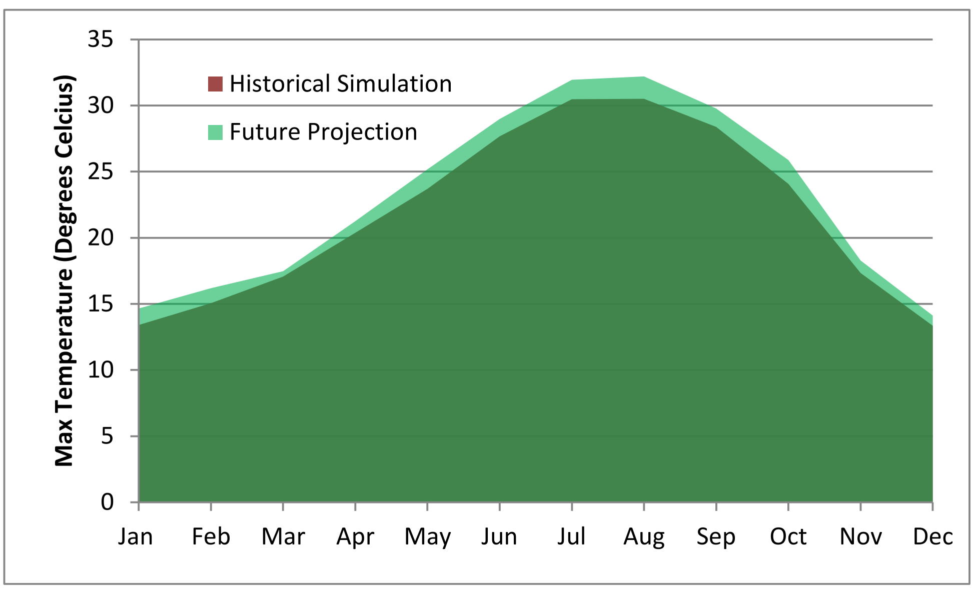


Figure P-10. Historical and Future Maximum Temperature (North County)

Figure P-11 and **Figure P-12** provide the differences in maximum and minimum daily temperatures. A rise in maximum temperatures indicates hotter day time temperatures and a rise in minimum temperatures indicate hotter night time temperatures (when compared with existing conditions). The two graphs indicate that the entire region will see an increase in temperature year-round, and, for the most part, the inland regions. The South County Sub-Region extends further inland (see **Figure P-6**) than the North Coast Sub-Region and so has similar characteristics to the North County Sub-Region in terms of temperature change in some months of the year. The greatest absolute and comparative difference between the Sub-Regions occurs during the summer months.

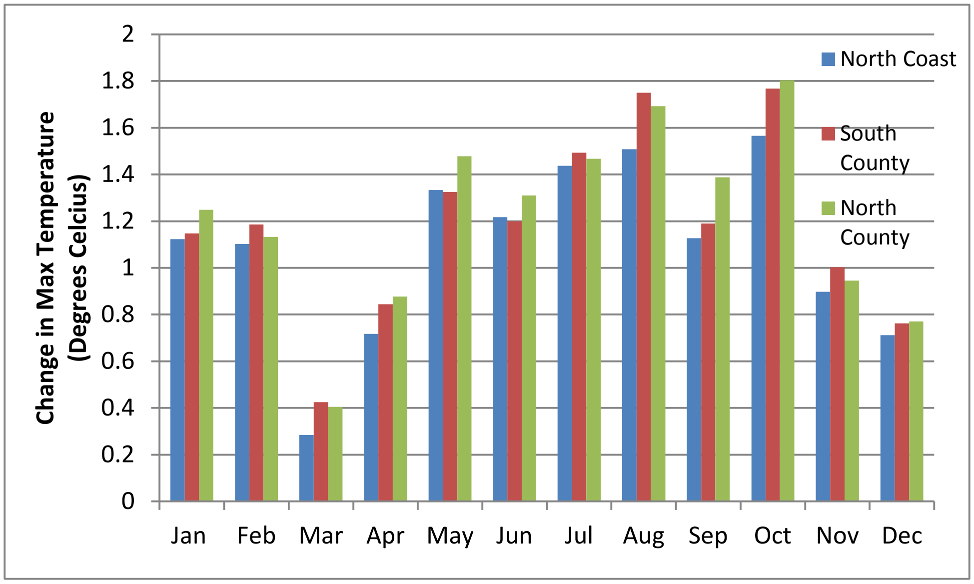


Figure P-11. Differences in Average Monthly Maximum Temperatures

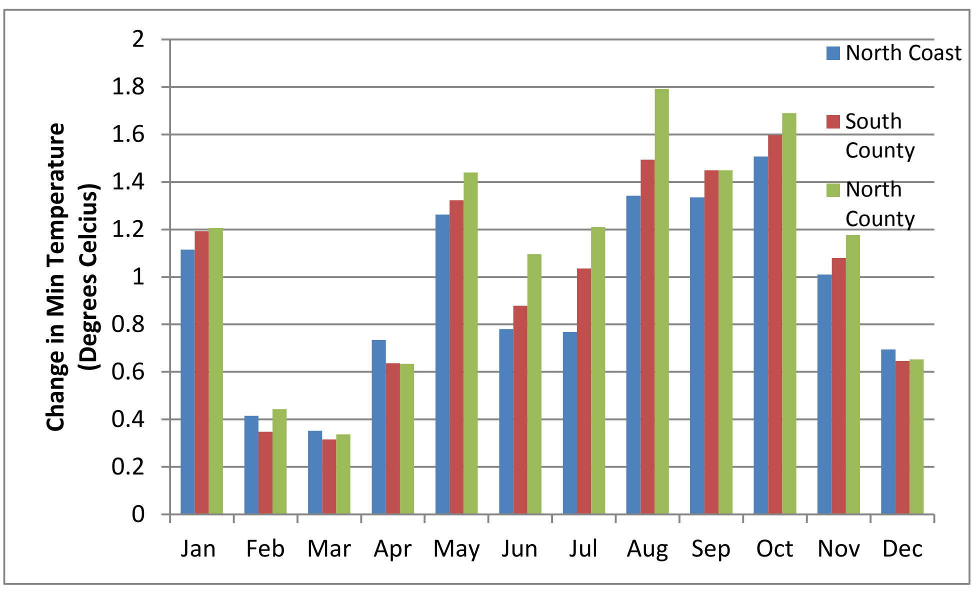


Figure P-12. Differences in Average Monthly Minimum Temperatures

P.7.3 Wind Speed Changes

Wind speed changes in **Table P-2** show minimal Sub-Region differences in the four seasonal periods. No additional analysis is available for wind speed changes.

P.7.4 Evapotranspiration Changes

Evapotranspiration (ET) is a measure of how the suns radiation affects the amount of water needed by plants to sustain growth. An increase, or positive change in **Table P-2**, represents an increase for water needed by the plant. **Figure P-13** shows the expected increase in the summer months when plants require water the most. **Figure P-14** provides the comparison amongst all three Sub-Regions, showing relatively little difference between the three Sub-Regions with the North Coast Sub-Region[7] having slightly less of an increase in ET than the North County Sub-Region in the spring months and more in the fall months. Most notably, the North County Sub-Region agricultural community reflects increased ET taking place during the spring growing season. The net result is an increased need for already constrained groundwater supplies in the Paso Robles Groundwater Basin.

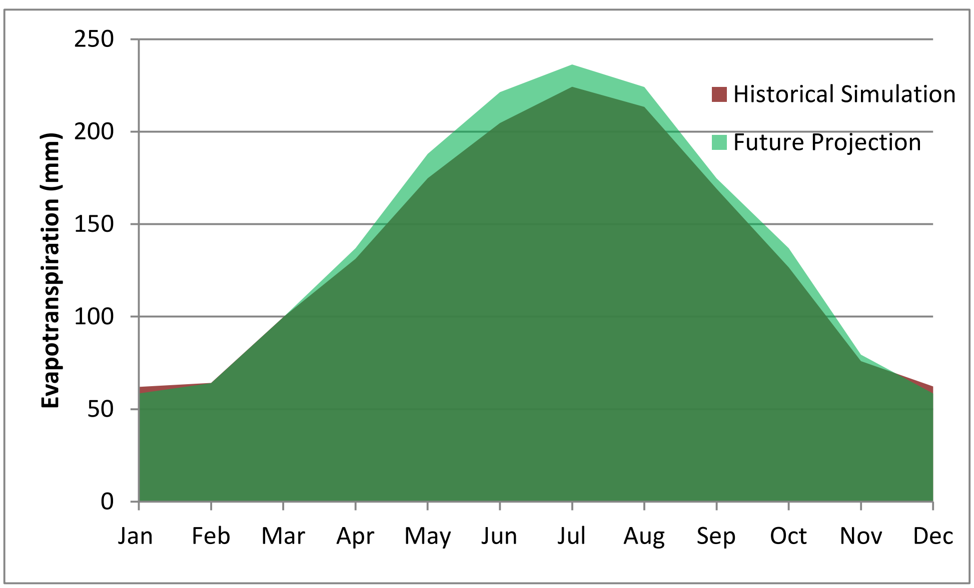


Figure P-13. Historical and Future Evapotranspiration (North County)

[7] While fog drip from the presence of dense marine layer is not treated separately in the Global Climate Change models as a component of precipitation, evapotranspiration rates in plants do inherently vary as available moisture and radiation decreases moving east away from areas influenced by the coastal marine layer.

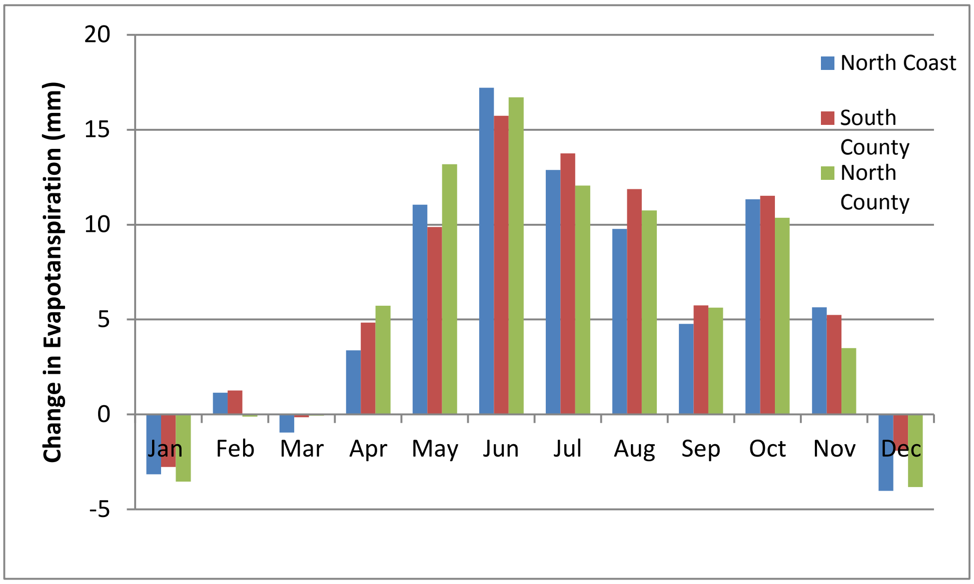


Figure P-14. Differences in Monthly Evapotranspiration

P.7.5 Runoff Changes

Runoff is an indicator of how much rainfall hits the ground and does not infiltrate or percolate to replenish groundwater supplies. This is an indicator of the intensity of storms, the size of the aquifers, and the soil moisture conditions. When rainfall events are spaced out and of low intensity, the region has an improved chance of capturing the water through deep percolation to groundwater supplies (or possibly to fractured rock). When soil moisture conditions reject the water, or aquifers become full, runoff occurs and is routed down streams and rivers, with some or all of the water stored in natural or manmade reservoirs. A change in the intensity and frequency of rainfall events resulting in changes in runoff can significantly impact a reservoir's operations resulting in insufficient stored water to meet water demands during the peak irrigation season. **Figure P-15** illustrates the shift in runoff over the 12 months of the year and the percent differences in the seasonal runoff volumes shown in **Table P-2**. **Figure P-16** indicates the North Coast Sub-Region experiencing the highest monthly change in runoff, with reduced change toward the inland regions. The smaller watersheds and small capacity aquifers along the north coast create shorter response times making it more sensitive to changes in storm event patterns. This sensitivity in the North Coast Sub-Region is seen in the runoff difference graph, especially when compared to the precipitation changes in **Figure P-8** for the same months.

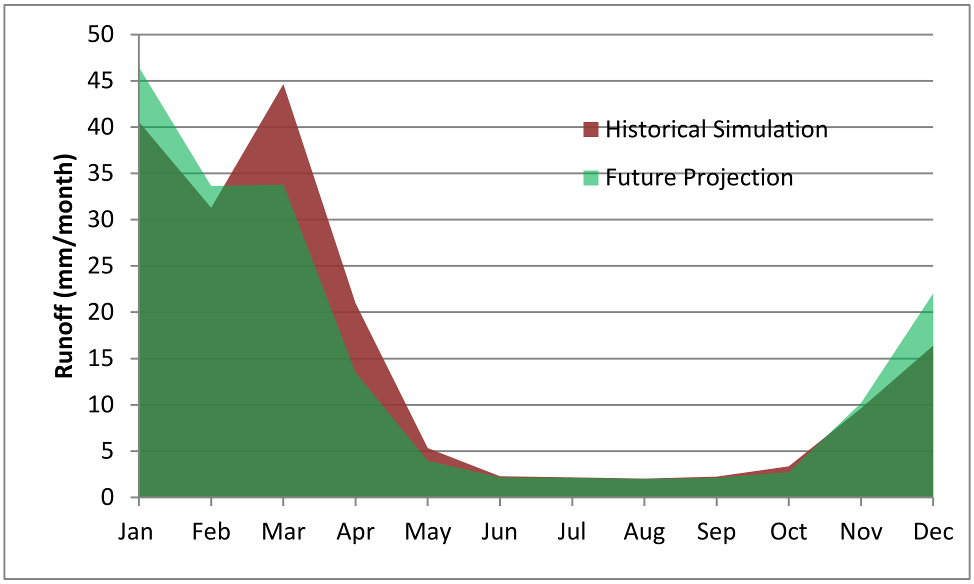


Figure P-15. Historical and Future Runoff (North Coast)

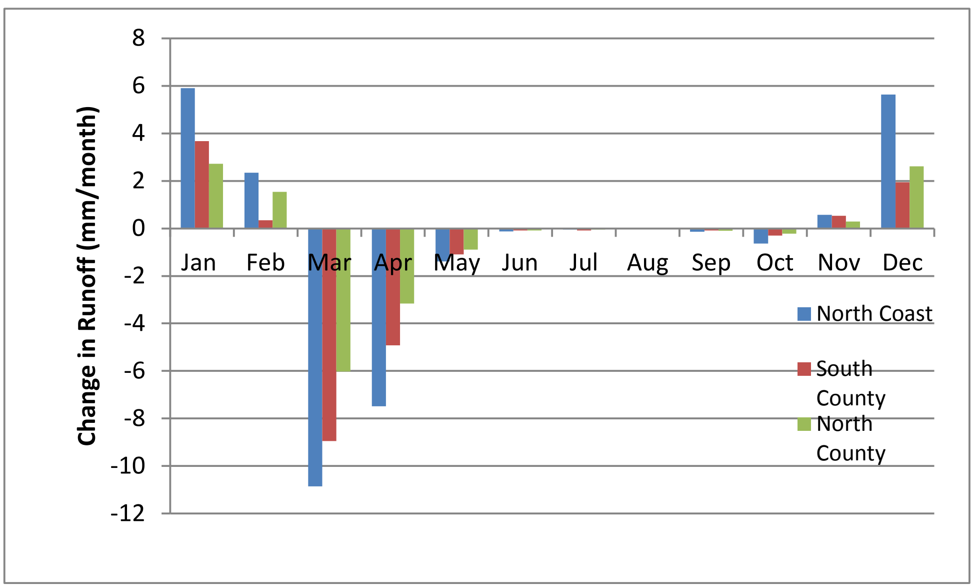


Figure P-16. Differences in Average Monthly Runoff

P.7.6 Daily Climate Change Results Expressed as Degree Days and Precipitation

With daily simulation data, the resolution of change significantly increases to the point where more can be said about how climate change affects the economy by considering how much hotter or cooler the temperatures will be, on average, for any given day of the year. **Section P.6.1.2** defines the concept of degree days and its purpose being to provide a metric of change that relates to the use of water and energy both impacting the human economy. **Table P-3** below shows summation of projected daily changes in the climate's daily metrics by mid-century (2050) with increases shown in green background and decreases shown in red backgrounds. Cells with white backgrounds indicate no significant change.

P.7.6.1 Changes in Growing Degree Days

A good example for GDDs is the change occurring in the North County Sub-Region. Using vineyards again as a surrogate for agricultural crops in the SLO Region, the number of GDDs increases with an increase in temperature.

The difference in the number of summer GDDs for the two coastal Sub-Regions appears to be slightly higher. This is caused by two factors: higher minimum temperatures due to temperate ocean influence along the coastline, and lower current number of GDDs along the coast than in the North County Sub-Region.

Table P-3. Projected Changes in Daily Climate Metrics by Mid-Century (2050)

Variable		Change in variables projected by GFDL Medium Emissions (A1B)			
		Winter	Spring	Summer	Fall
Growing Degree Days	North Coast	148.84	239.77	435.81	303.29
	South County	150.04	240.46	423.37	283.37
	North County	147.33	249.11	363.65	283.60
Heating Degree Days	North Coast	-288.00	-337.35	-214.49	-279.32
	South County	-296.08	-338.93	-190.82	-264.11
	North County	-306.75	-311.36	-48.87	-244.22
Cooling Degree Days	North Coast	0.00	0.00	1.16	0.37
	South County	0.00	0.05	1.51	0.41
	North County	0.00	0.69	80.83	10.44

Notes: Degree Days are represented using degrees Fahrenheit.
Differences are based on the equations provided in **Section P.6.1.2**

Figure P-17 and **Figure P-18** are histogram plots of the maximum and minimum daily temperatures. Both plots indicate a forward shift towards higher temperatures in the future. The mean maximum and minimum difference (i.e., shift in average) in temperatures is approximately 4.3°F (2.5°C) and 4.2°F (2.3°C), respectively. **Figure P-19** illustrates the shift in GDDs by representing the average daily temperature (average of maximum and minimum) and shows that the temperature shift is reducing the total number of days with an average temperature of less than 46°F (8°C) by a total of 33 days (see cross-hatched area representing days no longer less than minimum temperature) thereby increasing the number of growing days throughout the year.

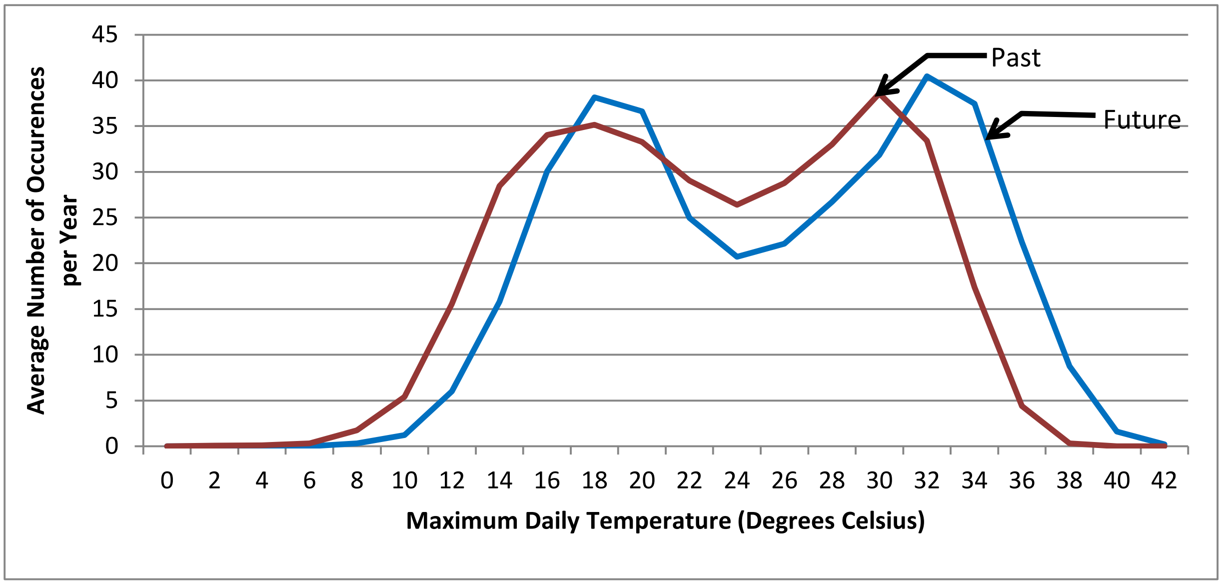


Figure P-17. Histogram Plot of Maximum Daily Temperatures

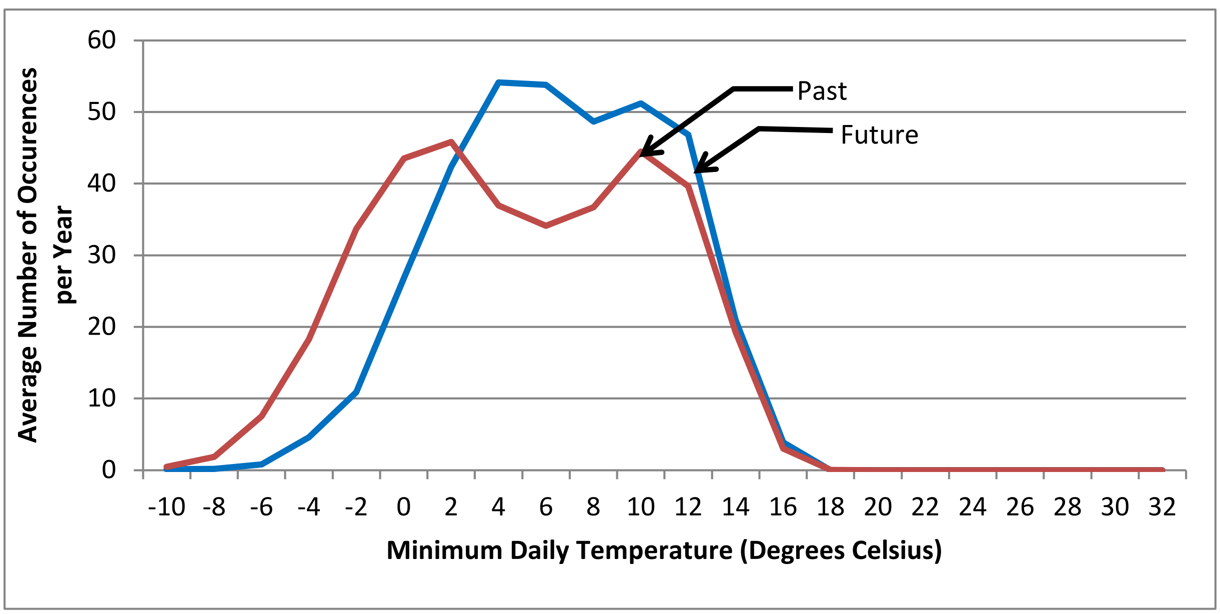


Figure P-18. Histogram Plot of Minimum Daily Temperatures

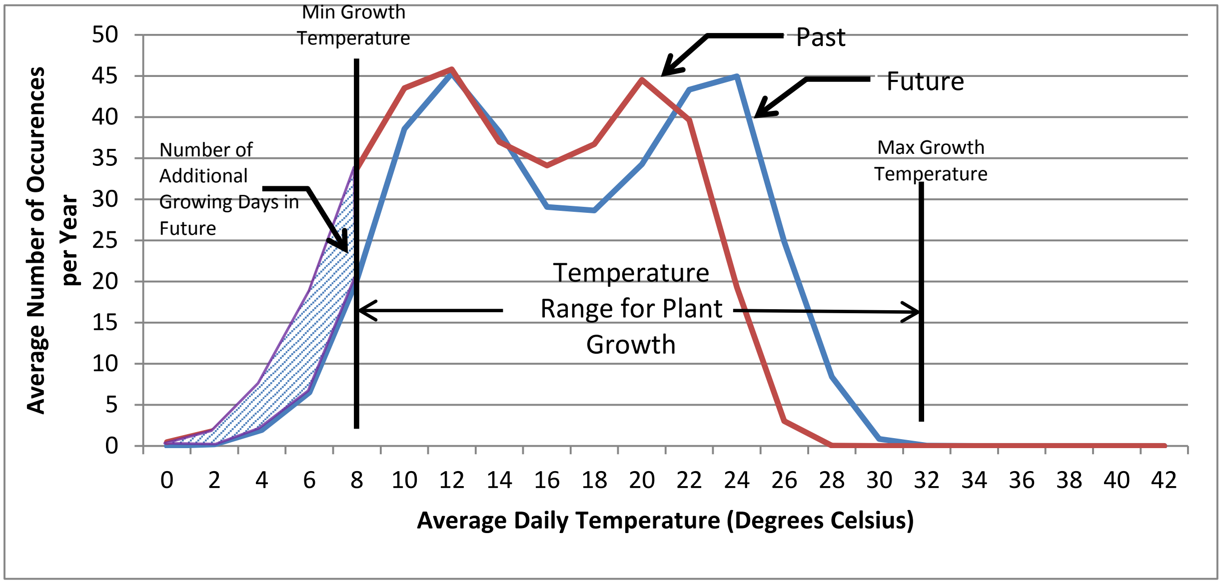


Figure P-19. Histogram Plot of Average Daily Temperatures

P.7.7 Overall Sub-Region Findings for Climate Change Analysis

Table P-4 provides additional details and general findings substantiating the results presented above for each Sub-Region.

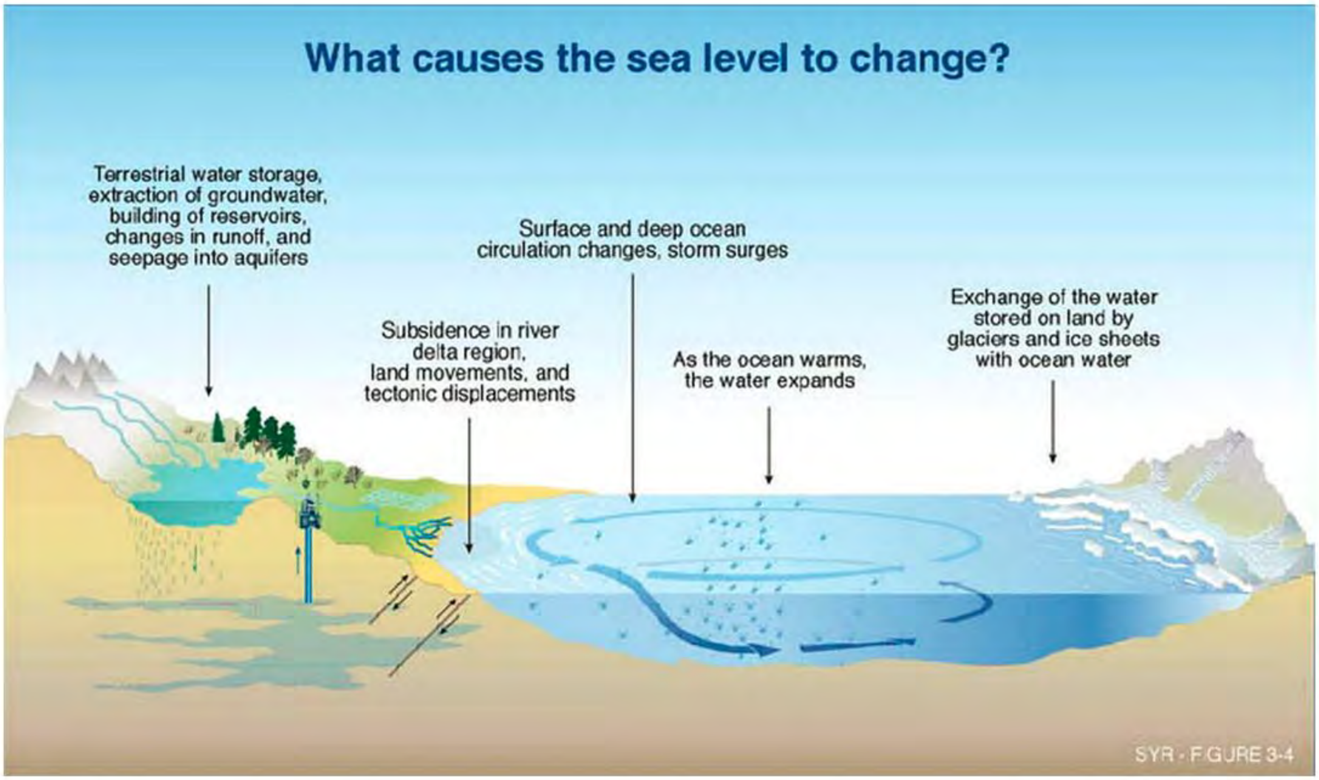
P.8 SEA-LEVEL RISE

In the history of the world, sea levels have been hundreds of feet higher and lower than what they are today due to the natural climate change cycle of ice ages and interglacial periods. Changes in sea level can happen due to many factors, including changes in the amount of ice and snow stored on land in the form of ice sheets and glaciers; the local shoreline moving up or down; or through larger scale processes such as global climate change. See **Figure P-20** for a depiction of events causing changes in sea level, and **Figure P-21** for a historical depiction of sea-level rise (SLR) over the past 140 years. The average rate of increase is approximately six tenths of a foot a year with the rate increasing to seven tenths over the past 65 years.

Being adjacent to the Pacific Ocean with approximately 100 miles of coastline, the SLO IRWM Region is concerned with SLR and has an interest in quantifying the changes in sea level that may occur in the coming years. While not completely understood, the forecasting of SLR in the modeling community, and hence different numerical and empirical approaches, estimates the rise at different geographic scales. There is no industry-accepted model currently in use.

Table P-4. Summary of Climate Change Findings as Related to Changes in Regional Water Resources

Climate Variables	North Coast Sub-Region	North County Sub-Region	South County Sub-Region
Rainfall	Increase in winter precipitation up to 7% and decreases in dry season precipitation up to 38% indicate a shift in precipitation cycles, with an overall decrease in annual precipitation up to 4%	Increase in winter precipitation up to 7% and decreases in dry season precipitation up to 41% indicate shift in precipitation cycles, with an overall decrease in annual precipitation up to 5%	Increase in winter precipitation up to 7% and decreases in dry season precipitation up to 32% indicate shift in precipitation cycles, with an overall decrease in annual precipitation up to 5%
Maximum Temperature	Increases by 4.2% - 6.5% in maximum temperatures throughout the year (in degree Celsius) indicate an overall increase in warming patterns	Increases by 4.5% - 7.5% in maximum temperatures throughout the year (in degree Celsius) indicate an overall increase in warming patterns	Increases by 4.6% - 6.6% in maximum temperatures throughout the year (in degree Celsius) indicate an overall increase in warming patterns
Minimum Temperature	Increases by 9.8% - 18.8% in minimum temperatures throughout the year (in degree Celsius) indicate warmer night time temperatures	Increases by 12.1% - 49.9% in minimum temperatures throughout the year (in degree Celsius) indicate warmer night time temperatures. This region has below freezing winter temperatures, hence the changed values are sensitive to small changes in temperatures	Increases by 11.2% - 23.2% in minimum temperatures throughout the year (in degree Celsius) indicate warmer night time temperatures
Wind Speed	Minor changes in wind speeds ranging from increases up to 1% and decreases up to 2% possibly affecting evapotranspiration	Only minor changes in wind speeds ranging from increases of less than 1% and decreases up to 1%	Only minor changes in wind speeds ranging from increases of less than 1% and decreases up to 1%
Evapo-transpiration	Increases up to 7% expected in evapotranspiration in all seasons except winter where a decrease up to 3% indicate the need for a shift in irrigation patterns	Increases up to 6% expected in evapotranspiration in all seasons except winter where a decrease up to 4% indicate the need for a potential shift in irrigation patterns	Increases up to 7% expected in evapotranspiration in all seasons except winter where a decrease up to 2% indicate the need shift in irrigation patterns
Runoff	Increases in runoff in the winter by 15.7% and decreased runoff in the dry seasons up to 27.8% indicate shift in runoff patterns	Increases in runoff in the winter by 16.2% and decreases in runoff in the dry seasons up to 27.8% indicate shift in runoff pattern	Increases in runoff in the winter by 12.8% and decreased runoff in the dry seasons up to 33.7% indicate shift in runoff patterns
Heating/Cooling Degree Days	Significant decreases in heating requirements (heating degree days) through all the seasons due to higher temperatures and minor increases in cooling requirements (cooling degree days) in summer and fall indicate higher energy costs in cooling building	Significant decreases in heating requirements (heating degree days) through all the seasons due to higher temperatures and minor increases in cooling requirements (cooling degree days) in spring, summer and fall indicate higher energy costs in cooling buildings	Significant decreases in heating requirements (heating degree days) through all the seasons due to higher temperatures and minor increases in cooling requirements (cooling degree days) in spring, summer and fall indicate higher energy cost in cooling buildings
Growing Degree Days	Increases in ambient growing temperatures (growing degree days) for plants in all seasons indicate need to alter crop types and water requirements	Increases in ambient growing temperatures (growing degree days) for plants in all seasons indicate need to alter crop types and water requirements	Increases in ambient growing temperatures (growing degree days) for plants in all seasons indicates a need to alter crop types and water requirements
Rainfall Events	Slight change in the number of precipitation events in winter and spring indicate shift in runoff and irrigation patterns	Slight change in the number of precipitation events in winter and spring indicate shift in runoff and irrigation patterns	Slight change in the number of precipitation events in winter and spring indicate shift in runoff and irrigation patterns



Source: IPCC Climate Change 2001 Synthesis Report

Figure P-20. Causes of Changes in Sea Level

A literature search indicates that, for the most part, the projected rise in sea level estimated by various studies using different approaches all fall within the same order of magnitude, as categorized and presented in **Table P-5**. The overall finding is that SLR is occurring and is tied to many of the same climate variables discussed above. In general, a change of less than 1 foot is likely to occur at mid-century and less than 3 feet by end of century (2100). This change combined with forecasted increases in storm surge and high tidal effects make for concerned on-shore impacts in the coming years. The 2010 GEOS Report stated the following regarding SLR:

> *Any SLR is considered to have large economic and natural resources impacts. In a report commissioned for the California Energy Commission, Cayan et al. (2009) indicate that by the end of the century, sea level is expected to rise 3.3 – 4.6 feet (1.0 – 1.4 meters) based on projections from six different global climate models run under the same A2 "business-as-usual" emissions scenario used in this report. Sea-level rise could accelerate even more, however, due to melting ice sheets. Sea-level rise will cause erosion along the coast as well as increased risk of damaging floods during large storms. Additionally, sea-level rise causes saltwater intrusion into wells and freshwater ecosystems near the coast. (GEOS, 2010)*

While the above SLR of over 4 feet is higher than other estimates in **Table P-5**, the more conservative (in terms of using a less moderate climate change scenario) A2 scenario represents an upper bound to the possible SLR for the region. A prevalent concern with SLR is the impact to coastal low lying urban areas at risk of flooding during periods of coincident high tide and flooding resulting from increased rain storm intensity. Further quantification of the implications of these changes is beyond the scope of this effort; however, through continued monitoring and adaptation, the SLO Region can adjust to the slow changes in sea level as they occur over the coming years.

Table P-5. Sea-level Rise Literature Search Results

Scale	Emissions Scenario	Projected Rise (m)	Projected Rise (ft)	Period	Climate Model	Data Source
Mid-Century						
Port San Luis	Historical	0.011-0.047 m	0.036-0.15 ft	2050	Extrapolation of Historical Trend	NOAA
California	Historical	0.15 m	0.49 ft	Mid-century	Extrapolation of Historical Trend	California DWR
California	Multi-Scenario	0.24 - 0.31 m	0.78-1.02 ft	Mid-century	Semi Empirical (Rahmstorf's) Approach	California DWR
California	Multi-Scenario	0.087 - 0.095 m	0.28-0.31 ft	2020 - 2049	PCM	Journal Publication
California	Multi-Scenario	0.116 - 0.127 m	0.38-0.41 ft	2020 - 2049	HadCM3	Journal Publication
California	Multi-Scenario	0.04 - 0.3 m	0.13-0.98 ft	2030	Multi-model Ensemble	National Academy
California	Multi-Scenario	0.12 - 0.6 m	0.39-1.96 ft	2050	Multi-model Ensemble	National Academy
Global	A1B	0.063 - 0.284 m	0.2-0.93 ft	2050	Multi-model Ensemble	IPCC
Late-Century						
California	Multi-Scenario	0.54 - 0.94 m	1.77-3.08 ft	End-Century	Semi Empirical (Rahmstorf's) Approach	California DWR
California	Multi-Scenario	0.192 - 0.288 m	0.63-0.94 ft	2070 - 2099	PCM	Journal Publication
California	Multi-Scenario	0.268 - 0.409 m	0.87-3.08 ft	2070 - 2099	HadCM3	Journal Publication
California	Multi-Scenario	0.42 - 1.67 m	1.37-5.47 ft	2100	Multi-model Ensemble	National Academy
Global	A1B	0.21 - 0.45 m	0.69-1.47 ft	2090 - 2099	Multi-model Ensemble	IPCC

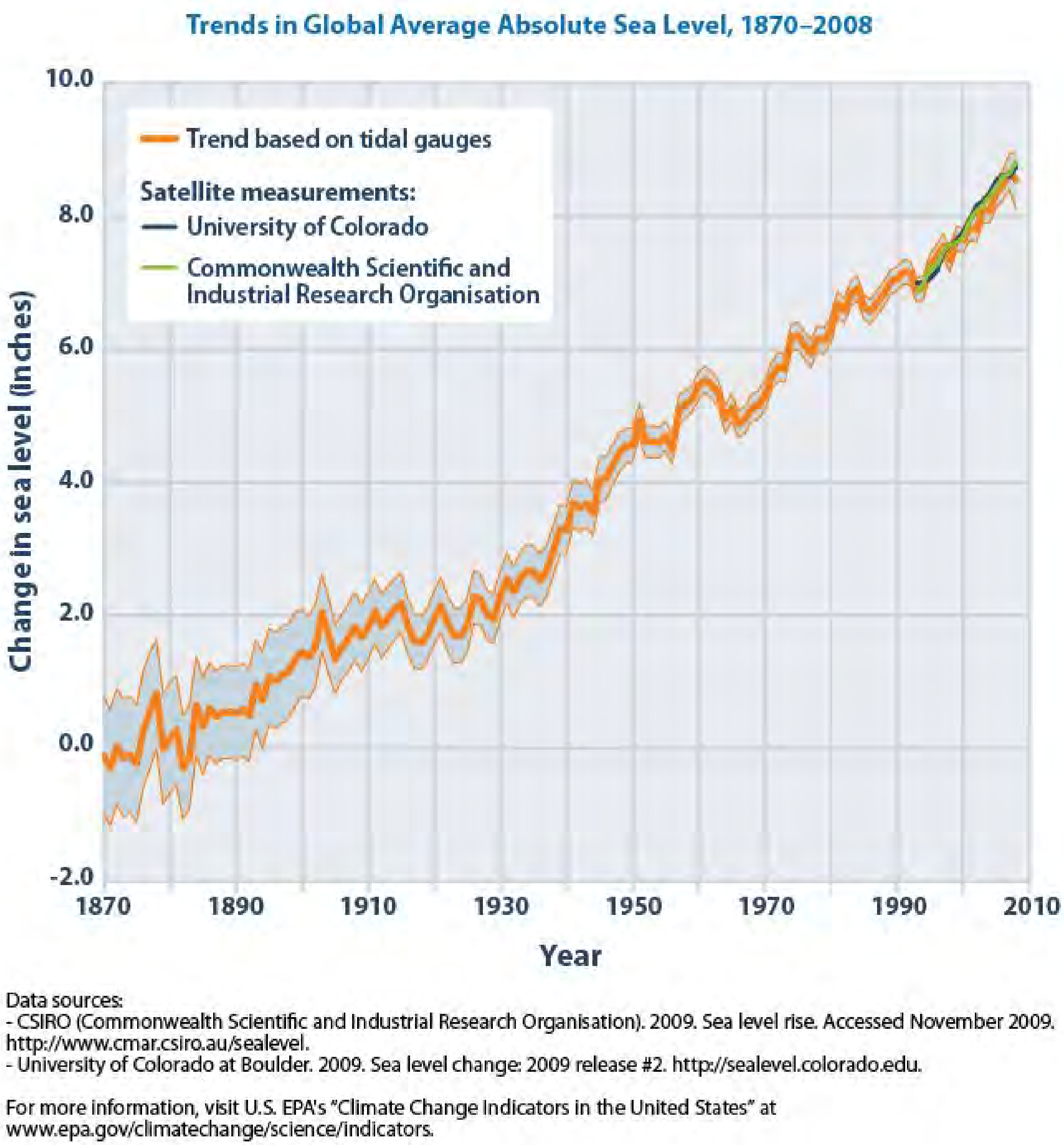


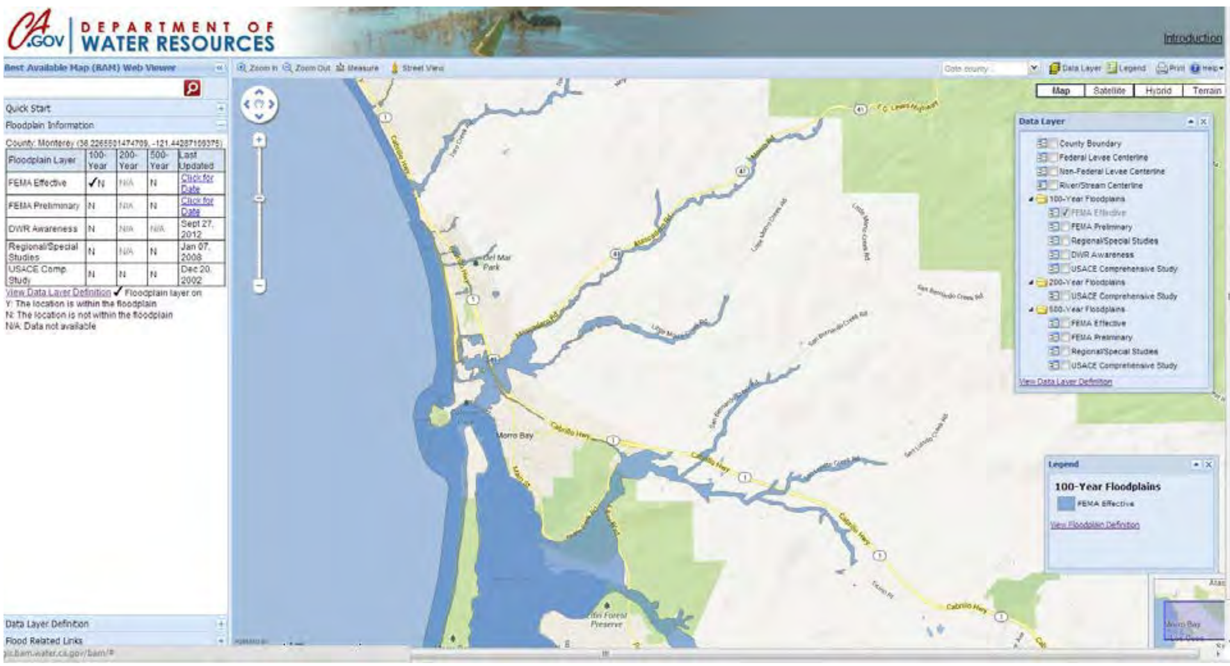
Figure P-21. Sea-level Rise Based on A1B Scenario Multi-model Ensemble

P.9 Flooding due to Climate Change and Extreme Precipitation Events

Though global climate models present uncertainty in the nature of projected changes in flooding and the increased intensity of precipitation events indicate a relatively low threat in the SLO IRWM Region. The changes in rainfall and runoff presented in **Section P.7** can be said to change floodplains set forth by the Federal Emergency Management Agency (FEMA).

Regardless of climate change, with continued flood management and monitoring activities, FEMA floodplain maps will require updating and structural remedies constructed to ensure the continued safety of life and property. Regulated rivers also require constant monitoring and modification in operations and structural/hydraulic design to mitigate for changed and unforeseen conditions in the weather patterns. **Figure P-22** is used solely as a source for where to find the FEMA floodplain maps as they may change over time because of climate change monitoring.

Note: This analysis does not take into consideration the effects of the "Pineapple Express" storms as the current global simulation models do not incorporate the physics of this event.



Source: <http://gis.bam.water.ca.gov/bam/>

Figure P-22. Current FEMA 100-Year Floodplain in the Morro Bay Region

P.10 Vulnerability Assessment

The Vulnerability Assessment incorporates the effort of the GEOS Institute and Local Government Commission (*Projected Future Climatic and Ecological Conditions in San Luis Obispo County, April 2010*, and *Integrated Climate Change Adaptation Planning in San Luis Obispo County, November 2010*) to evaluate climate change vulnerabilities in the IRWM Region as they relate to the region's water resources. For a complete and thorough listing of possible impacts and climate change vulnerabilities, the reader is encouraged to read the 2010 GEOS report at:

<http://www.geosinstitute.org/images/stories/pdfs/Publications/ClimateWise/sloclimatewisefinal.pdf>.

The purpose of the assessment provided below is to develop a working list of prioritized vulnerabilities to compare against IRWM projects in their selection and ranking in the IRWM Plan. Only those vulnerabilities believed to have the potential for further impact from IRWM Plan implementation are included in this list. The major categories of water resources-related vulnerabilities and their connection with water include:

Recreation/Tourism

- Fishing – streams and recreational lakes
- Birdwatching – wildlife areas including estuaries and wetlands
- Kayaking – natural streams and lakes
- Wine Country Touring – vineyard irrigation
- Camping – recreational lakes

Natural Water Dependent Activities

- Water Supplies – sufficient groundwater and surface water replenishment and storage
- Protected Fisheries – sufficient minimum in-stream surface water flows
- Food Production – sufficient water and moisture to maintain a healthy and sustainable food chain
- Groundwater Recharge – sufficient recharge water to recover each year
- Sediment Filtration – sufficient natural filtration through streambed and reservoir recharge
- Water Storage – sufficient surface water to fill natural and manmade reservoirs
- Hydroelectricity – sufficient surface water flows to run hydroelectric turbines
- Removal of Pollutants from Waterways – sufficient stream flows to reduce harmful concentrations

Agriculture/Timber

- Cattle Grazing – require irrigation sources
- Timber or firewood – require native woodlands
- Aquaculture – require water source for ponds
- Seasonal/Permanent Crops – require irrigation sources

As part of this analysis and with the knowledge of the three Sub-Regions (i.e., climate and socio-economic variables), each Sub-Region is examined individually using a list of questions intended to better understand the unique vulnerabilities of climate change. Each Sub-Region includes a set of categories and a scoring system[8] to assist in prioritizing projects intended to address the vulnerabilities based on the level of impact and the ability to mitigate for climate change in whole or in part. Prioritization of each Sub-Region is as follows:

> **Priority Rating 1** – significant vulnerabilities that have far-reaching impacts, are very likely to occur, have a willingness to pay[9] and can be addressed through well-defined near-term projects[10] where/when feasible.[11]

> **Priority Rating 2** – significant vulnerabilities with a high adaptive capacity and can be addressed through specific projects and planning studies and/or monitoring programs where/when feasible.

> **Priority Rating 3** – less than significant vulnerabilities for consideration in future long-term projects and planning studies and/or monitoring programs where/when feasible.

Shown in **Table P-6** are the rating categories and their ranking for each Sub-Region. The listing of vulnerabilities begins below the table.

Table P-6. Sub-Region Vulnerability Rating Categories and Ranking

Sub-Region	Rating Categories	Rating
North Coast Sub-Region	Inadequate Storage Capacity	1
	Saltwater Intrusion and Coastal Inundation	1
	Ecosystems and Habitat	2
	Water Quality	2
	Water Demand	3
	Flooding	3
North County Sub-Region	Water Supply	1
	Water Demand	1
	Water Quality	2
	Ecosystems and Habitat	2
	Flooding	3
South County Sub-Region	Decreased Water Supply	1
	Coastal Inundation	1
	Water Demand	2
	Water Quality	2
	Ecosystems and Habitat	2
	Flooding	2

[8] The scoring system used derived from *Section 4. Assessing Regional Vulnerability to Climate Change, of Climate Change Handbook for Regional Water Planning* <http://www.water.ca.gov/climatechange/CCHandbook.cfm> (DWR, 2011).
[9] Willingness to pay implies local funding is available to address vulnerability.
[10] Near-term projects are typically smaller projects with a shorter time frame to reach implementation.
[11] Addressing high priority vulnerabilities also alleviates vulnerabilities with lower priority (e.g., maintaining groundwater elevations would also prevent saltwater intrusion and reduce the risk to water quality).

P.10.1 North Coast Vulnerabilities

Inadequate Storage Capacity: Priority Rating 1

1. The indicated shift in precipitation from the dry seasons (summer and spring) to wetter seasons (fall and winter) implies a shift in traditional water storage operations.
2. North Coast Sub-Region aquifers may have reduced recharge from the change in the timing of excess precipitation.
3. The North Coast Sub-Region is dependent on coastal aquifers and limited diversion of surface water for their water supplies. Due to low storage capacity of the aquifers, the increased precipitation in the wetter months would become runoff and travel downstream to the ocean.
4. The smaller coastal groundwater aquifers of the North Coast Sub-Region are not resilient to droughts, and typical conjunctive-use solutions are limited because the aquifers' holding capacity limits the water that can be stored in years of available surplus in surface water supplies.
5. With reduced precipitation in spring, surface waters fed by natural springs (or high groundwater) are likely to become unreliable in the dry seasons. Perennial surface water sources are more likely to dry-up during the summer months, depleting the only source of drinking water supply, such as Pico Creek for the community of San Simeon.
6. The Whale Rock Reservoir that supplies water to some parts of the North Coast Sub-Region has similar challenges in storage of water due to the shift in the precipitation cycle.

Saltwater intrusion and Coastal Inundation: Priority Rating 1

1. The Ghyben-Herzberg principle that governs saltwater-freshwater relationships in coastal aquifers states that, "for each unit that freshwater level drops below sea level, the saltwater-freshwater interface will rise by 40 units in salt concentration." The region's coastal aquifers such as the Pico Creek Valley are the only source of water for smaller communities like San Simeon (also a disadvantage community [DAC]). Any rise in sea level would lead to salt water intrusion, increasing the likelihood of impairing their water supplies thus reducing the water available for urban uses.
2. As this is the coastal region, saltwater intrusion into sensitive estuaries and creeks is also a threat to wildlife and recreation requiring more water to flow downstream to

support ecosystem services, thus creating a conflict among users of limited water supplies (urban, agriculture, and rural users).

3. Critical coastal infrastructure such as Highway 1 and the 28 miles of coastal roads, and communities such as Morro Bay, Cambria, and San Simeon, are vulnerable to flooding due to rise in sea levels especially during coastal storm events.

Ecosystems and Habitat: Priority Rating 2

1. Loss of species at higher elevations such as loss of coastal oak woodlands and coniferous forests is expected as temperature and precipitation patterns change.
2. With changes in climate and reduced natural foraging areas, most sensitive wildlife species are expected to migrate to higher elevations or northward to find habitats conducive to their growth cycle.
3. Sensitive wetlands, the Morro Bay National Estuary, and ecosystems are at great risk in parts of the North Coast Sub-Region where they are already impacted due to urban development. Changes in rainfall and temperature interfere with conditions required for ecosystems and thriving habitats along the confluences of the ocean and the estuaries.
4. Higher water temperatures affect cold water aquatic habitats and related species dependent upon that environment.
5. Increased beach erosion (sand movement) occurs from rising sea levels in the region.

Water Quality: Priority Rating 2

1. The forested region of the North Coast Sub-Region is prone to wildfires in the drier seasons. Wildfires are projected to increase in the region due to drier conditions and warmer temperatures. Post-wildfire impacts compromise water quality by the development of mudslides and burnt residue transported through runoff and wind. Both produce undesirable chemical concentrations in rivers, streams, and lakes; affecting water quality of downstream drinking water supplies, fisheries, and recreation.
2. Water quality for both urban and agricultural uses in the North Coast Sub-Region changes with the intrusion of salt water from the ocean into coastal aquifers and natural streams.
3. Lower base flows in streams and rivers lead to higher concentrations of minerals and lower water quality.
4. Lower groundwater elevations in small coastal aquifers increase the concentration of nitrates, sulfates and total dissolved solids in the water.

5. Increased outside temperatures lead to increases in temperature of surface water supplies that is often associated with poor water quality. (There is not enough literature on the effects of increased temperatures on groundwater as a result of higher surface water recharge temperatures; however, changes in solubility of geochemicals do affect water quality.)
6. Increased runoff in winter increases the sediment load in surface water supplies affecting water quality.

Water Demand: Priority Rating 3

1. Increased temperatures are responsible for changes in water consumption for agriculture and outdoor urban landscape areas due to changed growing cycles and increased evapotranspiration.
2. Plant growth is conducive to warmer temperatures, and, as the climate in the region gets warmer, a potential growth in agricultural production occurs especially for winter crops.
3. Population growth in the region has been constrained by the already limited supply of drinking water.
4. Despite the growth moratoriums in the region, the water demands of the already existing communities expect to increase along with increased evapotranspiration demands from the domestic use of outdoor water used for watering lawns and landscaping.
5. Environmental water demands, similar to agriculture, increase during dry seasons with insufficient instream flows needed to support aquatic habitats and migratory flow requirements.
6. Reduced spring precipitation and runoff affects (or shift) the monthly water demand pattern; however, the majority of this shift results in the reduction of supply and not an increase in demand.
7. Projected increases in wildfires due to drier conditions result in the increased need for water required for fighting wildfires, and an increased potential of placing urban and rural communities at risk for the protection of life and property.

Flooding: Priority Rating 3

1. The coastline of the North Coast Sub-Region is located inside the FEMA 100-year effective floodplain. With the shift in precipitation and increase in runoff in the winter season, the region becomes more vulnerable to floods both in frequency and intensity.

2. Sea-level rise causes inundation of certain areas of coastal communities, which can increase the extent and severity of storm-related flooding events inland where there was historically no flooding (or less severe).

P.10.2 North County Vulnerabilities

Water Supply: Priority Rating 1

1. The North County Sub-Region relies almost entirely on groundwater. The Paso Robles Basin, Atascadero Sub-Basin, Pozo Valley Basin, and Carrizo Basin are the larger groundwater basins in the region. Maintaining or stabilizing groundwater levels is a critical water issue in the region. Climate change exacerbates these issues assuming increased urban and agricultural water demand on the groundwater supplies.
2. The overall decrease in precipitation projected in the North County Sub-Region reduces the total amount of water available for groundwater recharge, exacerbating the decline in groundwater levels.
3. A shift projected in the precipitation cycle with the bulk of precipitation occurring in winter and reduced amounts projected in the spring and summer produces drier spring and summer months when needed water for peak agricultural irrigation and increased urban and rural demands will not be available.
4. The shift in the precipitation cycle directly affects the volume of runoff with the winter seeing higher volumes and spring seeing lower volumes.
5. Snow melt reductions change the reliability of imported state water deliveries.

Water Demand: Priority Rating 1

1. Agriculture is a major industry in the Sub-Region and accounts for a majority of the water consumption. With the likely increase in temperatures, growth cycles in crops increase causing a shift in the cropping patterns and subsequently increase water demands in the region.
2. Drier springs and summers with average temperatures up to 71˚F, and warmer night time temperatures are conducive for the quality and quantity of grape vines. The wine production in the region has increased in recent years and is likely to continue to increase with climate change becoming more conducive to growing vineyards. Since temperatures are known to affect the quality of crops, the crop selection (i.e., variety of grapes or change from vineyards to feed crops) is uncertain but shift towards new crops could increase water demands.

3. Warmer temperatures and other climate variables increase evapotranspiration leading to increased water demands for agriculture and increased outdoor water demands for domestic use in urban and rural areas.
4. Projected increases in wildfires due to drier conditions result in the increased need for water required for fighting wildfires. Increased wildfire potential placing urban and rural communities at risk result in the need for increased above ground water storage to control the fires and to protect life and property.

Water Quality: Priority Rating 2

1. An overall reduction in precipitation and potential decline in groundwater elevations lead to increased dissolved solids, salts, concentration of minerals, and potentially geothermal influences in the water. These problems are exacerbated in the drier months due to the shift in precipitation towards winter.
2. The potential increase in agriculture in the region leads to increased use of pesticides and fertilizers. The chemicals and nutrients from these applications are likely to leach into the groundwater along with the return flow and deteriorate drinking water supplies.
3. Projected increased wildfires in the region due to drier conditions and warmer temperatures create environmental and drinking water impacts. Post-wildfire impacts compromise water quality by the development of mudslides and burnt residue transported through runoff and wind. Both produce undesirable chemical concentrations in rivers, streams and lakes, affecting water quality of downstream drinking water supplies.
4. Increased runoff in winter increases the sediment load in surface water supplies affecting water quality.
5. Increases in water temperatures in winter months interfere with mixing cycles of water in large water bodies, such as Salinas and Nacimiento reservoirs, in turn affecting water quality and recreation.
6. Lower base flows in streams and rivers lead to higher concentrations of minerals and lower water quality.

Ecosystems and Habitats: Priority Rating 2

1. Expected loss of plant species at higher elevations such as loss of coastal oak woodlands and coniferous forests occurs as temperature and precipitation patterns change.

2. Projected increases in wildfires adversely affect ecosystems by the destruction of flora and fauna.
3. Changing climate leads to flora and fauna migrating elsewhere or to higher altitudes to reach habitats conducive to their growth cycle. Extended periods of dry riverbeds associated with the Salinas, Nacimiento, and other river systems could reduce populations of species dependent upon live flow during certain migratory periods, such as Steelhead Salmon. It could also reduce water available to sustain riparian habitats.
4. Many aquatic and terrestrial species are known to be susceptible to poor water quality and higher water temperatures, and will be negatively affected by the impacts of climate change. This includes species and habitats associated with the Carrizo Plains and Soda Lake, Salinas Reservoir and river system, and other sensitive ecosystems.

Flooding: Priority Rating 3

1. The areas surrounding the Salinas and Nacimiento rivers and related streams, as well as the Carrizo Plains all lie in the FEMA 100-year effective floodplain. Increased precipitation and runoff in the winter season makes these regions vulnerable to increased intensity and frequency of flooding events.

P.10.3 South County

Decreased Water Supply: Priority Rating 1

1. Projections of precipitation indicate decreases in the average annual precipitation and a shift in the precipitation patterns with more precipitation occurring in winter and reduced precipitation in spring and summer. These conditions pose water supply challenges similar to that in the North Coast Sub-Region.
2. The shift in precipitation patterns towards the winter months coupled with an overall projected annual reduction in precipitation requires that water be stored in the wet months for later use in the drier spring and summer months.
3. Part of the South County Sub-Region overlies the adjudicated Santa Maria Basin thus limiting the amount of water supplied from the basin, in turn, increasing the dependence of the Sub-Region on surface waters.
4. Water sources in the region include groundwater, the California State Water Project, Lopez Reservoir, Whale Rock Reservoir, Nacimiento Water Project, and the Salinas Reservoir. In addition to groundwater constraint, sources of surface water are expected to become less reliable, especially the California State Water Project, which is reliant on snow melt in the Sacramento Valley.

5. The overall reduction in precipitation in the region results in less reliable surface water supplies in the drier months.
6. As a result of intense upper watershed rain storms and/or post wildfire events, reservoir capacities are expected to be impacted by mud flows and sediment depositions; both causing reductions in storage.

Coastal Inundation: Priority Rating 1

1. The South County Sub-Region includes recreational beaches and tourist destinations like Pismo and Avila beaches, Pismo State Park, Oceano State Vehicular Recreational Area, and Port San Luis, which are critical to sustaining the local economy. Also included are sensitive coastal ecosystems and habitats. These locations are all vulnerable to coastal inundation through increased flooding, storm surges, and sea-level rise.
2. The Diablo Nuclear Power Plant is also located along the coast of the South County Sub-Region and is vulnerable to the effects of coastal inundation on infrastructure and processes (as a result of sea-level rise and storm surges).
3. Highway 1 runs along the coast of the South County Sub-Region and is vulnerable to flooding due to sea-level rise especially during coastal storms. Closures impact businesses, the safety of low-lying residential areas and recreational areas.

Water Demand: Priority Rating 2

1. The South County Sub-Region's agricultural community, such as in the Arroyo Grande, Edna Valley, Osos Flaco, and Nipomo area, can expect increases in temperature affecting the number of Growing Degree Days. This affects the crop types, cropping patterns, and crop irrigation requirements. During the summer, creek and stream flows cease to run when increased groundwater extractions occur.
2. Increases in evapotranspiration result in an increased use of water for urban and agricultural irrigation.
3. Small oil fields are located in the South County Region and require water for cooling in their processes. Increased surface water temperatures result in larger requirements for water to achieve the same level of cooling.
4. Projected increases in wildfires due to drier conditions result in the increased need for water required for fighting wildfires. Increased wildfire potential placing urban and rural communities at risk result in the need for increased above-ground water storage to control the fires and to protect life and property.

5. Reduced summer runoff makes it difficult to meet in-stream flow requirements for sustaining ecosystems and habitats.

Water Quality: Priority Rating 2

1. Increases in water temperatures in winter months interfere with mixing cycles of water in large water bodies, such as Lopez Reservoir, in turn affecting water quality.
2. Projected increased wildfires in the region due to drier conditions and warmer temperatures impact environmental and drinking water. Post-wildfire impacts compromise water quality by the development of mudslides and burnt residue transported through runoff and wind. Both produce undesirable chemical concentrations in rivers, streams, and lakes; affecting water quality of downstream drinking water supplies.
3. Saltwater intrusion in coastal aquifers is a threat to drinking water quality.
4. Lower groundwater elevations in the inland areas of the Santa Maria Groundwater Basin may suffer from increased concentration of nitrates, sulfates, and total dissolved solids in the water.
5. Increases in water temperature reduce dissolved oxygen in water bodies and streams, leads to poor water quality.
6. Increased runoff in winter increases the sediment load in surface waters affecting water quality.
7. Lower base flows in streams and rivers lead to higher concentrations of minerals and lower water quality.

Ecosystems and Habitats: Priority Rating 2

1. Ecosystems already impacted due to urban development face increased impacts with rising sea levels and reduced stream flows.
2. Beach erosion (sand movement) occurs from rising sea levels and tidal effects in the region.
3. Many aquatic and terrestrial species are susceptible to poor water quality and higher water temperatures, and negatively affected by the impacts of climate change.
4. Loss of species such as coastal oak woodlands, riparian habitats, and coniferous forests occurs as temperature and precipitation patterns change.

Flooding: Priority Rating 2

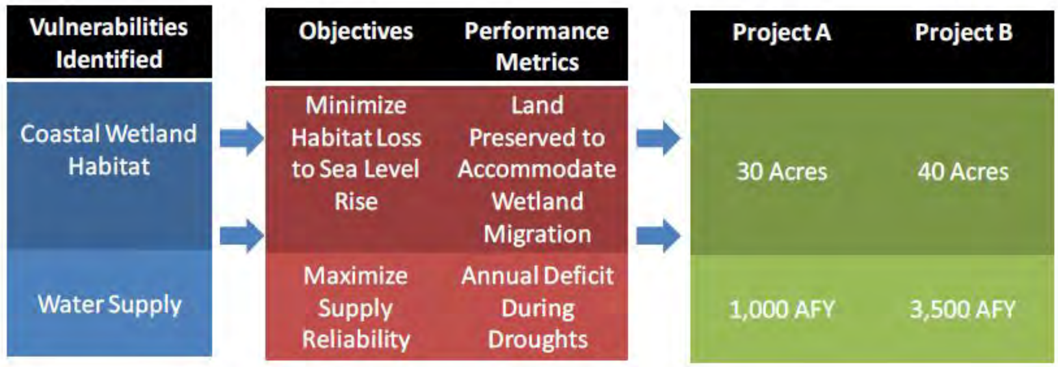
1. The coastline along the South County Sub-Region and some inland areas such as Pismo Beach are situated in the FEMA 100-year floodplain areas.
2. Low lying coastal communities, such as Oceano, Grover Beach, and Pismo, have a significant amount of urban development in historical wetlands and marshes. The shift in the precipitation cycle to winter and increased runoff from higher intensity storms will likely make these communities more susceptible to flooding.
3. Sea-level rise causes inundation of certain areas of coastal communities, which can increase the extent and severity of storm-related flooding events.

P.11 Adaptation Strategies

Climate change incorporated into the SLO Region IRWM Plan's Objectives and Performance metrics provide the necessary assurances to address adaption strategies and methods of mitigating climate change. Project development and evaluation includes both climate change mitigation and GHG emissions reduction (from a baseline) and GHG sequestration opportunities. Because of this, a single performance metric for climate change adaptation does not work. Instead, the total extent to which a concept, project, or program, and the IRWM Plan as a whole, helps the region adapt to climate change is considered a better method of describing adaptation. Consideration of the risks that would occur if the region did not address climate change would also aid in describing adaptation.

When evaluating projects, the combined numerical or qualitative values for ranking the project should reflect climate change as one of the benefits of that project. If climate change is added to the project, such as digression from predicted effects of climate change (increased flooding and increase water demand), the climate change adaptation benefits of the project will be quantified and included in the project numerical ranking.

An example per the *Climate Change Handbook for Regional Water Planning* (State Handbook) (DWR,2011) is shown in **Figure P-23**, where both projects contribute to climate change adaptation. Project B preserves more habitat area than Project A, but Project A is better than Project B in maximizing drought reliability. The planner may choose to create a composite index of climate change adaptation performance using the performance metrics values for each project, as well as information on the weight or priority of the planning objectives. This type of composite evaluation and weighting helps planners evaluate and incorporate tradeoffs involved with various project alternatives.



Source: Climate Change Handbook for Regional Water Planning

Figure P-23. Example of Project Contributions to Climate Change Adaptation

The State Handbook goes on to provide:

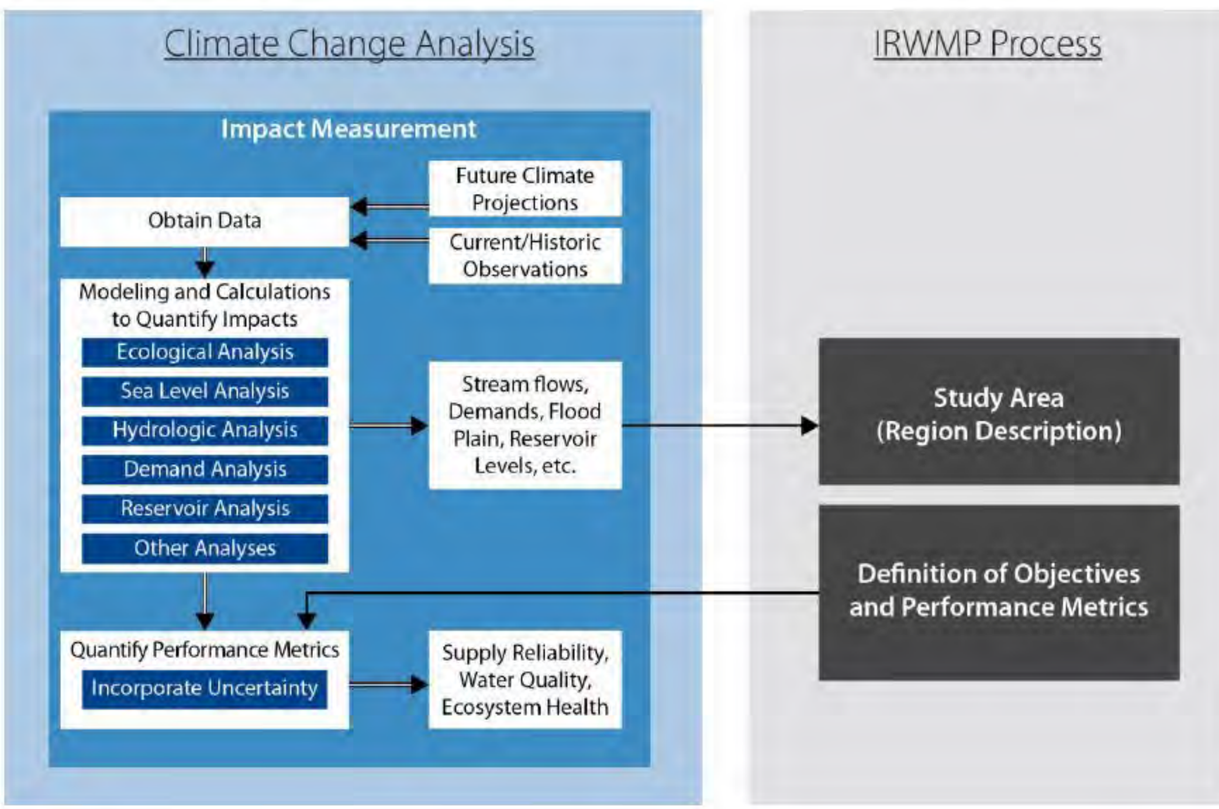
> *Performance metric evaluation in an IRWMP occurs at three stages: the baseline level, the project level (individual or integrated), and at the IRWMP level for a portfolio of projects… Climate change considerations are incorporated into this evaluation process in three ways:*
>
> 1. *Any performance metric that may be influenced by climate change impacts needs to be quantified in a manner that accounts for this possible influence…An example would be the annual yield of a storage project, which is an important metric to characterize such a project, but can be impacted by climate change….*
>
> 2. *Some performance metrics may explicitly address climate change adaptation. These performance metrics must be quantified and added to the mix of performance metrics that contribute to overall project portfolio ranking and weighting…*
>
> 3. *At least one performance metric should explicitly address climate change mitigation. These performance metrics must be quantified and added to the mix of performance metrics that contribute to overall project portfolio ranking and weighting.*

P.12 FUTURE DATA GATHERING AND ANALYSIS

Chapter 5 of the State Handbook, *Measuring Regional Impacts (DWR, 2011)*, provides the definitive methodology in data gathering and analysis to measure climate change and assess its impacts through the IRWM Planning process. **Figure P-24** (excerpted from Chapter 5) below illustrates the connectivity between the need to quantify climate change variables for purposes of satisfying the requirements of the IRWM Planning process and in defining the Objectives and Performance Metrics. This section is a very brief summary and highlights only the beginning of a long data collection and modeling process of making future projections and then monitoring the essential climate change variables to validate or invalidate the projections; then continue to make projections and continue to monitor in perpetuity. Modeling and monitoring work hand-in-hand to continuously define better models that define the Objectives and Performance Metrics of the IRWM Plan.

By carefully selecting the available models, and interpreting the results, this section provides the baseline of monitoring climate variables most meaningful to describing the region's most important water-related concerns as follows:

1. Water Demand
2. Water Supply
3. Water Quality
4. Ecosystem and Habitat Vulnerability
5. Sea-level Rise
6. Flooding



Source: Figure 5-1 of State Climate Change Handbook

Figure P-24. Process for Measuring Impacts of Climate Change as Part of IRWM Plan

P.12.1 Water Demands

Obtaining data for water demands (or demand analysis) is shown in **Figure P-24** as informing models and performing calculations to quantify impacts. This information is then shown to be used in the IRWM planning process for purposes of the Region Description[12] and, like all water-related concerns, for defining the Objectives and Performance Metrics.

Water demands and climate variables are collected as part of the Data Management Program described in **Section K – Data Management**. The monitoring results provide the correlation between water demands and increased temperatures, changed precipitation patterns, increased evaporation and plant transpiration (also referred to as ET), and decreased runoff, as described in **Section P.7**. Of all the water demand sectors, urban demands are most accurate due to current state-mandated monitoring requirements, and they offer the best opportunity to begin monitoring changes in climate as a function of changes in water demand. The State Handbook states:

> *The general approach of regression analysis involves developing a regression relationship between water demand versus temperature and precipitation. Planners can then use this relationship to evaluate future conditions.*

Agricultural demands are a function of precipitation, temperature, and ET climate variables, but vary significantly based on crop types and crop-specific ET requirements. To simplify and provide a meaningful correlation, a preferred approach is to identify changes in ET to both temperature and precipitation. This information, in turn, allows for the calculation of agricultural water demands based on the ET, irrigated area, crop type, precipitation, and temperature. The same relationship between the climate change variables and agricultural water demands can be used to model future conditions.

P.12.2 Water Supplies

Measurement of water supplies and quantifying supply reliability focuses on: 1.) water supply sources within the region, 2.) water imported into the region, and 3.) supplies for environmental needs. Many of the tools and data collection systems already in place throughout the region monitor these three supply elements and report based on need and available resources. Correlating changes in the amount of water supply with the climate variables of rainfall, temperature, and runoff provides the relationships to make model adjustments in rainfall runoff, imported water reliability, and in-stream flow requirements for

[12] Due to the number of public water agencies and water planning areas, **Section D – Water Supply, Demand, and Water Budget**, is separated from **Section C – Region Description**.

environmental demands. Many local and state models use the climate variables in their projection of available water supplies and especially for California State Water Project contractors who rely on these supplies, including San Luis Obispo County.

P.12.3 Water Quality

Surface water quality affects both drinking water supplies and ecological/environmental needs. The IRWM Region's near-coastal drinking water intakes and estuarine habitats are both susceptible to salt water intrusion. Fish in local rivers and streams are susceptible to higher temperatures. Rivers, reservoirs, lakes, and coastal areas are all susceptible to low dissolved oxygen that accompany higher temperatures.

As quoted in the State Handbook, Water quality models are by their very nature "*labor intensive and require a high level of technical expertise*" (DWR, 2011). The expectation to monitor climate variables associated with water quality is high with water quality monitoring programs planned to increase in breadth over time. Monitoring programs outside of the IRWM Planning process will provide necessary data for modeling; however; the application of the water quality data and performing correlations with climate change variables and validating water quality models are not proposed within the IRWM Planning process.

P.12.4 Ecosystem and Habitat Vulnerability

The approaches to measuring potential impacts of climate change on the environment, including flora and fauna, are varied. While more vulnerability metrics and methods for assessing them can be found in the literature, the IRWM Plan's implementation of data management and monitoring programs can only consider stream water temperature, water quantity, estuarine salinity, and coastal habitat loss from sea-level rise.

Data collection activities surrounding the protection of water supplies from salinity intrusion also protects the estuary and coastal wetland areas dependent on freshwater. Changes in the water quality could have a significant impact on aquatic life, but require the same models described above in Water Quality. Streamflow estimations can be easily calculated and modeled to assess potential ecosystem impacts as a result of reduced rainfall and runoff. While modeling tools are available to estimate future marsh and wetland migration or loss, this modeling effort is also allocated outside the planned work effort of the IRWM Plan process. Simple comparisons can take place, such as between the areas of coastal habitat and the projected sea-level rise impacts.

P.12.5 Sea-level Rise

Data collection of SLR takes place through local monitoring of the Central Coast Region. In addition, publication of global SLR data informs the region of continued threat to similar coastal regions. The State Handbook explains:

> *One method for quantifying SLR climate change impacts is to superimpose projected SLR onto elevations for existing coastal floodplains….With new floodplains mapped, it is possible to compare existing infrastructure and resource locations with these flood plains.*

Tracking and reporting SLR data is considered to be a long-term monitoring effort with frequent reporting and comparisons with climate change model forecasting. Models calibrated to the measured SLR stand to benefit from this data collection effort. Though necessary models and data will be utilized, the process of collecting the information will not be included as part of the San Luis Obispo IRWM Plan implementation.

P.12.6 Increased Flooding

The fact that global climate change models work on the low resolution of a monthly time step, they do not capture the higher resolution storm events occurring over days within the months. Extreme storm events (e.g., the "Pineapple Express" as described in **Section P.9**) can occur over a period of hours or days. Monitoring of severe storm events currently occurs as part of the flood protection responsibilities of the region. However, there are few examples of alternative tools and methods to correlate storm events to changes in the climate variables, and most are either not available or need to be specifically tailored to incorporating climate change considerations into flood planning in the region. Therefore, the direct monitoring of flood events itself for purposes of monitoring climate change will not be incorporated within the IRWM planning process. Nonetheless, the region recognizes that the assessment of climate change impacts on future flooding is an important aspect of regional water planning.

P.13 PROJECT RATINGS BASED ON CLIMATE CHANGE

The top 15 projects listed in Table G-3 of **Section G – Project Solicitation, Selection and Prioritization** were individually evaluated and rated based on two criteria -

1. Potential of adaptation to the projected effects of climate change in the region
2. Potential of reducing greenhouse gas emissions due to water related activities

P.13.1 Adaptation Analysis

The potential for adaptation of each project has been analyzed based on its ability to address the regions' projected vulnerabilities. In the above sections, projected changes in the climate variables have been associated to vulnerabilities related to water resources in each respective Sub-Region. The vulnerabilities identified are – Decreased Water Supply, Saltwater intrusion and Coastal Inundation, Ecosystem and Habitats, Water Quality, Increased Water Demands, and Flooding. **Table P-6** indicates the prioritized vulnerabilities for each region.

What follows is a scoring of the primary list of projects based on the vulnerabilities alleviated from, or benefited by, each project's implementation. Vulnerabilities alleviated by the project contribute points (see **Table P-7**) towards a cumulative score for the project. The projects are then categorized into 'High Adaptation Potential', 'Medium Adaptation Potential' and 'Low Adaptation Potential' categories.

Table P-7. Point Chart for Each Vulnerability Alleviated by Projects for All Sub-Regions

Potential Vulnerabilities Alleviated by Projects	North Coast	North County	South County
Supply Benefits	3	3	3
Prevention of Saltwater Intrusion and Coastal Inundation	3	n/a	3
Enhancement or Conservation of Groundwater	2	2	2
Improving Water Quality	2	2	2
Demand Reduction	1	3	2
Benefits to the Ecosystem & Habitat	2	2	2
Flood management	1	1	1

Note: Point values represent number of projects in the Sub-Region alleviating a given vulnerability.

P.13.2 Mitigation Analysis

The mitigation potential of projects has been analyzed by examining the energy intensive activities involved and averted by each of the projects. Electricity is required to pump, treat, distribute and recycle water and wastewater. During the process of generating this electricity, burning of fossil fuels leads to emissions of greenhouse gases. These emissions can indirectly be associated with the energy expended for the water-related activities of each project; however, water savings or excess water needs from the proposed projects cannot be quantified at the current planning level. The emissions factor for energy generation also varies between the projects. Hence, the projects have been qualitatively compared for their potential of GHG emissions reduction. **Table P-8** presents a baseline of emissions typically associated with water related activities. A California wide emissions factor of 0.492859 lbs/kWh (Emission factor obtained from the San Luis Obispo County Climate Action Plan Appendix A) has been used to estimate the emissions associated with each water intensive activity. To rank the projects for their emissions reduction potential, the change in emissions due to water related activities, relative to the baseline emissions, of every project has been categorized into "Positive", "Neutral" or "Negative".

Table P-8. Baseline Emissions from Water Related Activities per AF

Activity	Energy intensity (in kWh/AF)	Associated Emissions (in lbs of CO_2e/AF)	Regional Extent
Groundwater Pumping	450	221	Central Coast (Average between 1999- 2005)
Recycling	1,129	556	Statewide
Water Distribution	1,000	493	Statewide
Water Treatment	312	154	Statewide
Desalination Brackish	1,689	8,324	Central Coast
Desalination Sea Water	4,000	19,714	Central Coast
Wastewater treatment	2,012	992	Statewide

Source: Embedded Energy in Water Studies- Study 1

P.13.3 Ranking Projects on Climate Change

The adaptation and mitigation potential of each of the projects is used to Rank the projects from the values 1 through 5. Projects with the highest adaptation potential and a positive mitigation potential have been ranked 1 and projects with a low adaptation potential and negative mitigation potential have been ranked 5. **Table P-9** shows the summary of the analysis with ranking values ranging from 1 to 5 (see last column) based on the various relative levels of adaptation (i.e., HIGH, MEDIUM, and LOW) and mitigation (i.e., Positive, Neutral, and Negative) potential.

Table P-9. Project Notes and Rankings

Projects	Name	Region	Notes	Relative Adaptation Potential	Relative Mitigation Potential	Climate Change Rank
MLTP_ECO1	Livestock & Land Program	Multiple Regions	Project focuses on educating private property , horse property homes to implement best management practicing and contain animal waste from entering natural streams.	LOW	Negative	5
MLTP_WMT2	LID Pilot Program	Multiple Regions	Project includes rebate programs to support low impact development with up to 60% cost recovery of installations with free assessments for homeowners.	MEDIUM	Negative	3
NCNT_ECO1	North County Fertilizer Regions_Precision Agriculture	North County	Project proposes to evaluate best fertilizer application and management strategies on different soil types by selecting test sites in the region and then developing fertilizer practice maps and information for public use.	MEDIUM	Positive	2

Table P-9. Project Notes and Rankings, Continued

Projects	Name	Region	Notes	Relative Adaptation Potential	Relative Mitigation Potential	Climate Change Rank
NCNT_ECO2	Attiyeh Ranch Conservation Easement	North County	Project is a Conservation Easement of Attiyeh Ranch to facilitate conservation of local flora and fauna and reduce urban development and associated increases in water demands, and impacts on water quality.	HIGH	Positive	1
NCNT_GWM1	Atascadero Groundwater Basin Augmentation Expansion Project	North County	Project directs wastewater to one location through conveyance and treatment providing enhanced recharge from recycled water to improve the sustainable use of groundwater in the basin .	HIGH	Negative	2
NCNT_WMT1	Community Based Social Marketing	North County	Project is a public outreach and marketing campaign to educate local farmers and groundwater users about the sustainable use and protection of quality in groundwater supplies.	LOW	Negative	5
NCNT_WMT2	North County Precision Irrigation Research Program _ Precision Agriculture	North County	Project provides for an Educational and Experimental Program for improving agricultural water efficiencies.	MEDIUM	Negative	3
NCNT_WSP1	City of Paso Robles Lake Nacimiento Water Treatment Plant Construction	North County	Project includes the construction of a water treatment plant on the Nacimiento Pipeline increasing usable surface water supplies and reducing groundwater dependency.	LOW	Positive	4
NCNT_WSP2	San Miguel Critical Water System Improvement	North County	Project includes six critical infrastructure upgrades to an aging water supply and delivery system. Not all of the proposed projects are related to climate change adaptation or mitigation.	MEDIUM	Neutral	2
NCST_GWM1	8th Street Upper Aquifer Well Nitrate Removal Faciliy	North Coast	Project aims at setting up a well and nitrate treatment facility in the upper aquifer reducing the stress on the lower aquifer in the Los Osos area. Benefits include reduction in Salt water intrusion in to drinking water aquifers.	MEDIUM	Negative	3
NCST_FLD1	Los Padres CCC Center- Stormwater LID Treatment Project	North Coast	Project is an experimental low impact development project that engages community members in environmental and water conservation programs.	MEDIUM	Positive	2
SCNT_FLD2	Oceanic Drainage Improvement Project - Hwy 1 & 13th	South County	Project aims at improving infrastructure to drain highways, in turn improving the groundwater recharge. These drains are currently undersized for small storms.	LOW	Positive	4
SCNT_WMT1	Water Treatment Plant Expansion	South County	Project proposes to improve water quality by the addition of water filtration membrane units to the already existing water treatment plant. The assumption is that this would improve reliability during peak demand periods and also utilize the unused water allocations and reduce stress on critical groundwater resources.	HIGH	Positive	1
SCNT_WSP2	Recycle Water Distribution System Expansion	South County	Project proposes building new infrastructure to deliver recycled water in turn reducing the stress on GW resources in the region	LOW	Positive	4
SCNT_WSP4	Pismo Beach Recycled Water Treatment Plant	South County	Project addresses the need for reliable water supply during periods of drought, reduces the City's dependence on imported SWP water, and reduces demands on the South County Sub-Region's potable water supplies.	LOW	Negative	5

Section Q.

Plan Implementation and Maintenance Activities

Section Q. Plan Implementation and Maintenance Activities

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Section Q. Plan Implementation and Maintenance Activities

This section concludes the IRWM Plan with a summary of some of the information included in previous sections, and identifies specific actions through which the IRWM Plan will be implemented. In doing so, this section:

1. Identifies the agencies responsible for the IRWM Plan's implementation
2. Summarizes sections of the IRWM Plan describing procedures for updating and amending the list of projects and programs
3. Identifies timelines for all active or planned projects
4. Identifies linkages between projects and programs

Q.1 Agencies Responsible for Plan Implementation

The RWMG worked successfully throughout the IRWM planning and development process, demonstrated committed stakeholder involvement by engagement with the important water sectors (water supply providers, demand sectors, DACs, environmental and environmental justice interests, State and federal agencies, etc.) in each of the three Sub-Regions, and created an effective decision making process (illustrated in **Figure B-3**) with regional accountability and coordination with DWR.

Through a series of Sub-Region workshops, electronic notifications, and RWMG meetings, the region, as a whole, developed a list of specific implementable projects and programs. Each project and program was prioritized within the context of this IRWM Plan, with all projects meeting the Goals and Objectives described fully in **Section E – IRWM Goals and Objectives**. The projects and programs that are incorporated in the IRWM Plan (see **Section G – Project Solicitation, Selection and Prioritization**) are described briefly in **Table Q-1** and shown in **Figure Q-1**.

Table Q-1. Final Project List

ID	Unique Project ID	Projects and Programs Titles	Project Type	Sponsor	Cost	Status
1	MLTP_ECO1	Livestock & Land Program	Ecosystem	Coastal San Luis Resource Conservation District (CSLRCD) and Upper Salinas Las Tablas Resource Conservation District (US-LTRCD)	$250K-$500K	Upon funding
2	MLTP_WMT2	LID Pilot Program	Water Management	Upper Salinas Las Tablas Resource Conservation District (US-LTRCD)	<$250K	Upon funding
3	NCNT_ECO1	North County Fertilizer Regions_ Precision Agriculture	Ecosystem	Upper Salinas Las Tablas Resource Conservation District (US-LTRCD)	<$250K	Upon funding
4	NCNT_ECO2	Attiyeh Ranch Conservation Easement	Ecosystem	Land Conservancy of San Luis Obispo County	>$5M	Upon funding
5	NCNT_GWM1	Upper Salinas River Basin Water Conservation/Conjunctive Use Project	Groundwater	Templeton CSD	>$5M	Upon funding
6	NCNT_WMT1	Community Based Social Marketing	Water Management	Upper Salinas Las Tablas Resource Conservation District (US-LTRCD)	<$250K	Upon funding
7	NCNT_WMT2	Improving On Farm Water Management Through Demonstration, Research & Outreach of Precision Agricultural Best Management Practices	Water Management	Vineyard Team and Upper Salinas Las Tablas Resource Conservation District (US-LTRCD)	$250K-$500K	Upon funding
8	NCNT_WSP1	City of Paso Robles Lake Nacimiento Water Treatment Plant Construction	Water Supply	City of Paso Robles	>$5M	Upon funding
9	NCNT_WSP2	San Miguel Critical Water System Improvements	Water Supply	San Miguel CSD	$500K-$1M	Upon funding
10	NCST_GWM1	8th Street Upper Aquifer Well and Nitrate Removal Facility	Groundwater	Los Osos Community Services District	$500K-$1M	Upon funding
11	NCST_FLD1	Los Padres CCC Center - Stormwater LID Treatment Project	Water Management	Morro Bay National Estuary Program	$500K-$1M	Upon funding
12	SCNT_FLD2	Oceano Drainage Improvement Project - Hwy 1 & 13th Street	Flood Management	County of San Luis Obispo, Department of Public Works	$1M-$5M	Upon funding
13	SCNT_WMT1	Lopez Water Treatment Plant Membrane Rack Addition	Water Management	San Luis Obispo County Flood Control and Water Conservation District	$500K-$1M	Upon funding
14	SCNT_WSP2	Recycle Water Distribution System Expansion	Water Supply	City of San Luis Obispo	$250K-$500K	Upon funding
15	SCNT_WSP3	Pismo Beach Recycled Water Project	Water Supply	City of Pismo Beach	>$5M	Upon funding

Q.2 UPDATING AND AMENDING THE LIST OF PROJECTS AND PROGRAMS

An adaptive management process creates a balance between a stable plan that guides action, and a flexible plan that allows for responding to changed circumstances. The approach to updating and amending the IRWM Plan is intended to ensure its effective implementation over time and to make the San Luis Obispo County IRWM Plan a living document.

Changes to regional and Sub-Region planning assumptions and priorities, to State and federal legislative and/or policy, or climate conditions could create a need to update the list of projects and programs. Areas of uncertainty that could drive a plan update include litigation, changes in on-farm water use practices, State and federal coastal plans, and major changes in land use that would have an effect on the Region's water use. The process for making changes to the IRWM Plan is intended to provide the flexibility to respond to changing conditions in the region.

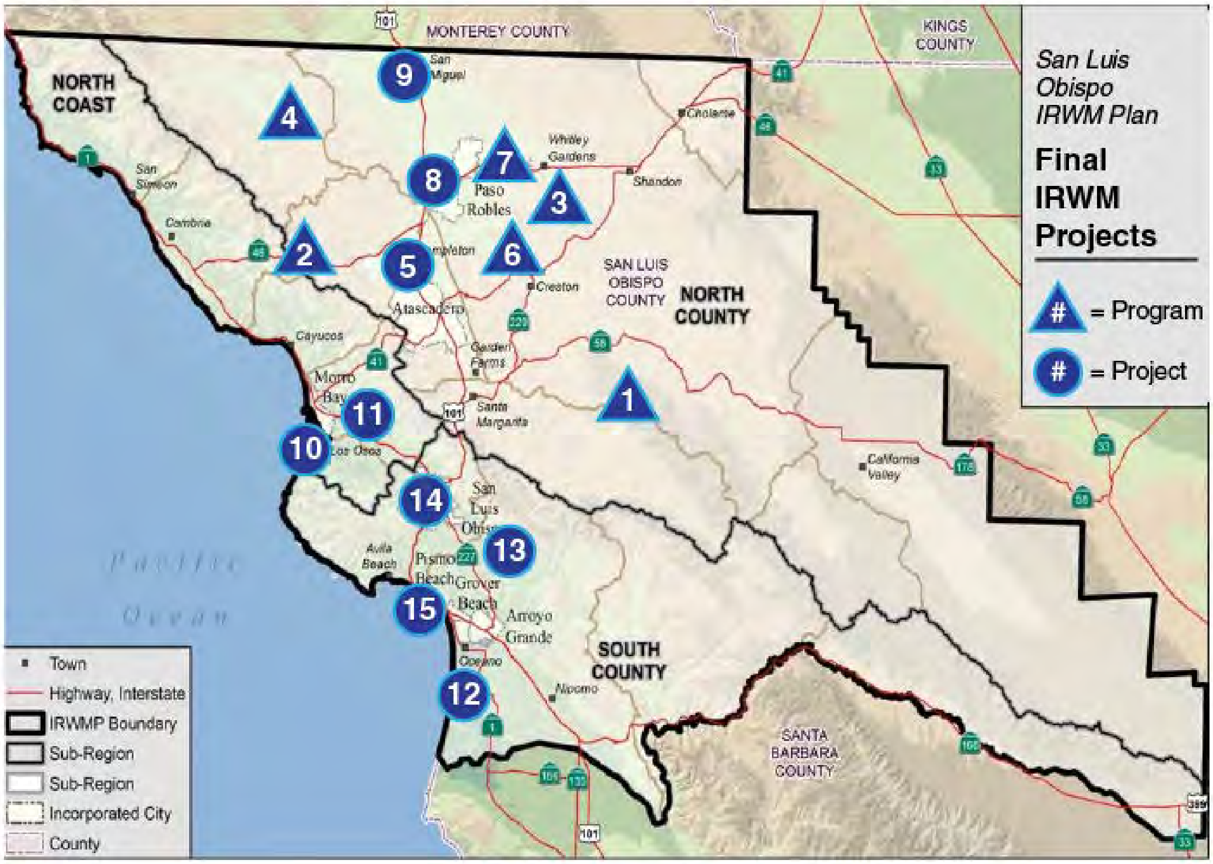

Figure Q-1. High Priority List of 15 IRWM Plan Implementation Projects

Interim changes are defined as minor amendments to process, organization, or water management. These changes might occur with some frequency and don't require the update and re-adoption of the IRWM Plan, or resubmittal to DWR. Interim changes include, but may not be limited to, updates to data and maintaining the Full List of Projects (see **Appendix G-1 – Project Selection Brochure**). Updating the Full Project List will be based on a publicly noticed Call for Projects to the stakeholders that have adopted the IRWM Plan and to interested parties. The PMT will review and rank the submitted projects and make a recommendation for the RWMG at a special meeting, and will not be required to repeat the rigorous project selection steps typically done with an IRWM Plan Update.

Q.3 Timelines for Active and Planned Projects

The IRWM Plan will be implemented through short- and long-term projects and programs designed using Project Elements to achieve the Water Management Strategies (WMSs) described herein. The prioritization strategy described in **Section G – Project Solicitation,**

Selection and Prioritization, is used to stage the progression of projects and programs identified in the IRWM Plan. Through short- and long-term regional project implementation, the local planning agencies will begin to achieve their own sub-regional objectives. The implementation schedule for each project and program in the IRWM Plan, and how each Goal is achieved, is shown in **Figure Q-2** and **Figure Q-3**, respectively.[1]

The first figure shows that all projects are ready to proceed and can realize full implementation within one to three years of obtaining funding. The expected start dates are staggered somewhat to allow for the permitting and final design considerations. Programs can start quickly, but are the most difficult to monitor their physical benefit. Each project is provided a monitoring line, assuming the project is implemented through the IRWM Plan, requiring at least 10 years of monitoring along with project implementation. The coloration of the monitoring differentiates between simply monitoring, or something more than monitoring, such as operations and maintenance, which can go on for the life-cycle of the project.

The second figure shows the total subjective score for each Objective for all projects (aggregated at the level of the IRWM Plan Goals), and is used as a means of illustrating the level of meeting the IRWM Plan's Goals and Objectives with the chosen suite of IRWM Projects. For example, the second project (MLTP_WMT2 – Low Impact Development Pilot Program) is highest in Water Resources Management and Water Supply, but still partially benefits Flood Management and Ecosystem Goals, even though the project is not focused in these areas.

Q.4 LINKAGES BETWEEN PROJECTS AND PROGRAMS

All of the projects included in the IRWM Plan are slated to be initiated in the near future; each given a high readiness-to-proceed to ensure implementation. Some of the projects have a long or short timeline for implementation while others may require funding and project actions in perpetuity. Linkages exist between most of the project types and programs; these potential linkages are described in **Section H – Project Integration and Alternatives**. Other regional projects provide linkages that include benefits between the projects. For example,

1 **Figure Q-2** is an aggregation of each project's score based on meeting IRWM Plan Objectives. The ranking system applied to each Objective is defined as follows:

Score

1 – Project partially satisfies the Objective's intent but is not focused on achieving the Objectives intended outcome.

2 – Project is not directly aimed to satisfy the Objective's intended outcome, but Objective benefits can be measured as part of implementation.

3 – Project is directly aimed to meet the Objective's intended outcome and includes a monitoring program for quantifying the Objective benefits.

groundwater recharge projects, conjunctive use projects, and education programs in irrigation and fertilizer use are all related and provide synergistic benefits among the projects through regional groundwater storage and quality in the Paso Robles Basin. Various monitoring programs, such as water quality analysis of agricultural drains, studies of watersheds, environmental water requirements, wildlife species, and wildlife habitat analysis are all ongoing and will inform the further development of specific WMS.

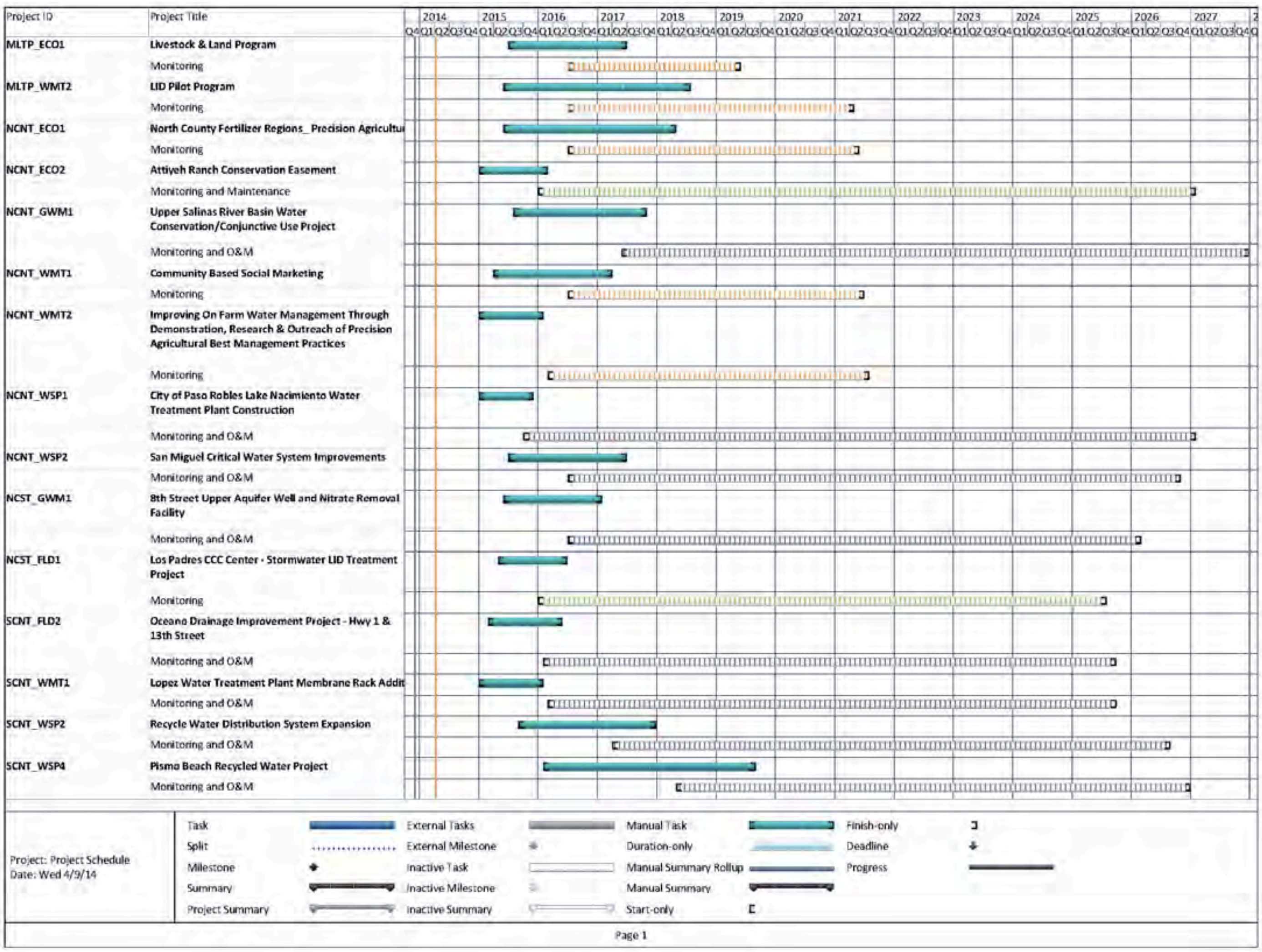

Figure Q-2. Estimated Project Schedule Timeline

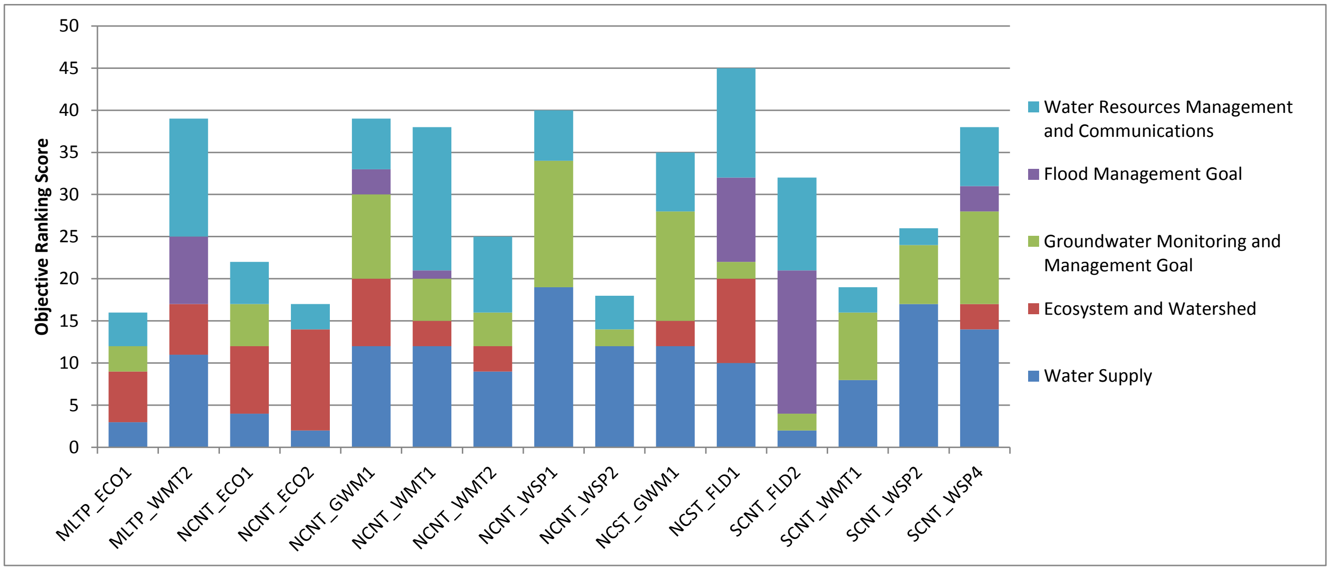

Figure Q-3. IRWM Final Project Goal/Objective Ranking Score

Q.5 ECONOMIC AND TECHNICAL FEASIBILITY

This IRWM Plan consists of projects, programs, and planning activities that Sub-Region and regional stakeholders have found to be economical and technically feasible based on studies, technical analysis, and data assessment.

Q.6 INSTITUTIONAL STRUCTURE AND SCHEDULE FOR IRWM PLAN IMPLEMENTATION

As described in **Section A – Introduction** and **Section B – Governance, Stakeholder Involvement, and Outreach** of the IRWM Plan, the RWMG is the lead decision making body with representation from each of the stakeholder interests and local agencies for the development and implementation of the IRWM Plan. Once an agency/stakeholder adopts the IRWM Plan, it accepts responsibilities to participate in the implementation of the IRWM Plan. Thus, while, the IRWM Plan will be a living document that will change over time, an agency that adopts the IRWM Plan agrees to continue building common ground and collaborating to implement the IRWM Plan.

Roles and responsibilities in keeping the document current and relevant to the water resources issues facing the region over time, are to be taken on by the District as staff of the RWMG. Sources of funding to maintain the IRWM Plan are currently insufficient to keep every task on schedule and to provide complete reporting. The schedule of tasks in **Figure Q-4** is a financially unrestricted plan over the next five years in keeping up with the reporting requirements contained within the IRWM Plan, and in meeting the IRWM Plan management milestones. The goal is to keep the plan current with outside updates to water resources information such as the UWMP water demand and supply updates in 2015/16, new capital improvement project lists, and DWR IRWM Plan Guideline and review requirements as they change over time.

The update frequency of the IRWM Plan for re-adoption by the region's stakeholders is planned to be every five years. The intervening time in between each update is spent on a myriad of critical and required tasks to ensure compliance with the IRWM Plan requirements, assuming a funding source is available to support this effort. Timing of the various events shown in the figure coincides with probable funding opportunities and to, more or less, even the work load and effort so as to be manageable by one to two full time equivalents at the Associate Engineer/Principal Technician Level by the District. Technology is inserted near the top to ensure the region communicates, monitors, and reports information using the latest technology and social media devices and software. Outreach efforts during the intervening years should strive to keep the IRWM Plan and related activities fresh in the minds of Sub-Region stakeholders (i.e., update Sub-Region Priorities), DACs, and project sponsors.

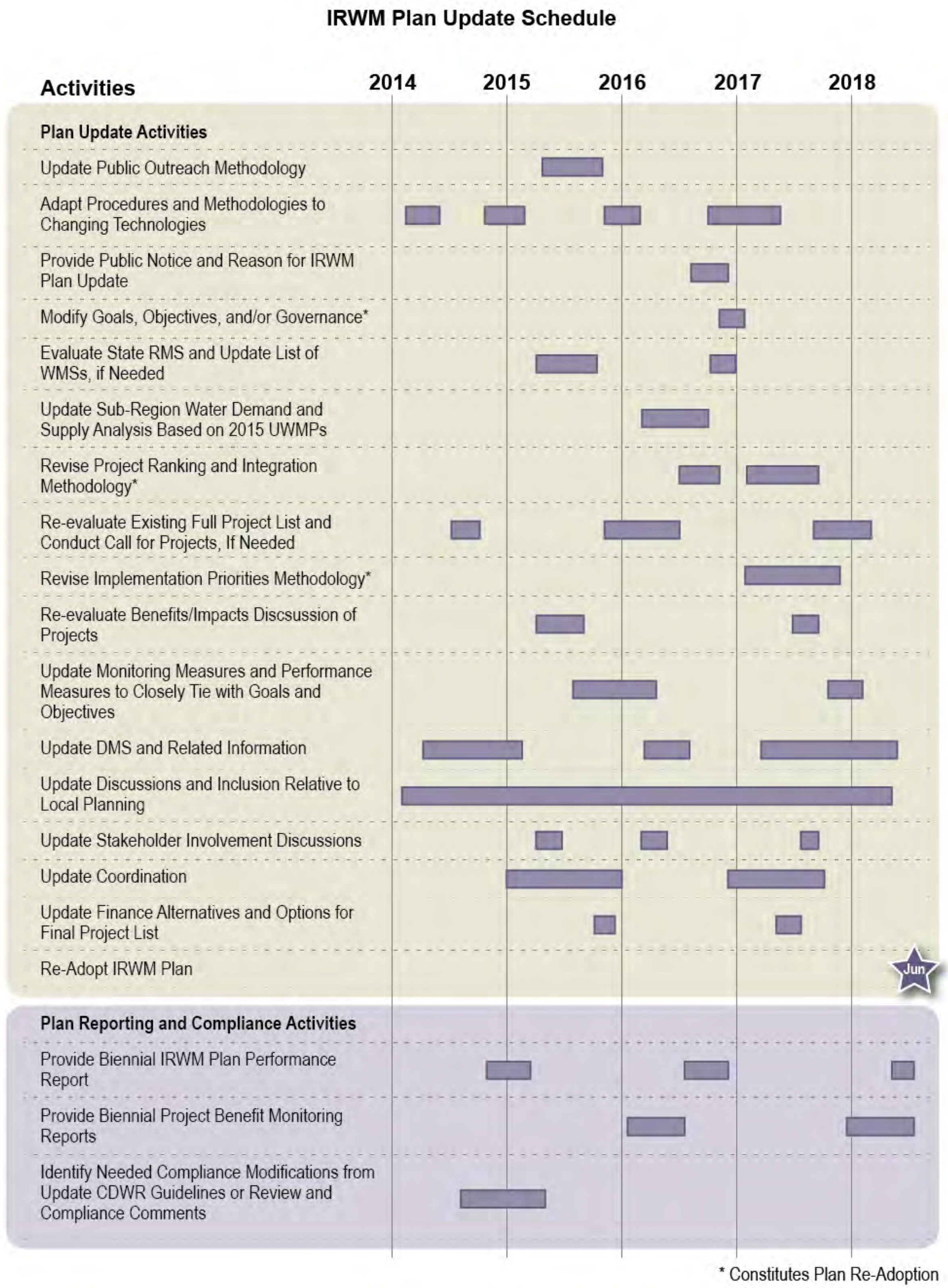

Figure Q-4. IRWM Plan Management and Update Schedule

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Section R.
References

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