San Luis Obispo County

Final
2019 Integrated Regional Water Management Plan

San Luis Obispo County Flood Control and Water Conservation District

May 15, 2020

An APWA Accredited Agency

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May 2020

San Luis Obispo County Integrated Regional Water Management Plan

San Luis Obispo Regional Water Management Group:

Avila Beach CSD
California Men's Colony
Cambria CSD
Cayucos Sanitary District
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
County of San Luis Obispo
Estrella-El Pomar-Creston Water 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 Flood Control and Water Conservation District
San Miguel CSD
San Miguelito Mutual Water Company
San Simeon CSD
Shandon-San Juan Water District
South San Luis Obispo County Sanitation District
S&T Mutual Water Company
Templeton CSD
Upper Salinas - Las Tablas Resource Conservation District

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Preface

Special thanks to the developers and contributors of the 2014 San Luis Obispo County IRWM Plan for providing a guide and foundation for the development of the 2019 San Luis Obispo County IRWM Plan. These include GEI Consultants, Fugro Consultants, Dudek, Gutierrez Consultants and Hollenbeck Consulting. On top of this foundation, the District thanks Water Systems Consulting, Inc. and the AmeriCorps CivicSpark Fellowship program for their contributions to the 2019 San Luis Obispo County IRWM Plan.

The California Department of Water Resources (DWR) has established a Plan Review Process (PRP) designed to assess whether IRWM plans are consistent with the 2016 IRWM Plan Standards. The PRP is described in Appendix C of the 2016 IRWM Planning Guidelines.

To be eligible for state funding, IRWM plans must be submitted to DWR for review and meet the requirements listed in the 2016 IRWM Planning Guidelines. To assist DWR, we have provided the section numbering and descriptions for those sections which, in whole, or partially address the given requirements. This information is provided in Appendix L.

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

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Appendix J - Climate Change
Appendix K - Disadvantaged Community Needs Assessment
Appendix L - State Guidelines Requirements Table

Acronyms

2016 CDWR	California Department of Water Resources'
IRWM Guidelines	2016 Regional Water Management Grant Program Guidelines
AC	Acre(s)
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
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
EDA	Economically Disadvantaged Area
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
GSA	Groundwater Sustainability Act
GSP	Groundwater Sustainability Plan
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	Mutual 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)
SGMA	Sustainable Groundwater Management Act
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	Sewer System Management Plan
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 Program
WEP	Water and Environmental Programs
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

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Map 1-1: San Luis Obispo County IRWM Region

1 INTRODUCTION

This section describes the purpose of the San Luis Obispo County Integrated Regional Water Management (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 California Department of Water Resources (DWR) requirements specified in the 2016 IRWM Grant Program Guidelines including the related IRWM Plan Standards.

1.1 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.

1.1.1 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 **Map 1-1**). 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 6 Water Planning Areas (WPAs) and 25 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 3 – Region Description**.

1.1.2 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 1 IRWM Planning Grant from the California DWR. 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 website:
https://www.slocounty.ca.gov/IRWM

1.1.3 IRWM Plan Adoption

The District Board of Supervisors will adopt this Plan upon completion of a public comment period, recommendation of the RWMG and recommendation of the Water Resources Advisory Committee (WRAC). Once adopted, a copy of the resolution can be found in **Appendix A – Resolution of Adoption**. Each individual participating member agency (see **Table 1-1**) 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. Member adoption will follow adoption by the District. 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 a living guidance document for all member agencies to support, and re-adopt, with each IRWM Plan update approx. every five (5) years.

Table 1-1: *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	Los Osos CSD
Avila Beach Community Services District	Morro Bay National Estuary Program
California Men's Colony*	Nipomo CSD
Cambria Community Services District (CSD)	Oceano CSD
Cayucos Sanitary District	S&T Mutual Water Company
Central Coast Salmon Enhancement	San Miguel CSD
City of Arroyo Grande	San Miguelito Mutual Water Company
City of Grover Beach	San Simeon CSD
City of Morro Bay	Shandon-San Juan Water District
City of Paso Robles	South San Luis Obispo County Sanitation District
City of Pismo Beach	Templeton Community Services District
City of San Luis Obispo	The Land Conservancy of San Luis Obispo County
Coastal San Luis Resource Conservation District	Upper Salinas - Las Tablas Resource Conservation District
Estrella-El Pomar-Creston Water District	

* Note: The California Men's Colony has signed the RWMG MOU (see appendix B) but did not adopt the 2014 IRWM Plan.

1.2 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 adjusts when needed

It is a plan for near-term water management in a 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 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 2016 IRWM Guidelines. The guidelines establish what DWR will use to implement the Proposition 1 (The Water Quality, Supply, and Infrastructure Improvement Act of 2014) IRWM Grant Program. The 2016 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.

1.3 IRWM Plan Benefits and Need for Updates

An IRWM Plan provides several benefits for the Region and its participants, including the following:

- 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

1.4 HISTORY OF IRWM IN SAN LUIS OBISPO COUNTY

The San Luis Obispo County IRWM Plan was originally adopted in December 2005, updated in July 2007, and most recently in July 2014. 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:

- 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 represent the existing conditions and priorities for the region.

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

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

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.

The objectives of the 2014 IRWM Plan Update were to incorporate changes that occurred since 2007 were 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

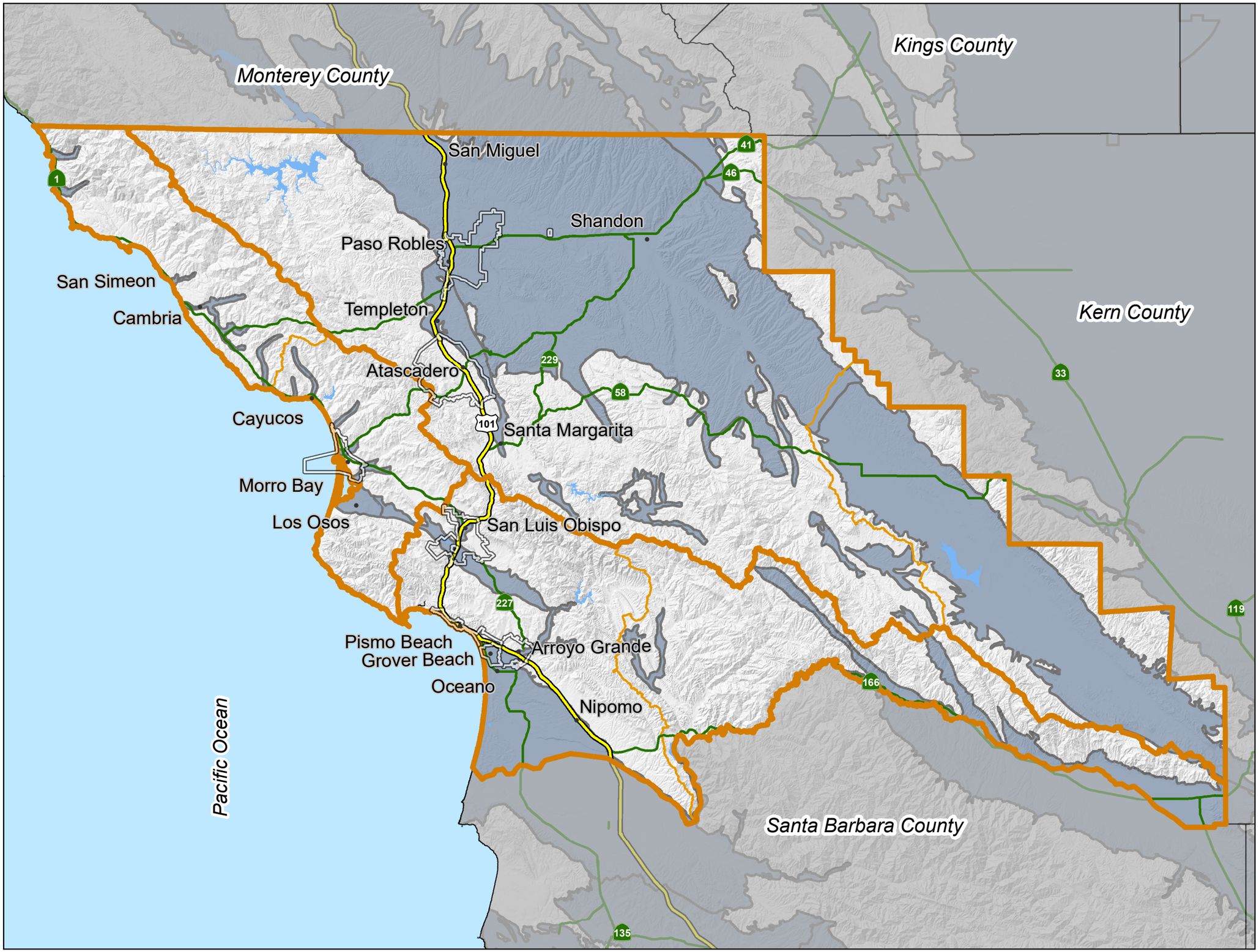
The 2014 Plan update included an exhaustive public outreach program that included meeting with stakeholders in the sub-regions, taking surveys and conducting public meetings throughout the County. This plan update created opportunities for the following projects to receive funding and support from DWR:

- Prop 84 Expedited Drought Grant:
    - CSA 23-AMWC-Garden Farms Emergency Intertie
    - Heritage Ranch CSD Emergency Turnout
    - Cambria CSD Emergency Water Supply
- Prop 84 Implementation Grant (2015)
    - Templeton CSD Upper Salinas River Basin Conjunctive Use
    - San Simeon CSD Well Head Treatment
    - Oceano CSD Water Resources and Reliability Program – Planning Study

Once the 2016 Standards were released, which were created in response to Proposition 1 (2014), work on this plan update began. The focus of these standards was on creating a more robust discussion and understanding of climate change and integration mitigation and adaptation to climate change throughout the document.

1.5 MEETING THE 2016 IRWM PLAN STANDARDS

As the IRWM Plan was developed, the RWMG maintained the list of requirements developed using the 2016 IRWM Plan Guidelines to ensure acceptance and approval by the State after completion of the IRWM Plan Update. Detailed tables addressing specific requirements of the 2016 Guidelines are compiled and incorporated as **Appendix L – State Guidelines Requirements Tables. Appendix L** 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.



County of San Luis Obispo
Public Works
Water Resources

San Luis Obispo County IRWM Region

Figure: 1-1

Legend

Highways

- US HIGHWAY
- STATE HIGHWAY
- City Limits
- Bulletin 118 Groundwater Basins
- Water Planning Subregions
- 2018 Water Planning Area (WPA)

N

0 2.5 5 10
Miles

COUNTY of SAN LUIS OBISPO

Date Created: 3/28/2019

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2 GOVERNANCE AND STAKEHOLDER INVOLVEMENT

This section describes the regional governance and stakeholder involvement for the development and implementation of the *San Luis Obispo County Integrated Regional Water Management (IRWM) Plan*.

2.1 PLAN PARTICIPANTS

The development and implementation of the IRWM Plan is a collaborative effort by a variety of participants in the San Luis Obispo County IRWM region, including local agencies, organizations, Native American Tribes, and stakeholders.

Governance determines the processes and organization used to exercise power, make decisions, and hold the decision-makers accountable throughout the implementation and updating of the IRWM plan. Native American Tribe and stakeholder involvement as well as public outreach and participation are essential for successful governance.

2.1.1 Regional Water Management Group

The Regional Water Management Group (RWMG), as defined in Water Code §10539, is the group responsible for development and implementation of the IRWM Plan. The RWMG must consists of three or more local agencies, at least two of which have statutory authority over water supply or water management. Local agencies may include cities, counties, special districts, joint power authorities, or other political subdivision of the state, public utilities, or mutual water companies. The RWMG may also include non-profit organizations and other persons who may be necessary for the development and implementation of the IRWM Plan.

The **San Luis Obispo County RWMG** was established to ensure that the San Luis Obispo County IRWM Plan is developed, implemented, and updated while

- Engaging elected officials and water resource management leaders
- Representing public and stakeholder groups
- Resolving conflicts
- Building political support
- Planning for important water resources projects in a regionally unified way

The members of the RWMG participate by means of the *San Luis Obispo County IRWM Plan Memorandum of Understanding* (MOU), as provided in **Appendix A – Resolution of Adoption**. The MOU formalizes the governance mechanism of the RWMG and describes the essential governance structure inclusions such as definitions of IRWM common terms, program participant roles and responsibilities, and decision-making processes.

The San Luis Obispo County RWMG consists of the local agencies and organizations who are signatories to the MOU and have adopted the Plan, as presented in **Table 2-1**. Entities that have

statutory authority ("SA") over water supply or water management are indicated with a checkmark ("✓") in the table.

Table 2-1: *San Luis Obispo County RWMG Membership*

Agency/Organization/Group	Entity Type	SA
San Luis Obispo County Flood Control and Water Conservation District	Special district	✓
County of San Luis Obispo	County	✓
Avila Beach Community Services District	Special district	✓
California Men's Colony*	State political subdivision	✓
Cambria Community Services District	Special district	✓
Cayucos Sanitary District	Special district	✓
Central Coast Salmon Enhancement	Non-profit organization	
City of Arroyo Grande	City	✓
City of Grover Beach	City	✓
City of Morro Bay	City	✓
City of Paso Robles	City	✓
City of Pismo Beach	City	✓
City of San Luis Obispo	City	✓
Coastal San Luis Resource Conservation District	State political subdivision	
Estrella-El Pomar-Creston Water District	Special District	✓
Heritage Ranch Community Services District	Special district	✓
Los Osos Community Services District	Special district	✓
Morro Bay National Estuary Program	Non-profit organization	
Nipomo Community Services District	Special district	✓
Oceano Community Services District	Special district	✓
S&T Mutual Water Company	Mutual water company	✓
San Miguel Community Services District	Special district	✓
San Miguelito Mutual Water Company	Mutual water company	✓
San Simeon Community Services District	Special district	✓
Shandon-San Juan Water District	Special district	✓
South San Luis Obispo County Sanitation District	Special district	✓
Templeton Community Services District	Special district	✓
The Land Conservancy of San Luis Obispo County	Non-profit organization	
Upper Salinas-Las Tablas Resource Conservation District	State political subdivision	

*Note: The California Men's Colony has signed the RWMG MOU (see appendix B), but did not adopt the 2014 IRWM Plan.

The general composition of the RWMG based on membership meets Water Code §10539 and is sufficient in breadth to develop and implement the IRWM Plan.

RWMG membership will continue to be open to local agencies, organizations, groups, and other persons necessary to develop and implement the IRWM Plan, including the following eligible grant applicants, as defined in Water Code §79712:

- Public agencies (as defined in Water Code §79702(s))

- Non-profit organizations (as defined in Water Code §79702(p))
- Public utilities (as defined in Public Utilities Code §216)
- Mutual water companies (as defined in Public Utilities Code §2725)
- Federally recognized Indian Tribes
- State Indian Tribes listed on the Native American Heritage Commission's Tribal Consultation list

The San Luis Obispo County IRWM Program Participants MOU is used as a method of clarifying the organizational structure and describes the ways that RWMG members, project proponents, stakeholders can participate in the development and implementation of the IRWM Plan.

The MOU defines the participants of the San Luis Obispo County IRWM Plan:

- RWMG Members
- RWMG Lead Agency
- Water Resources Advisory Committee (WRAC)
- Implementation Affiliates
- RWMG Working Group
- Interested Stakeholders

To encourage broad participation across jurisdictional, watershed, and political boundaries, each local agency, organization, or stakeholder determines their level of participation in IRWM planning for addressing issues related to water resources in the region.

2.1.2 RWMG Members

RWMG members have signed the MOU and the governing bodies of each agency have formally adopted the current IRWM Plan. Member agencies and organizations designate representatives to work collaboratively in providing the expertise and timely information in the review and development of the IRWM Plan.

New members can be incorporated into the RWMG by signing the MOU and formally adopting the current IRWM Plan.

The composition of RWMG members will continue to include municipalities, water purveyors, resource conservations districts, non-profit organizations with interest in natural resources, environmental and land use management, water districts, sanitation districts, and other entities that are involved with water management issues in the San Luis Obispo IRWM region.

RWMG members that have sufficient managerial, financial, and staffing capacity and meet eligibility requirements may pursue IRWM grant program funding opportunities for planning or implementation projects.

2.1.3 Lead Agency

The San Luis Obispo County Flood Control and Water Conservation District (District) serves as the RWMG's Lead Agency for IRWM Plan development and implementation. The District is ultimately responsible for the preparation, production, and presentation of the IRWM Plan, the submission of grant applications, the execution and administration of grant agreements with the State and local project sponsors, and the monitoring and reporting of plan and project performance.

Given its regional framework and geographic scope, the District was viewed as an appropriate agency to act as the Lead Agency of the RWMG. The California Legislature established the District in 1945 with the passage of the *San Luis Obispo County Flood Control and Water Conservation District Act*. The District's boundaries are co-terminus with the County of San Luis Obispo. The County of San Luis Obispo Board of Supervisors act as the District Board of Supervisors and County Public Works Department provides staffing support for the District.

The District is responsible for San Luis Obispo County's regional water planning and implementation of regional water management projects, which include the following primary services:

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

The District gathers data, identifies issues, coordinates stakeholder review, and recommends solutions. The general regional data gathering, planning, and coordination efforts are included in the District's budget that is funded from general property tax allocations.

Projects and programs relating to the primary services of the District that are identified for implementation are funded from revenues provided by participating agencies, organizations, and other parties benefiting from the services.

2.1.4 Water Resources Advisory Committee

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 policies and programs in the Region.

The WRAC has thirty-seven (37) members representing county supervisorial districts, cities, community service districts, resource conservation districts, water management agencies, water purveyors, institutions, and at-large individuals and organizations for agricultural,

development, and environmental interests. The agencies, organizations, and groups including at-large members that constitute the WRAC are identified in **Table 2-2**.

Since 1952, WRAC meetings have been the primary means for the District's review of regional water resources issues. The purposes of the committee include developing recommendations for the District's Board of Supervisors on all policy decisions and programs (including financing) related to water resources.

The District collaborated with WRAC members to establish the RWMG and develop the initial IRWM Plan in 2005 and subsequent updates in 2007 and 2014. The WRAC offers an ongoing stakeholder forum to provide additional input and recommendations to the District Board of Supervisors during IRWM Plan development and implementation. The RWMG will continue to collaborate with the WRAC to receive broad perspectives from a wide number of stakeholders in the region as well as support for IRWM planning activities and implementation projects.

Table 2-2: *Water Resource Advisory Committee Membership*

Agency/Organization/Group	Representing
County Supervisorial District 1	County government
County Supervisorial District 2	County government
County Supervisorial District 3	County government
County Supervisorial District 4	County government
County Supervisorial District 5	County government
City of Arroyo Grande	Municipality
City of Atascadero	Municipality
City of Grover Beach	Municipality
City of Morro Bay	Municipality
City of Paso Robles	Municipality
City of Pismo Beach	Municipality
City of San Luis Obispo	Municipality
Avila Beach Community Services District	Water-serving agency
Cambria Community Services District	Water-serving agency
Estrella-El Pomar-Creston Water District	Water district
Heritage Ranch Community Services District	Water-serving agency
Los Osos Community Services District	Water-serving agency
Nipomo Community Services District	Water-serving agency
Oceano Community Services District	Water-serving agency
Templeton Community Services District	Water-serving agency
San Miguel Community Services District	Water-serving agency
San Simeon Community Services District	Water-serving agency
Shandon-San Juan Water District	Water district
Coastal San Luis Resource Conservation District	Resource conservation district
Upper Salinas-Las Tablas Resource Conservation District	Resource conservation district
Atascadero Mutual Water Company	Water purveyor
California's Men Colony	Institution
Camp San Luis Obispo	Institution
Cuesta Community College	Institution
Golden State Water Company	Water purveyor
San Luis Obispo County Farm Bureau	Agriculture interests
Environmental At-Large (3 members)	Environmental interests
Agriculture At-Large (2 members)	Agriculture interests
Development At-Large (1 member)	Development interests

2.1.5 Implementation Affiliates

Implementation affiliates are local project proponents that have formally adopted the current IRWM Plan. This participant category allows agencies and organizations to submit projects as part of the plan implementation even if they choose not to participate as an RWMG member. Any Implementation affiliate that meets grant application eligibility requirements may pursue

IRWM grant program funding opportunities for planning and implementation projects. There are currently no Implementation Affiliates in the San Luis Obispo County IRWM Program.

2.1.6 RWMG Working Group

The RWMG Working Group consists of representatives designated by RWMG Members to develop information and recommendations for IRWM program planning and implementation, stakeholder outreach, and pursuit of funding opportunities. Ideally, the RWMG Working Group is constituted as

- One (1) Lead Agency representative
- Three (3) North Coast Sub-Region representatives
- Three (3) North County Sub-Region representatives
- Three (3) South County Sub-Region representatives

The RWMG Working Group coordinates technical resources, agency staff, and stakeholders for addressing specific topics or assignments and provides draft findings and recommendations to the RWMG.

RWMG Working Group activities may include:

- Participating and inviting others to participate in workshops, presentations, and other stakeholder/public meetings
- Defining the project review process and project selection criteria
- Reviewing and defining water resources management strategies

Workshops in each of the three IRWM Sub-Regions may be convened to engage community members who have relevant expertise and interests in water resources management. Workshops serve as an outreach function to inform stakeholders and other organizations about the IRWM Plan, and may include the following activities:

- Soliciting input and feedback from community members and stakeholders
- Obtaining data and information relevant to IRWM
- Identifying issues and opportunities related to IRWM objectives, project review process, and other sections of the plan
- Reviewing draft findings on resource management strategies
- Reviewing draft findings on project review solicitation and prioritization
- Providing feedback and input to the RWMG

RWMG Working Group meetings and workshops will be held to review and update the IRWM project lists so that plan information is current and meets State guidelines and requirements.

2.1.7 Interested Stakeholders

Interested Stakeholders include local agencies, organizations, groups, and individuals who choose to participate in IRWM planning efforts. Interested Stakeholders may provide a letter of support or other forms of feedback and input for IRWM planning efforts to the RWMG. This participant category allows members of the public, stakeholders, and others to provide input to the RWMG without needing to be eligible for directly receiving state IRWM grant funds.

2.1.8 Native American Tribes

California Native American Tribes are all Indigenous Communities of California, which are on the contact list maintained by the Native American Heritage Commission, including those that are federally non-recognized and federally recognized, and those with allotment lands, regardless of whether they own those lands.

Native American Tribes are sovereign nations and the RWMG will coordinate with Tribes on a government-to-government basis. The RWMG maintains an open policy to continually invite and encourage collaboration with Tribes. Letters to the local Native American Tribes have been sent to invite them of the various IRWM processes and encourage their participation during both plan development and implementation. See **Section 2.3.4** for additional information regarding outreach to Native American Tribal communities.

Native American Tribes are invited to participate as RWMG Members, Implementation Affiliates, or Interested Stakeholders (as described in the MOU) or on a consultation basis for plan development and implementation. Native American Tribes who meet DWR requirements as a project proponent are encouraged to submit projects, programs, and technical support to the RWMG or on a government-to-government basis with the Lead Agency.

San Luis Obispo County does not currently contain any tribal lands.

2.2 IRWM Organization Structure

2.2.1 Governance Structure

The MOU defines the governance structure of the RWMG and includes the purpose for developing and implementing the San Luis Obispo County IRWM Plan, membership list of agencies and organizations, participant roles and responsibilities in program development and implementation, and the decision making process. The participants are organized in four areas characterized by these key actions:

- Submitting projects, programs, and technical support
- Evaluating projects, programs, and technical support
- Making recommendations for plan development and implementation

- Submitting plans, administering grants, and coordination with DWR & Native American tribes

Figure 2-1 illustrates the organizational structure of the relationship between the program participants and their key actions.

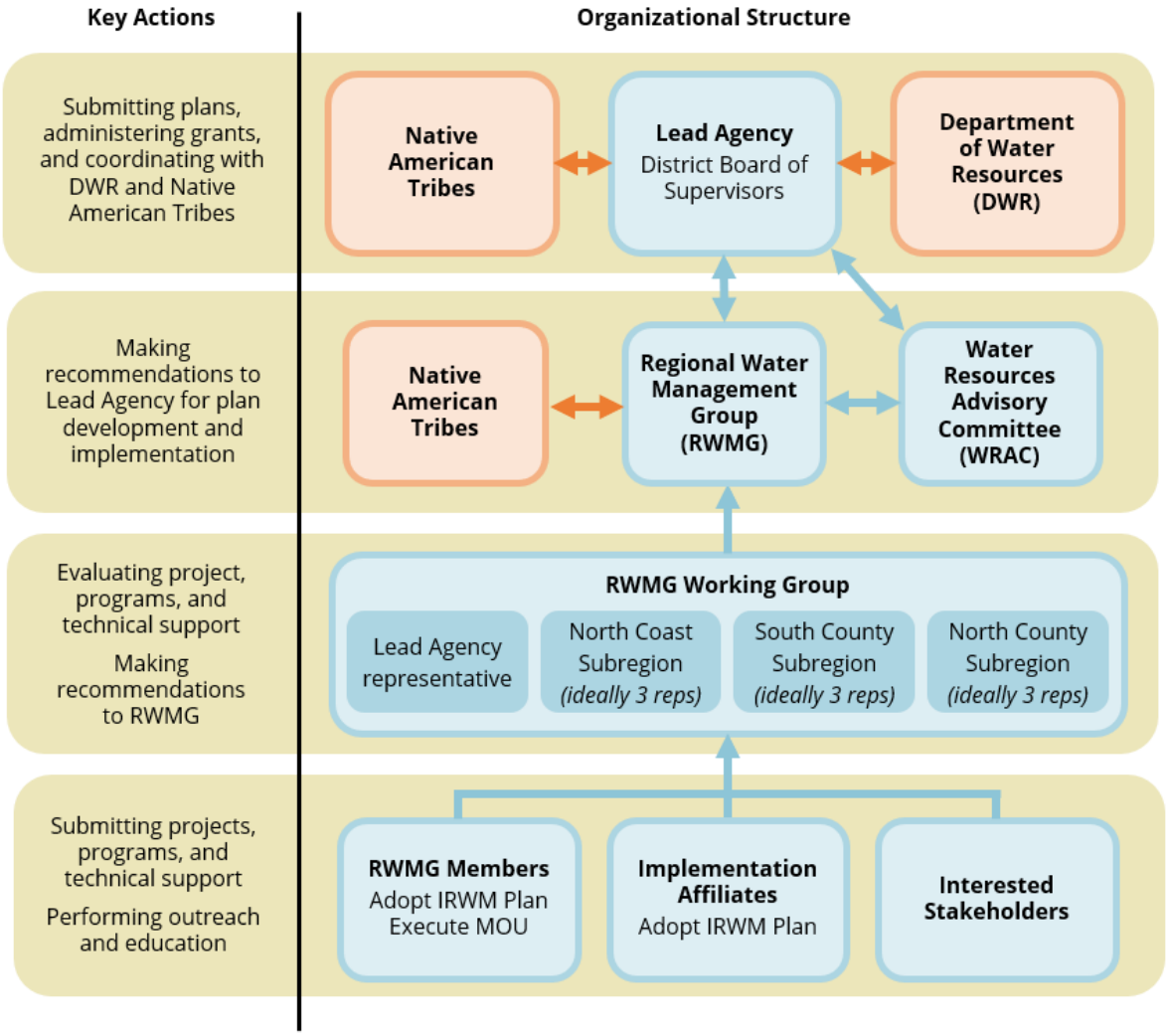

Figure 2-1: *Organizational structure of the San Luis Obispo IRWM Program Participants*

Individual RWMG Members and Implementation Affiliates submit projects, programs, and technical support for plan development and along with Interested Stakeholders provide information and input to the RWMG Working Group.

The RWMG Working Group evaluates projects, programs, and technical support including stakeholder information and input to prepare recommendations throughout the plan development and implementation process to the RWMG.

The RWMG considers the recommendations provided by the RWMG Working Group and receives input from community members and other stakeholders via public forum. The RWMG

maintains the regional perspective during plan review and decision making for the IRWM program and seeks WRAC support of its recommendations at key decision points.

The WRAC can consider concurrence or modification of RWMG recommendations, review via WRAC sub-committee or other action either directly to the District Board of Supervisors or the RWMG.

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 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 2.3.1**.

2.2.2 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*.

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.

2.3 Stakeholder Involvement and Public Outreach Process

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), 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 considers 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.

It is important to recognize barriers to involvement, so effort can be made to overcome them. While the regular RWMG meetings are held centrally in the City of San Luis Obispo, for the more remote communities of San Simeon, San Miguel, Shandon, Nipomo, etc. even this location can be upwards of an hour drive away. Additionally, our region, like others, has communities with very limited staffing capacity. In some cases, there are no engineers or water specific staff on site; all are consultants or contracted employees. This presents an institutional disadvantage in participation. Even so, attendance to RWMG meetings is not a requirement for receiving grant funds. Additionally, District staff visit these agencies as needed in provide opportunity to participate and receive feedback. Most recently, this occurred for the Implementation List scoring efforts in 2018. See **Section 6 – Project Review Process** for more information.

The RWMG acknowledges four (4) critical success factors for effective stakeholder involvement, decision making and overall IRWM program:

- Meeting attendance.
- Compliance with information/data requests.
- Review of TMs, draft, and final drafts of plan according to schedule and workplan (based on Scope of Work).
- Agency participants have decision-making authority and communicate frequently with agency boards and councils to ensure information about the Plan is current and accurate.

2.3.1 Communications and Outreach Plan

The 2014 IRWM Plan developed communication processes as a simple guide on how communication will flow and be managed through the life of the IRWM Program. These processes continue for the 2019 IRWM Plan Update.

These processes are built upon the MOU (See **Appendix B**) and the identified IRWM Program Participants (RWMG, WRAC, RWMG Working Group, Implementation Affiliates and stakeholders – See **Section 2.1**) involved in the IRWM Plan Update. It also describes the planned and periodic communications to occur between the entities. It characterizes what types of communication are used and how communication proceeds to facilitate the overall goals of the IRWM Plan Update. These are 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 Program.

2.3.1.1 Informal Communication

Informal communications consist of e-mail, conversations or phone calls and serve to supplement and enhance formal communications. Due to the varied types and ad-hoc nature of informal communications, which will occur among and between all the entities, they are not discussed in this plan.

2.3.1.2 Formal Communication

San Luis Obispo County IRWM Plan Update will engage in various types of formal communications. The types and purposes are described below:

- **Notice of Intent**– A formal "Notice of Intent" (NOI) to update the San Luis Obispo County IRWM Plan will be prepared and will be distributed to all entities. The NOI will also be publicly noticed in media publications throughout the County. The NOI will be posted on the SLO County website for public access.
- **Public Meeting Notices** – Adoption Hearings on the Plan and certain meetings will be publicly noticed to allow for public and stakeholder input. Meeting Notices will be posted on the SLO County website for public access.
- **RWMG Meeting Notices** – Will be generated and sent out by email to the RWMG one (1) week in advance of the actual meeting. The WRAC will be notified of RWMG meetings in

their meeting notices as well. Meeting notices and agendas will be posted on the SLO County website for public access.

- **WRAC** meeting notices have been generated and will continue to be generated and sent via email to all entities and individuals that request to be added to the email distribution list. Meeting Notices, Agendas and Meeting Minutes will be posted on the SLO County website for public access.
- **RWMG Working Group** meeting notices will be generated and sent out by email one (1) week in advance of the actual meeting. The RWMG will be copied on Working Group meeting notices to ensure that the RWMG is abreast of the progression on the Plan and the progress on issue areas. Interested Stakeholders will also be copied on RWMG Working Group meetings. Meeting notices and agendas will be posted on the SLO County website for public access.

2.3.2 Public Outreach for the 2019 IRWM Plan

Building off the successful public outreach efforts in creation of the 2014 IRWM Plan, District staff and RWMG members continued to provide opportunities to the public and potential stakeholders to learn more about and engage in the IRWM process. More recently, these outreach efforts also included the Stormwater Resources Plan (SRP), which is also lead by the District.

Outreach efforts for the plan update began in 2016 and included:

- 17 regular RWMG meetings*
- 5 RWMG Working Group meetings
- 10 Agency meeting presentations throughout the County*
- 1 Climate Change workshop*
- 3 sub-regional workshops*
- 1 Tribal Council Outreach meeting (see **Section 2.3.4**)

*denotes meeting was open to the public. Information provided at these meetings can be found in **Appendix C – Public Meetings and Workshops.**

The highlight of these meetings is series of 8 IRWM Plan Update kick-off presentations that informed the public of the purpose of IRWM, solicited feedback on potential projects, as well as hear from the public on the water-related priorities for their communities.

2.3.3 Public Outreach to Disadvantaged Communities (DACs)

The IRWM Region has seven (7) identified DACs as follows:

Community of San Miguel	Community of Oceano	City of Grover Beach
Community of San Simeon	City of San Luis Obispo	Community of Shandon*

Community of Santa Margarita*

All seven DACs are signatories to the MOU and are represented in the RWMG. The Cities of San Luis Obispo and Grover Beach are RWMG members. The Communities of Oceano, San Simeon and San Miguel are represented by their Community Services District (CSD). Lastly, The Communities of Santa Margarita and Shandon are represented by the County of San Luis Obispo. All public outreach and communication efforts include and support the involvement of the SLO IRWM Region's DACs. The abovementioned outreach efforts included specific meetings targeted at San Simeon, Oceano, San Luis Obispo and Grover Beach.

The Proposition 1 Disadvantaged Communities Involvement Grant (DAC-Inv. Grant) was a key opportunity to engage with 5 DACs in our area and meet immediate needs. Each DAC was awarded funds to meet these critical needs. Shandon and Santa Margarita were identified as DACs after the awards were made for the DAC-Inv. Grant. The community of Shandon, represented by County Service Area (CSA) 23, completed an income survey in June 2019 that showed an MHI below the 80% average of the State[1]. The Community of Santa Margarita was identified as a DAC with the release of the 2012-2016 American Communities Survey (ACS) date in 2018.

In addition to the DAC-Inv. Grant, these communities are involved with and regularly attend the RWMG meetings. Specifically, San Simeon was represented in the RWMG Working Group that met 3 times in April 2018 to implement the updated Project Review Process for this IRWM Plan Update.

Lastly, outreach to and engage of DACs will continue beyond this Plan in development of the County-wide Needs Assessment. This Needs Assessment is looking at "communities" beyond the Census Designated Place boundaries to identify needs and capacities for portions of larger communities that are disadvantaged, underserved or underrepresented. Upon its completion, it will be added to this Plan as a reference and intended to be used in project development and selection for future grants opportunities. The Needs Assessment will include in depth review of these seven DACs as well as other potential DACs across the region.

2.3.4 Native American Tribes Outreach

While San Luis Obispo County does not contain any officially designated Tribal lands, local groups are active in education, events, and protecting their culture.

In the course of the 2019 Plan update, two focused outreaches were made to local Tribal groups.

[1] The income survey is available on the County's website. http://www.slocounty.ca.gov/Departments/Public-Works/Committees-Programs/County-Service-Areas/CSA-16-Shandon.aspx

Early on in the update process on March 10, 2016, all local Tribal groups were contacted via email. This email included information regarding IRWM, the 2014 IRWM Plan, Proposition 1 (2014) and an invitation to participate. This correspondence and responses are provided in **Appendix D – Native American Tribal Outreach.**

Prior to the final push of the update, in April 2018, local Native American Tribes and any tribes in surrounding counties that have members living in San Luis Obispo County were contacted via mail, email, and telephone. A copy of these materials is provided **Appendix D– Native American Tribal Outreach.**

These Native American Communities were asked to:

- Identify if and how they would like to participate in the RWMG
- Describe of the social and cultural makeup of their tribal community
- Describe of critical water issues for their tribal community
- Discuss any potential impacts or benefits to their community of implementing the IRWM Plan.

Many Tribal communities did not respond or indicated that they would not participate in IRWM in SLO County, citing not having any lands in the County to implement projects.

Responses regarding critical water issues were used in development of the project review process. See **Section 6 – Project Review Process** for additional information.

2.3.5 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 1 Planning Grant awarded in 2017.

2.3.6 Public Information

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 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. The website[2] 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.

2.3.7 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. Members of the public routinely attend RWMG meetings and ask questions to stay informed about the options and opportunities available to their communities.

All are welcome and encouraged to participate in IRWM in San Luis Obispo County.

2.4 Stakeholder and Resource Integration

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

The IRWMP process, and specifically the RWMG and WRAC, 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

[2] http://www.slocounty.ca.gov/irwm

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. These Project Elements are described and listed in **Section 5 – Resource Management Strategies.**

2.5 PLAN IMPLEMENTATION

2.5.1 Long-term Implementation

As directed by the Board of Supervisors, the governing body of the District, the Lead Agency, District staff is to prioritize implementing IRWM. This functionally means staff are to prioritize facilitating this Plan, the RWMG, grant opportunities, maintaining eligibility and compliance with program guidelines, etc. The resolution from the Board of Supervisors prioritizing IRWM can be found on the County's website.[3]

Beyond the District, each member agency/organization, interested stakeholder, Native American Tribe, and member of the public carry a shared responsibility of implementing the plan. These activities include attending meetings, providing feedback at decision points, participating in RWMG Working Groups, submitting projects, etc.

[3] https://agenda.slocounty.ca.gov/IIP/sanluisobispo/agendaitem/details/6595

Detailed approaches to performance monitoring of this Plan can be found in **Section 8 – Plan Performance and Monitoring.**

Tasks to be undertaken during the implementation of the 2019 IRWM Plan include:

(note: * denotes an activity that triggers a re-adoption)

- Modifying / Updating Goals, Objectives and/or Governance*
- Evaluate updates to the State list of RMS for inclusion into the San Luis Obispo Region's IRWM Plan
- Update Supply and Demand projections and methodologies of the 2012 Master Water Report
- Maintain and update the Full Project List
- Explore stakeholder, project and resource integration opportunities
- Respond to DWR, SCRWB and other Funding Opportunities
- Maintain and update the impacts and benefits as individual projects are developed and implemented
- Produce an IRWM Monitoring Report
- Maintain database of local planning documents (i.e. 2020 UWMPs when required)
- Update Stakeholder involvement surveys
- Maintain the finance opportunities list for members and interested stakeholders
- Respond to update State guidelines for IRWM planning and implementation*
- Conduct annual review of climate change prioritized vulnerabilities per Section 14.10

As denoted above, certain implementation activities may trigger a re-adoption of the plan by RWMG members. These activities are updating the plan in response to State guidelines and changing the IRWM Plan goals, objectives and/or Governance.

2.5.2 Updating 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 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.

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 Project List. See **Section 6.2** for more information about the Full Project List.

As described in **Section 1 – Introduction** and this section 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.

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 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 workload and effort so as to be manageable by one to two full time equivalents at the Associate Engineer/Principal Technician Level by the District. 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.

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3 REGION DESCRIPTION

This section describes the region description for the development and implementation of the *San Luis Obispo County Integrated Regional Water Management (IRWM) Plan*.

3.1 ORGANIZATION OF SECTION

The 2016 State Guidelines for this section include the following elements:

IRWM Plan Standard from November 2016 IRWM Guidelines (pg. 38): ***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. If the IRWM Region has areas of nitrate, arsenic, perchlorate, or hexavalent chromium contamination, the plan must include a description of location, extent, and impacts of the contamination; actions undertaken to address the contamination, and a description of any additional actions needed to address the contamination (Water Code §10541.(e)(14)).*
• *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 E – Supply and Demand
- Appendix G – Detailed Description of Groundwater Basins
- Appendix H – San Luis Obispo County Watershed Management Planning Project Report

Section 3 is organized to assist in the understanding for splitting the IRWM Region up into three Sub-Regions, 6 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 H**, 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 3.10** with reference to **Appendix H** if additional details are needed.

3.2 Regional Planning Area

The San Luis Obispo County IRWM Region is co-terminus with the boundaries of both the County of San Luis Obispo (County) and the San Luis Obispo County Flood Control and Water Conservation District (District) as shown on. The Region encompasses a total area of 3,304 square miles and is located within the Central Coast Hydrologic Region as shown on **Map 3-1**.

The Region's geographic features and composition are appropriate for integrated regional water management planning and generally contain the same physical, political, environmental, social, and economic boundaries needed to facilitate active stakeholder involvement at the local and regional levels. Communities can better balance economic well-being, social equity, and environmental protection needs by linking water resources management to land use

planning. The Region's boundary effectively links land use and water management planning efforts within the context of local shared values and sense of place.

Using the County/District boundary to define the IRWM Region boundary enables the local agencies, communities, and stakeholders to use existing infrastructure, management systems, funding mechanisms, partnerships, and planning documents as a scaffold upon which to build the IRWM Plan.

Water management agencies and other stakeholders within the county participate on the Water Resources Advisory Committee (WRAC) and other local advisory committees that ensure broad coordination for all aspects of water resources management. These efforts have resulted in overall efficiencies in integrating strategies at local, sub-regional, regional, and interregional levels and among participating agencies and organizations across a variety of management authorities, interests, and concerns.

3.3 Sub-Regional Planning Areas

The Region was divided into three sub-regions to facilitate collaboration among stakeholders for integrated regional water management planning efforts:

- North Coast Sub-Region
- South County Sub-Region
- North County Sub-Region

Sub-regions generally share climatic features as well as common watershed and groundwater basin characteristics that facilitates water resources management. Major water infrastructure projects, such as the Nacimiento Water Pipeline (North County) and the State Water Coastal Branch and Lopez Reservoir systems (South County), generally benefit communities at a sub-regional level.

Sub-regional planning provides an opportunity for stakeholders with agricultural, environmental and development interests to address their unique water management challenges. Project sponsors are encouraged to shape their programs and projects to meet both sub-regional priorities and regional objectives.

3.3.1 North Coast Sub-Region

The North Coast Sub-Region spans along the coast 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. Urban areas include, but are not limited to, San Simeon, Cambria, Cayucos, Morro Bay, and Los Osos.

3.3.2 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. Urban areas include, but are not limited to, San Luis Obispo, Avila Beach, Pismo Beach, Arroyo Grande, Grover Beach, Oceano, and Nipomo.

3.3.3 North County Sub-Region

The North County Sub-Region spans from the inland San Luis Obispo/Monterey County line southward, bounded to the east by Kern and Fresno Counties and to the west and south, in part, by the Santa Lucia range. Urban areas include, but are not limited to, Paso Robles, Templeton, Atascadero, Santa Margarita, San Miguel, Heritage Ranch, Creston, and Shandon.

3.4 Water Planning Areas

The Region was subdivided into six Water Planning Areas (WPA) to organization water resource management data collection, analysis, and reporting. The 2018 IRWM Plan WPAs were redefined as six areas compared to the sixteen areas defined in the 2014 IRWM Plan and 2012 Master Water Report.

Delineation of the WPAs considered the following information:

- Watershed boundaries
- Groundwater basin boundaries
- Water supply systems
- Urban growth boundaries
- Water supplies and management practices

The sub-regions, WPAs, watersheds, groundwater basins, communities, places of interests, and water suppliers within the IRWM region are summarized in **Table 3-1** and depicted in **Map 3-3**.

Table 3-1: *San Luis Obispo County IRWM Region – Water Planning Areas*

Watersheds	Groundwater Basins	Communities & Places of Interest
NORTH COAST SUB-REGION		
WPA 1 - San Simeon/Cambria		
• San Carpoforo Creek • San Simeon Area • Santa Rosa Creek Area	• San Carpoforo Valley • Arroyo De La Cruz Valley • Pico Creek Valley • San Simeon Valley • Santa Rosa Valley • Villa Valley	• San Simeon • Cambria • Hearst Ranch

Watersheds	Groundwater Basins	Communities & Places of Interest
WPA 2 - Cayucos/Morro Bay/Los Osos		
• Cayucos Creek – Whale Rock Area • Morro Bay • Coastal Irish Hills	• Cayucos Valley • Old Valley • Toro Valley • Morro Valley • Chorro Valley • Los Osos Valley	• Cayucos • Morro Bay • Los Osos • California Men's Colony • Camp San Luis Obispo (National Guard) • County Office of Education • County Operational Center • Morro Bay Estuary
SOUTH COUNTY SUB-REGION		
WPA 3 - San Luis Obispo/South County		
• San Luis Obispo Creek • Pismo Creek • Arroyo Grande Creek • Oso Flaco – Black Lake Area • Nipomo Creek – Santa Maria River Area	• San Luis Obispo Valley • Santa Maria River Valley	• San Luis Obispo • California Polytechnic State University • Port San Luis Harbor District • Edna • Los Ranchos • Avila Beach • Pismo Beach • Arroyo Grande • Grover Beach • Oceano • Nipomo • Black Lake • Callender-Garrett • Los Berros • Woodlands • Palo Mesa
WPA 4 - Cuyama River		
• Alamo Creek • Huasna River • Cuyama River	• Huasna Valley • Cuyama Valley Basin	

Watersheds	Groundwater Basins	Communities & Places of Interest
NORTH COUNTY SUB-REGION		
WPA 5 – North County		
• Upper San Juan Creek • Lower San Juan Creek • Cholame Creek • Estrella River • Upper Salinas River – Santa Margarita Area • Mid Salinas River – Atascadero Area • Huer Huero Creek • Lower Salinas River – Paso Robles Area • Nacimiento Area	• Paso Robles • Paso Robles • Atascadero • Rafael Valley • Big Spring Area • Pozo Valley • Rinconada Valley • Cholame Valley	• Paso Robles • Camp Roberts • Templeton • Atascadero • Garden Farms • Santa Margarita • Pozo • Creston • Whitley Gardens • Lake Nacimiento • San Miguel • Shandon • Heritage Ranch • Oak Shores • Cholame
WPA 6 – Carrizo Plain		
• Soda Lake • Black Sulphur Spring	• Carrizo Plain	• California Valley

3.4.1 WPA 1 - San Simeon/Cambria

WPA 1 – San Simeon/Cambria encompasses the communities of San Simeon and Cambria, Hearst Ranch, agricultural, and other rural overlying users in the northern area of the North Coast Sub-Region. See **Map 3-4**. The primary groundwater supplies include the San Carpoforo, Arroyo De La Cruz, Pico Creek Valley, San Simeon, Santa Rosa, and Villa Valley Groundwater Basins.

Primary water issues include seawater intrusion and tidal influences affecting water quality, drought impacts to groundwater supplies, and limited groundwater basin yield.

Community of San Simeon

The unincorporated community of San Simeon is located along Highway 1, north of Cambria. San Simeon Community Services District (CSD) 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.

San Simeon meets the definition as Severely Disadvantaged Community (SDAC), which is a community with a medium household income (MHI) less than 60 percent of the statewide average (Public Resource Code Section 75005(g)). San Simeon has an annual MHI of $33,889 based on the US Census American Community Survey (ACS) 5-Year Data (2010-2014). The statewide annual MHI is $61,489 and the calculated DAC and SDAC thresholds are $49,191 and $36,893, respectively.

Motel rooms, restaurants, and other tourist facilities are a major component in the San Simeon CSD 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.

Community of Cambria

Cambria is an unincorporated town bisected by Highway 1. The Cambria Community Services District (CSD) 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.

3.4.2 WPA 2 - Cayucos/Morro Bay/Los Osos

The Cayucos/Morro Bay/Los Osos WPA encompasses the City of Morro Bay, communities of Cayucos, Los Osos, Chorro Valley Water System, agricultural, and other rural overlying users. See **Map 3-5.**

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. The Cayucos Area Water Organization (CAWO) members include the Morro Rock Mutual Water Company, Cayucos Beach Mutual Water Company, County Service Area 10/10A, and the Cayucos Cemetery District. CAWO members receive potable water predominantly from Whale Rock Reservoir.

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.

Wastewater service is provided by the Cayucos Sanitary District.

City of Morro Bay

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 Morro Bay 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.

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 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.

Chorro Valley Water System

The Chorro Valley Water System includes:

- California Men's Colony
- Cuesta College
- Camp San Luis Obispo (National Guard)

- County Office of Education
- County Operations Center

The California 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.

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.

Camp San Luis Obispo (National Guard) 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.

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.

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

Community of Los Osos

The Los Osos area includes the community of Los Osos, agricultural and other rural overlying users. 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.

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).

3.4.3 WPA 3 - San Luis Obispo/South County

The San Luis Obispo/South County WPA encompasses the Cities of San Luis Obispo, Pismo Beach, Arroyo Grande and Grover Beach, communities of Avila Beach, Oceano and Nipomo, Cal Poly San Luis Obispo, Port San Luis Harbor, agricultural, and other rural overlying users. See **Map 3-6.**

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 7,857 acres. Cal Poly's population is last reported as:

- Students: 21,812 (2018)
- Faculty: 1,473 (2017)
- Staff: 1,670 (2017)
- Total: 24,955

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.

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.

South Coast

The South Coast area 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. 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. The Oceano Community Services District, with funding provided by the State Water Resources Control Board's Technical Assistance Program, completed an income study in 2017 and found the MHI to be $39,000.

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.

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.

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.

3.4.4 WPA 4 - Cuyama River

WPA 4 includes the Huasna Valley and Cuyama Valley areas as shown in **Map 3-7**.

The Huasna Valley area 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.

The Cuyama Valley area 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.

3.4.5 WPA 5 – North County

WPA 5 includes what is collectively known as "North County". This entire area drains to the Salinas River, eventually flowing through Monterey County to the Pacific Ocean. **Maps 3-8** and **3-9** depict this area.

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.

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.

Atascadero/Templeton

The Atascadero/Templeton area 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.

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.

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.

Cholame

The Cholame are 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.

Nacimiento

The Nacimiento area includes Oak Shores, Heritage Ranch Community Services District, agricultural, and rural users. The primary source of water supply for this area is Lake Nacimiento.

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.

Rafael/Big Spring

The Rafael/Big Spring area 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.

3.4.6 WPA 6 – Carrizo Plain

The Carrizo Plain area includes agricultural and rural users, and potentially future solar farms. See **Map 3-10**. 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.

3.5 Groundwater Basins

There are 22 groundwater basins and 3 sub-basins in the San Luis Obispo IRWM Region. See **Map 3-2** for a comprehensive view of both DWR-listed groundwater basins in relation to the region at-large. 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. As shown in **Map 3-2**, the largest urban areas all overly High priority or adjudicated groundwater basins.

Table 3-2 provides a list of the various groundwater basins and sub-basins within the IRWM region and is organized based on Sub-Region and WPA. A thorough description of each basin and sub-basin is included as **Appendix G – Groundwater Basin Descriptions.**

Additional information of the region's geology can be found in **Section 3.10 - Watersheds**.

***Table 3-2**: Groundwater Basins and Sub-Basins within the IRWM Region*

Sub-Region	WPA	Basin ID	Bulletin 118 Groundwater Basin Name	Prioritization (2019)*	Subject to Critical Conditions of Overdraft (y/n)*
North Coast	1	3-033	San Carpoforo Valley	Very Low	-
		3-034	Arroyo De La Cruz Valley	Very Low	-
		3-035	San Simeon Valley	Very Low	-
		3-036	Santa Rosa Valley	Very Low	-
		3-037	Villa Valley	Very Low	-
	2	3-038	Cayucos Valley	Very Low	-
		3-039	Old Valley	Very Low	-
		3-040	Toro Valley	Very Low	-
		3-041	Morro Valley	Very Low	-

Sub-Region	WPA	Basin ID	Bulletin 118 Groundwater Basin Name	Prioritization (2019)*	Subject to Critical Conditions of Overdraft (y/n)*
		3-042	Chorro Valley	Very Low	-
		3-008.01	Los Osos Valley - Los Osos Area	Very Low**	**Yes**
		3-008.02	Los Osos Valley - Warden Creek	Very Low	-
South County	3	3-009	San Luis Obispo Valley	High	-
		3-012.01	Santa Maria River Valley - Santa Maria	Very Low**	-
		3-012.02	Santa Maria River Valley - Arroyo Grande	Very Low	-
	4	3-045	Huasna Valley	Very Low	-
		3-013	Cuyama Valley	High	**Yes**
North County	5	3-047	Big Spring Area	Very Low	-
		3-046	Rafael Valley	Very Low	-
		3-044	Pozo Valley	Very Low	-
		3-043	Rinconada Valley	Very Low	-
		3-004.06	Salinas Valley - Paso Robles Area	High	**Yes**
		3-004.11	Salinas Valley - Atascadero Area	Very Low	-
		3-005	Cholame Valley	Very Low	-
	6	3-019	Carrizo Plain	Very Low	-

** Groundwater basins are identified (and as appropriate, designated as subject to critical conditions of overdraft) in DWR's Bulletin 118, Interim Update 2016 and prioritized in DWR's release of the SGMA 2019 Basin Prioritization Process and Results. https://water.ca.gov/Programs/Groundwater-Management/Basin-Prioritization*

*** denotes a basin under adjudication.*

3.5.1 Sustainable Groundwater Management Act (SGMA)

The "Sustainable Groundwater Management Act" (SGMA) took effect on January 1, 2015. SGMA provides for the preparation and implementation of Groundwater Sustainability Plans (GSP) for High and Medium priority groundwater basins.

Implementation of SGMA is on-going. The Salinas Valley - Paso Robles Area GSAs have completed and adopted their GSP. All other basins & GSAs are currently in the planning phase. Groundwater Sustainability Agencies (GSA) have been formed throughout the County to first create the GSPs and then to implement them. See **Section 12.4.4 – Groundwater Sustainability Plans (GSPs)** for a detailed breakdown of GSA's for the basins requiring GSPs.

Because this effort is on-going and GSPs are not yet complete, most SGMA-related information is to-be-determined by GSPs and how they will be implemented. For most up-to-date information regarding SGMA planning and implementation, see the County's SGMA website: http://www.slocounty.ca.gov/Departments/Public-Works/Committees-Programs/Sustainable-Groundwater-Management-Act-(SGMA).aspx

3.6 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 3-3** below is a limited summary of the location of these agencies relative to the WPAs.

Table 3-3: *Wastewater Service Areas by WPA*

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

3.7 Flood Control Districts

The only Flood Control District in the Region is the San Luis Obispo 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 recharge efforts
- Regional environmental permitting
- Hydrological data gap analysis – with special emphasis on environmental needs and natural groundwater recharge areas
- Flood management planning
- Optimization of the Nacimiento Water Project
- 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

3.8 Land Use Agencies

Land use agencies in the San Luis Obispo County Region include the County, 7 incorporated cities and the US Forest Service. Coordination with these agencies, their planning efforts and more is included in **Section 12 – Relation to Local Water and Land Use Planning.** See **Map 3.11** for a depiction of the Land Use areas of the County.

Through participation and representation in the WRAC and RWMG, the land use agencies interests are well represented in the IRWM planning process (see **Table 3-4**).

Table 3-4: *Summary of Land Use Agency Participation in WRAC and RWMG within the IRWM Region*

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

3.9 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. **Map 3-13** shows the major conveyance and storage facilities. **Map 3-14** shows the local reservoir locations with a photo of each.

3.9.1 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). 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 3-5**. The District does not have storage rights at Nacimiento Reservoir, so the unused portion of annual water supply cannot be carried over for use in the next water year.

Table 3-5: *Nacimiento Water Project Entitlement Contract Values, 2018-2019 Water Year*

Participating Agency	Contracted AFY
City of Paso Robles	6,488
Templeton CSD	406
Atascadero MWC	3,244
SMR MWC	80
City of San Luis Obispo	5,482
CSA 10A	40
Bella Vista MHP	10
TOTAL	***15,750***

3.9.2 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.

The tables below summarize the current capacity rights for the joint right-holders (downstream water rights are accounted for separately) for both the reservoir and downstream. 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 3-6**: Whale Rock Reservoir Allocations*

Participating Agency	Contracted AFY
City of San Luis Obispo	21,451
Cal Poly San Luis Obispo	13,136
California Men's Colony	4,380
TOTAL	***38.967***

***Table 3-7**: Whale Rock Downstream Entitlements*

Participating Agency	Contracted AFY
Cayucos Area Water Organization (CAWO)[1]	582
TOTAL	***582***

Notes:
1. The referenced agreement establishes the amount of 582 AFY to CAWO. The allocations to 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.

3.9.3 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.

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.

***Table 3-8**: Lopez Lake Allocations*

Participating Agency	Contracted 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***

3.9.4 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 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.

3.9.5 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.

3.9.6 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.

Table 3-9 summarizes the sub-contractor Water Service Amounts and Drought Buffer for the various turnouts along the Coastal Branch in San Luis Obispo County. See **Map 3-13** for a location of these facilities.

Table 3-9: *Sub-contractor Water Service Amounts and Drought Buffer, by turnout, in San Luis Obispo County*

Turnout Location	Subcontractor	Water Service Amount (AFY)	Drought Buffer (AFY)	Total (AFY)
SHANDON				
	CSA 16 (Shandon)	100	0	100
	Subtotal	*100*	*0*	*100*
CHORRO VALLEY	City of Morro Bay	1,313	2,290	3,603
	CMC	400	400	800
	County Ops Center	425	425	850
	Cuesta College	200	200	400
	Subtotal	*2,338*	*3,315*	*5,653*
LOPEZ	City of Pismo Beach	1,240	1,240	2,480
	Oceano CSD	750	750	1,500
	San Miguelito MWC	275	275	550
	Avila Beach CSD	100	100	200
	Avila Valley MWC	20	20	40
	San Luis Coastal USD	7	7	14
	Subtotal	*2,392*	*2,392*	*4,784*
	Total Subcontracted*	**4,830**	**5,707**	**10,537**
			**Contracted Delivery Capacity in Coastal Branch (AFY)*	*4,830*
			District's "Table A" Allocation (AFY)	25,000
			Total "Table A" Subcontracted (AFY)	10,537
			"Unsubscribed" Allocation (AFY)	14,463

3.9.7 Reducing Reliance on the Delta

The RWMG MOU (**Appendix B**) 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. See **Appendix E – Supply and Demand** 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 5% beginning in 2014.

With the desire to not only reduce reliance on the Delta, but reduce water costs, many communities have engaged in aggressive water conservation measures. These include the Paso Robles Groundwater Basin Area, City of San Luis Obispo, the Community of Los Osos and others. Los Osos for example, set a goal of 50 gal/person/day and in the calendar year of 2017 saw the actual use as 41.8 gal/person/day. This is documented in post-performance report #2 for the Los Osos Community Wastewater Project, project 2 of IRWM grant Agreement No. 4600009717.

3.9.8 Desalination Projects

Pacific Gas & Electric maintains a desalination facility as part of the Diablo Canyon Power Plant (DCPP) site. This unit provides potable water for all staff and visitors to the site, as well as cooling water for the power generation processes. With the scheduled decommissioning of the DCPP, the future use, owner and operator of the desalination facility is to be determined.

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) 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.

3.10 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 H** of the IRWM Plan.

The watershed names and locations attached identify with the USGS Hydrologic Unit 8 and 12. Locally, "San Luis Obispo County Watershed" name is the District's own grouping of HU-12 watersheds, within the context of HU-8 boundaries.

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 H**.

The watersheds are aligned with the Subregions and WPAs as shown in **Table 3-10** and **Map 3-12**.

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 9 – 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

Table 3-10: *Watershed Area Names, Numbers by WPA*

WPA (2018)	Watershed No.	San Luis Obispo County Localized Watershed Group Name
1 - San Simeon / Cambria	1	San Carpoforo Creek
	2	San Simeon Area
	3	Santa Rosa Creek Area
2 - Cayucos / Morro Bay / Los Osos	4	Cayucos Creek - Whale Rock Area
	5	Morro Bay
	6	Coastal Irish Hills
3 - San Luis Obispo / South County	7	San Luis Obispo Creek
	8	Pismo Creek
	9	Arroyo Grande Creek
	10	Oso Flaco - Black Lake Area
	11	Nipomo Creek - Santa Maria River Area
4 - Cuyama River	12	Alamo Creek
	13	Huasna River
	14	Cuyama River
5 - North County	15	Upper San Juan Creek
	16	Lower San Juan Creek
	17	Cholame Creek
	18	Estrella River
	19	Upper Salinas River - Santa Margarita Area
	20	Mid Salinas River - Atascadero Area
	21	Huer Huero Creek
	22	Lower Salinas River - Paso Robles Area
	23	Nacimiento Area
6 - Carrizo Plain	24	Soda Lake
	25	Black Sulphur Spring

3.10.1 Watersheds in WPA 1 – San Simeon / Cambria

The USGS HU-12 Watersheds for WPA-1 are listed in **Table 3-11**.

Table 3-11: *USGS Hydraulic Unit 12 (HU-12) Watershed Designations for WPA 1 – San Simeon/Cambria*

WPA	San Luis Obispo County Localized Watershed Group Name	USGS HU-12 Name	USGS HU-12 Number
1 - San Simeon / Cambria	San Carpoforo Creek	San Carpoforo Creek	180600060306
		Salmon Creek - Frontal Pacific Ocean	180600060307
	San Simeon Area	Burnett Creek	180600060401
		Arroyo De La Laguna	180600060402
		Pico Creek	180600060403
		San Simeon Creek	180600060404
		Little Pico Creek - Frontal Pacific Ocean	180600060407*
	Santa Rosa Creek Area	Perry Creek	180600060405
		Santa Rosa Creek	180600060406
		Frontal Pacific Ocean	180600060407*
		Villa Creek	180600060408

** denotes where multiple watershed groups contain "Frontal Pacific Ocean" areas from same HU-12 designation*

3.10.1.1 San Carpoforo Creek

The 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. 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.

3.10.1.2 San Simeon Area

The San Simeon-Arroyo de la Cruz area watershed grouping 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.

3.10.1.3 Santa Rosa Creek Area

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.

3.10.2 Watersheds in WPA 2 – Cayucos / Morro Bay / Los Osos

A list of the USGS HU-12 watershed names and numbers for WPA - 2 are found in **Table 3-12**.

Table 3-12: *USGS Hydraulic Unit 12 (HU-12) Watershed Designations for WPA 2 – Cayucos/Morro Bay/Los Osos*

WPA	San Luis Obispo County Localized Watershed Group Name	USGS HU-12 Name	USGS HU-12 Number
2 - Cayucos / Morro Bay / Los Osos	Cayucos Creek - Whale Rock Area	Old Creek	180600060409
		Cayucos Creek - Frontal Pacific Ocean	180600060410
		Toro Creek	180600060411
		Morro Creek	180600060412
		Willow Creek - Frontal Pacific Ocean	180600060413
	Morro Bay	Los Osos Creek	180600060501
		Chorro Creek	180600060502
		Morro Bay	180600060503
	Coastal Irish Hills	Islay Creek - Frontal Pacific Ocean	180600060504

3.10.2.1 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. The watershed area contains five major drainages that independently reach the Pacific Ocean: Cayucos Creek, Old Creek, Toro Creek, Willow 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.

3.10.2.2 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.

3.10.2.3 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.

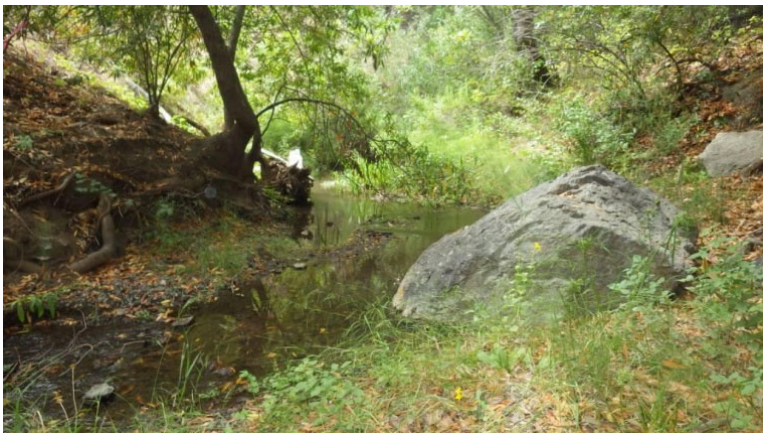
3.10.3 Watersheds in WPA 3 – San Luis Obispo / South County

The names and numbers for the USGS HU-12 watersheds in WPA 3 are listed in **Table 3-13**.

Table 3-13: *USGS Hydraulic Unit 12 (HU-12) Watershed Designations for WPA 3 – San Luis Obispo/South County*

WPA	San Luis Obispo County Localized Watershed Group Name	USGS HU-12 Name	USGS HU-12 Number
3 - San Luis Obispo / South County	San Luis Obispo Creek	Upper San Luis Obispo Creek	180600060701
		Lower San Luis Obispo Creek	180600060702
	Pismo Creek	Pismo Creek	180600060703
	Arroyo Grande Creek	Lopez Canyon	180600060601
		Upper Arroyo Grande Creek	180600060602
		Tar Spring Creek	180600060603
		Los Berros Creek	180600060604
		Lower Arroyo Grande Creek	180600060605
		Meadow Creek - Frontal Pacific Ocean	180600060705
	Oso Flaco - Black Lake Area	Oso Flaco Creek	180600060704
	Nipomo Creek - Santa Maria River Area	Nipomo Creek	180600080601
		Upper Santa Maria River	180600080602
		Lower Santa Maria River	180600080603

3.10.3.1 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 Polytechnic State University, rural residential, a regional airport and two wastewater treatment plants.

3.10.3.2 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.

3.10.3.3 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.

3.10.3.4 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.

3.10.3.5 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.

3.10.4 Watersheds in WPA 4 – Cuyama River

The USGS HU-12 names and numbers for the watersheds in WPA 4 are listed in **Table 3-14**.

***Table 3-14**: USGS Hydraulic Unit 12 (HU-12) Watershed Designations for WPA 4 – Cuyama River*

WPA	San Luis Obispo County Localized Watershed Group Name	USGS HU-12 Name	USGS HU-12 Number
4 - Cuyama River	Alamo Creek	Upper Alamo Creek	180600070401
		Lower Alamo Creek	180600070402
	Huasna River	Arroyo Seco	180600070501
		Upper Huasna River	180600070502
		Carrie Creek	180600070503
		Huasna Creek	180600070504
		Lower Huasna River	180600070505
	Cuyama River	Tennison Canyon - Cuyama River	180600070203
		The Wash	180600070204
		New River - Cuyama River	180600070208
		Bitter Creek - Cuyama River	180600070209
		Schoolhouse Canyon - Cuyama River	180600070302
		Red Rock Canyon	180600070303
		Powell Canyon	180600070304
		Cottonwood Canyon - Cuyama River	180600070305
		Mustang Canyon - Cuyama River	180600070306
		Carrizo Canyon	180600070601
		Sycamore Creek - Cuyama River	180600070602
		Aliso Creek-Cuyama River	180600070604
		Twitchell Reservoir - Cuyama River	180600070605
		Canada de Los Coches - Cuyama River	180600070606

3.10.4.1 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.

3.10.4.2 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.

3.10.4.3 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.

3.10.5 Watersheds in WPA 5 – North County

Table 3-15 lists the USGS HU-12 watersheds located in WPA 5.

Table 3-15: *USGS Hydraulic Unit 12 (HU-12) Watershed Designations for WPA 5 – North County.*

WPA	San Luis Obispo County Localized Watershed Group Name	USGS HU-12 Name	USGS HU-12 Number
5 - North County	Upper San Juan Creek	Big Spring	180600040101
		Barrett Creek - San Juan Creek	180600040102
		Rogers Creek - San Juan Creek	180600040103
		Placer Creek -San Juan Creek	180600040104
		Navajo Creek	180600040105
		Sandy Canyon	180600040106
		Carnaza Creek - San Juan Creek	180600040107
	Lower San Juan Creek	Long Canyon - San Juan Creek	180600040301
		Shell Creek	180600040302
		Gillis Canyon -San Juan Creek	180600040303
		McDonald Canyon - San Juan Creek	180600040304
	Cholame Creek	(unnamed)	180600040205
		Middle Cholame Creek	180600040206
		Lower Cholame Creek	180600040207
	Estrella River	Indian Creek	180600040401
		McMillan Canyon - Estrella River	180600040402
		Shimmin Canyon	180600040403
		Mason Canyon	180600040404
		Pine Creek - Estrella River	180600040405
		Hog Canyon	180600040406
		Keyes Canyon - Estrella River	180600040407
		Ranchito Canyon	180600040408
		San Jacinto Creek	180600040409
		Town of Estrella - Estrella River	180600040410
	Upper Salinas River - Santa Margarita Area	Pozo Creek	180600050101
		Big Spring - Salinas River	180600050102
		Toro Creek - Salinas River	180600050103
		San Margarita Lake - Salinas River	180600050104
	Mid Salinas River - Atascadero Area	Rinconada Creek	180600050201
		Santa Margarita Creek	180600050202
		Pilitas Creek - Salinas River	180600050203
		Atascadero Creek	180600050204
		Paloma Creek - Salinas River	180600050205

WPA	San Luis Obispo County Localized Watershed Group Name	USGS HU-12 Name	USGS HU-12 Number
	Huer Huero Creek	East Branch Huer Huero Creek	180600050301
		Middle Branch Huer Huero Creek	180600050302
		(unnamed)	180600050303
		Upper Huer Huero Creek	180600050304
		(unnamed)	180600050305
		Dry Creek	180600050306
		Lower Huer Huero Creek	180600050307
	Lower Salinas River - Paso Robles Area	Santa Rita Creek	180600050401
		Paso Robles Creek	180600050402
		Graves Creek - Salinas River	180600050403
		Town of Templeton - Salinas River	180600050404
		Mustard Creek - Salinas River	180600050405
		San Marcos Creek	180600050406
		Bridge Canyon - Salinas River	180600050407
		Vineyard Canyon	180600050801
		Portuguese Canyon - Salinas River	180600050802
	Nacimiento Area	Little Burnett Creek	180600050605
		Salmon Creek - Nacimiento River	180600050606
		Town Spring	180600050607
		Las Tablas Creek	180600050608
		Kavanaugh Creek - Nacimiento River	180600050609
		Nacimiento Reservoir - Nacimiento River	180600050610
		Nacimiento River	180600050611
		Harris Creek	180600050709
		San Antonio Reservoir- San Antonio River	180600050710
		Kemp Canyon - San Antonio River	180600050711

3.10.5.1 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 generally 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.

3.10.5.2 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.

3.10.5.3 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.

3.10.5.4 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.

3.10.5.5 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.

3.10.5.6 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.

3.10.5.7 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.

3.10.5.8 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. 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.

3.10.5.9 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.

3.10.6 Watersheds in WPA 6 – Carrizo Plain

A list of each of the USGS HU-12 watersheds found in the Carrizo Plain WPA 6 is found in Error! Reference source not found..

***Table 3-16**: USGS Hydraulic Unit 12 (HU-12) Watershed Designations for WPA 6 – Carrizo Plain*

WPA	San Luis Obispo County Localized Watershed Group Name	USGS HU-12 Name	USGS HU-12 Number
6 - Carrizo Plain	Soda Lake	Carrizo Plain - Soda Lake	180600030203
		Thompson Spring - Carrizo Plain	180600030202
		Mustang Springs - Carrizo Plain	180600030201
	Black Sulphur Spring	Black Sulphur Spring - Carrizo Plain	180600030102
		Padrones Spring - Carrizo Plain	180600030101

3.10.6.1 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 endorheic (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.

3.10.6.2 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 endorheic (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.

3.11 Regional Water Quality

This section of the Plan discusses regional water quality conditions and identifies needs and requirements for water quality protection and improvement. Assembly Bill 1249, an amendment to the California Water Code (Salas, Chapter 717, Statutes of 2014), provides the following guidance for Integrated Regional Water Management Plans:

> *If an area within the boundaries of the plan has nitrate, arsenic, perchlorate, or hexavalent chromium contamination, the plan shall include a description of each of the following:*
>
> *(A) The location and extent of that contamination in the region.*
> *(B) The impacts caused by the contamination to communities within the region.*
> *(C) Existing efforts being undertaken in the region to address the impacts.*
> *(D) Any additional efforts needed to address the impacts.*

3.11.1 SWRCB Water Quality Evaluation

Assembly Bill 2222 (Caballero, Chapter 670, Statutes of 2008) required the State Water Resources Control Board (SWRCB) to submit a report to the State Legislature identifying communities that rely on contaminated groundwater as a primary source of drinking water and outlining potential solutions for treatment or acquisition of alternative water supplies. In collaboration with the California Department of Public Health (CDPH) and Department of Water Resources (DWR), the SWCRB evaluated principal contaminants detected in the groundwater supply of California community water systems (CSWs).

The SWRCB's 2013 Report, titled "Communities That Rely on a Contaminated Groundwater Source for Drinking Water" expands on any CWS that (1) receives, at minimum, a portion of its drinking water from a groundwater source and (2) has had a principal contaminant or chemical detected in its groundwater source above a primary maximum contaminant level (MCL) on two or more occasions between 2002 and 2010. Developed by the SWRCB, MCLs are health-based standards for the maximum allowable concentrations of contaminants in drinking water. For the Report to the Legislature, the SWRCB used data from the CDPH Division of Drinking Water and Environmental Management water quality monitoring database for a compliance cycle of

2002 to 2010. The methodology used to evaluate regional water quality for this IRWM Plan Update was based on the procedures used by the SWRCB in their 2013 Report.

3.11.2 IRWM Water Quality Analysis

The 2018 IRWM Plan Update investigates regional nitrate, arsenic, perchlorate, and hexavalent chromium contamination of active, groundwater-reliant CWSs from 2007 to 2017. Data used for identification of SLO County CWSs was obtained from the Drinking Water Watch's Safe Drinking Water Information System (SDWIS).

The SDWIS database was queried for all active CWSs in SLO County and provided the name, water system number, and water source information for each of the CWSs. Following definitions outlined in the SWCRB Report, if a CWS draws groundwater from a single well as part of its supply, the water system is understood as groundwater-reliant. If a CWS draws solely from groundwater wells, the water system is considered completely, or 100%, groundwater-reliant.

The water quality data used for this evaluation was obtained from the SWRCB's GeoTracker GAMA information system. The nitrate, arsenic, perchlorate, and hexavalent chromium levels from 2007 to 2017 were examined for SLO County Public Water System Wells. The Public Water System Wells dataset includes well identification number, approximate longitude and latitude, chemical concentration, and sampling dates; this information is available to the public and can be downloaded from the GeoTracker GAMA online map. For this analysis, a contaminated water system contains at least one active drinking-water well where a contaminant (nitrate, arsenic, perchlorate, or hexavalent chromium) was detected with a concentration above an MCL one or more times between 2007 and 2017.

Between the four contaminants, a total of 239 active CWS wells within the SLO Region were sampled and evaluated between 2007 and 2017. A summary of the active CWS wells sampled is provided in **Table 3-17**. Sixty-one active CWS wells were detected with contaminant concentrations above an MCL for one of the four contaminants at least one time during the period of review.

Table 3-17: *Summary of Active Community Water System Wells Sampled for Nitrate, Arsenic, Perchlorate and Hexavalent Chromium between 2007 and 2017*

Contaminant	Number of Wells Sampled	Number of Contaminated Wells
Nitrate	233	39
Arsenic	218	19
Perchlorate	221	1
Hexavalent Chromium	193	3
Total	**239**	**61**

The well sampling data was compared with the information on active CWSs to identify groundwater-reliant CWSs with contaminated groundwater sources. A summary of these results is shown in **Table 3-18**. From 2007 to 2017, testing for each contaminant was conducted for over 50 CWSs at one or more of their supply wells.

Table 3-18: *Summary of Contaminated, Groundwater-Reliant Community Water Systems from 2007 to 2017*

Contaminant	Number of Groundwater-Reliant CWS Evaluated	Number of CWS Reliant on Contaminated Groundwater Source	Number of CWS 100% Reliant on a Contaminated Groundwater Source
Nitrate	58	14	9
Arsenic	60	12	9
Perchlorate	60	1	1
Hexavalent Chromium	54	3	2

3.11.3 Nitrate

Nitrate has a current MCL of 10 mg/L (milligrams per liter). Fourteen groundwater-reliant CWSs had wells with one or more nitrate detections above the MCL between 2007 and 2017. Of those CWSs, nine were identified as completely reliant on a contaminated groundwater source. The active CWSs that have been impacted by nitrate contamination are summarized in

Table 3-19. The sampling dates shown in the table note the most recent (as of December 31, 2017) detection of a concentration above the MCL for an active well operated by the CWS. The Los Osos Groundwater Basin has been under a comprehensive Basin Plan since January 2015, after a stipulated judgement was rendered by the Superior Court of California. The key components of this basin plan and the annual monitoring reports are to track and combat the effects of seawater intrusion and elevated nitrate concentrations.

Table 3-19: *Active Community Water Systems Impacted by Nitrate (NO_3^-)*

Community Water System	PWS Number	Population Served	No. of Wells with [NO_3^-] >MCL	Last Sampling Date with [NO3-] >MCL
City of Arroyo Grande	4010001	17,064	1	9/4/2010
City of Morro Bay	4010011	10,327	10	12/5/2017
Golden State Water Company - Cypress Ridge	4010040	2,582	7	12/28/2017
Golden State Water Company - Los Osos	4010017	8,844	2	10/28/2015
Golden State Water Company - Nipomo	4010018	4,904	3	12/27/2017
Grover Beach Water Department	4010004	13,156	3	10/6/2015
Halcyon Water System	4000501	105	1	10/12/2017
Higuera Apartments	4000563	30	1	6/29/2017
Los Osos Basin Plan Area*	n/a	14,159	5	10/12/2017
Nipomo CSD	4010026	12,512	1	1/25/2017
Rancho Colina Mobile Home Park	4000653	250	3	12/1/2017

S & T Mutual Water Company	4000523	575	2	11/13/2017
San Miguel CSD	4010010	2,300	1	2/3/2009
Templeton CSD	4010019	6,800	1	9/5/2017
Woodland Park Mutual Water Company	4000506	500	2	10/6/2017

**Note: The Los Osos Basin Plan uses 5 wells to establish a "Nitrate Metric". See the Basin Plan and Annual Reports for more information.*

3.11.3.1 Impacts and Solutions

If consumed, nitrate poses the biggest risk to infants; adults are rarely exposed to levels that could cause unwanted health effects. According to the CDC Public Health Statement for Nitrate and Nitrite, when infants less than six months old consume water contaminated by nitrates, methemoglobinemia is common. Methemoglobinemia disrupts the ability of the hemoglobin to delivery oxygen to tissues.

Arroyo Grande and Grover Beach both use treatment methods to remove nitrates from water before it is delivered for potable uses.

Nipomo CSD has been investigating alternative effluent disposal methods that could be used to mitigate the nitrate levels of its groundwater supply.

Templeton CSD has experienced nitrate, arsenic, and perchlorate concentrations exceeding the respective MCLs between 2007 and 2017. To combat these contaminants, Templeton developed a plan for a conjunctive use project, which received Prop 84 Implementation Grant funding in 2015. The project involves the upgrade of the Meadowbrook Wastewater Treatment Plant to increase its capacity and allow for tertiary treatment of water. Treated effluent can then be released to infiltration ponds increasing the Salinas River underflows and improving groundwater quality.

3.11.4 Arsenic

Arsenic has a current MCL of 10 µg/L (micrograms per liter). Twelve CWSs were identified as reliant on a groundwater source contaminated by arsenic, and nine of those are completely reliant of groundwater. These CWSs are summarized in **Table 3-20**.

Table 3-20: *Active Community Water Systems Impacted by Arsenic (As)*

Community Water System	PWS Number	Population Served	No. of Wells with [As] >MCL	Last Sampling Date with [As] > MCL
Almira Water Association	4000631	40	1	10/23/2017
Avila Valley Mutual Water Company	4000716	65	1	5/11/2011
Bella Vista Mobile Lodge	4000512	200	2	8/12/2014
City of Paso Robles	4010007	30,522	3	6/7/2016
Country Hills Estates	4000637	60	1	12/21/2017

CSA 23 - Santa Margarita	4010024	1,259	1	2/6/2017
Edna Ranch Mutual Water Company - East	4000202	60	1	9/14/2011
H2O, Inc.	4000741	60	1	2/28/2011
Nipomo CSD	4010026	12,512	1	4/22/2015
Rim Rock Water Company	4000750	55	1	11/17/2017
San Miguel CSD	4010010	2,300	1	8/29/2017
Templeton CSD	4010019	6,800	5	12/12/2017

3.11.4.1 Impacts and Solutions

Arsenic is a naturally occurring substance and is commonly found in groundwater at low concentrations. As reported in the CDC's Public Health Statement on Arsenic, inorganic arsenic is a known toxic to humans and can be fatal if consumed in large doses. If consumed in lower doses, it can cause stomach and intestine irritation. Inorganic arsenic is also a recognized human carcinogen by the EPA.

Due in part to the poor quality of the groundwater, Avila Valley Mutual Water Company relies heavily upon its surface water supplies and only uses groundwater as an emergency supply.

In the past 10 years, arsenic levels above the MCL have been measured in three of the City of Paso Robles's wells; the most recent of these measurements was in 2016. The City has increased the use of microfiltration well heads to remove water contaminants from its groundwater. Paso Robles has also increased its use of water from Nacimiento Reservoir to help improve groundwater quality.

3.11.5 Perchlorate

Perchlorate has a current MCL of 6 µg/L. Templeton Community Services District (CSD) operates one well with a perchlorate concentration measured at 20 µg/L in 2008. Templeton CSD serves a population of 6,800 and is completely reliant on a contaminated groundwater source. In response to water quality issues, Templeton is implementing a conjunctive use program described in **Section 3.11.3.1** above.

It should be noted that the results for two other wells were reported with a limit of detection exceeding the MCL of 6 µg/L. For this analysis, if the reported perchlorate concentration was less than the limit of detection, it was assumed the groundwater source did not exceed the drinking water standard.

According to the CDC Public Health Statement for Perchlorates, perchlorate consumption disrupts the ability of the thyroid to uptake iodine. This can block the thyroid's production of hormones disrupting body functions regulated by those hormones.

3.11.6 Hexavalent Chromium

In a media release on August 1st, 2017, the SWRCB reported adoption of a resolution to remove the MCL for hexavalent chromium (10 µg/L) found in drinking water. This action follows an order by the Superior Court of Sacramento County, which found the hexavalent chromium MCL invalid due to a failure of the SWRCB to consider if the MCL was economically feasible. The SWRCB is working to address these concerns and plans to develop a new MCL by 2019.

This evaluation was based on the hexavalent chromium MCL of 10 µg/L, which was in place when the 2016 IRWM Plan Guidelines were released. Three active CWS wells were identified with one or more hexavalent chromium concentration detections above the MCL. Of the three groundwater-reliant CWSs affected by hexavalent chromium contamination, two were identified as completely reliant on a contaminated groundwater source. The active CWSs impacted by hexavalent chromium are summarized in **Table 3-21**.

Table 3-21: *Active Community Water Systems Impacted by Hexavalent Chromium (Cr^{+6})*

Community Water System	PWS Number	Population Served	No. of Wells with [Cr^{+6}] >MCL	Last Sampling Date with [Cr^{+6}] >MCL
City of San Luis Obispo	4010009	45,802	1	11/13/2014
Hidden Hills Mobilodge	4000632	55	1	9/6/2017
Los Osos CSD	4010016	7,086	1	12/7/2015

3.11.6.1 Impacts and Solutions

Based on the Public Health Statement for Chromium, the primary concern associated with chromium (VI) is its carcinogenic properties. Consumption and inhalation of chromium (VI) has been shown to cause lung cancer along with various other forms of cancer. Consumption of chromium (VI) can also cause irritation and ulcers in the stomach and small intestine. Additionally, male animals exposed to chromium (VI) experience damage to their reproductive systems.

Hexavalent chromium concentrations have forced the City of SLO to stop using its Pacific Beach Well and Fire Station #4 Well. While the City of SLO continues to use groundwater as needed, groundwater contamination has led the City to eliminate groundwater from its long-term water supply calculations.

3.11.7 Salt and Nutrient Management Planning Efforts

Four efforts have taken place to better understand local basins and how to prioritize limited capacities to the highest priority areas. These efforts included:

1. Identification and Prioritization of Basins in the Region Requiring SNMPs
2. The Paso Robles Groundwater Basin SNMP

3. Santa Maria Groundwater Basin Characterization – Phase I for the development of an SNMP
4. Los Osos Basin SNMP – Final draft complete and submitted to the State Water Board for Review in January 2018. Review is pending.

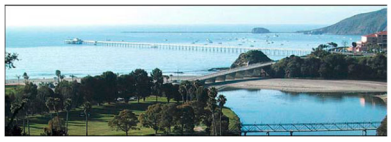
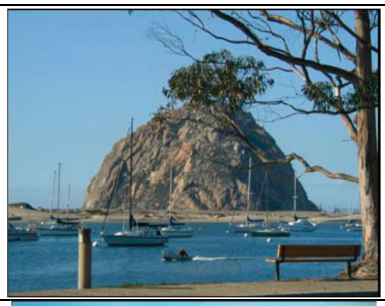
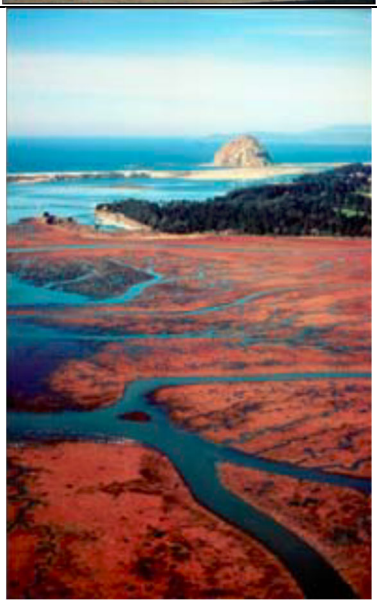
The first three documents were funded by a Proposition 84 2012 Planning Grant. The San Luis Obispo Flood Control and Water Conservation District was the lead agency for developing each of these reports.

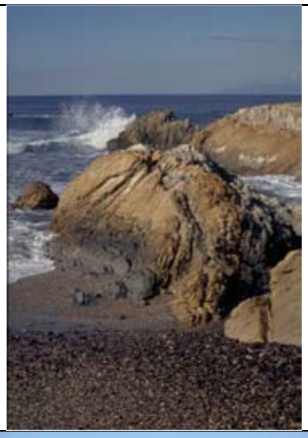
3.12 Environmental Resources

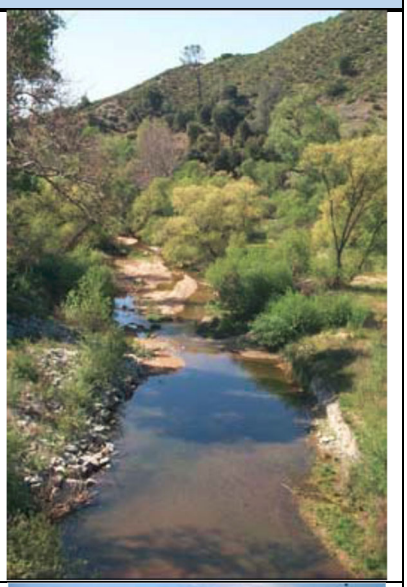
The various environmental resources identified throughout the region are described in **Table 3-22**.

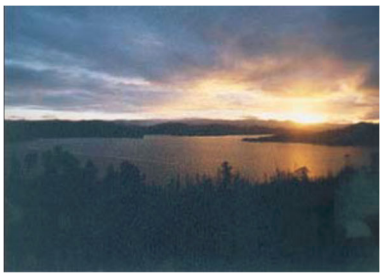
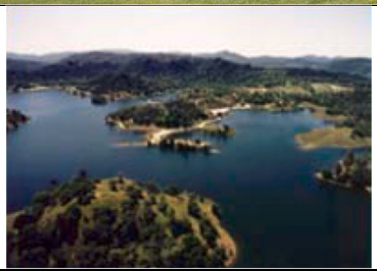
Table 3-22: *Environmental Resources Throughout the IRWM Region*

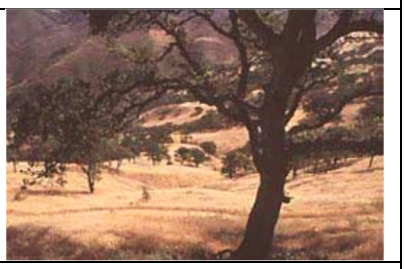
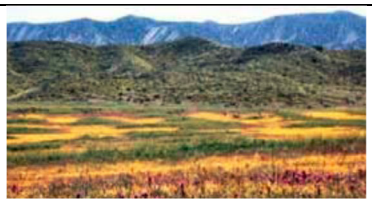
Environmental Resource	Description	Image
San Luis Obispo Coastal Zone spanning 118 miles of coastline with numerous wide sandy beaches, sheltered bays, and vista pints offering scenic views of the Pacific Ocean.	The coastal zone of San Luis Obispo County is known throughout the state for its beauty and 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	

Environmental Resource	Description	Image
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.	
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.	

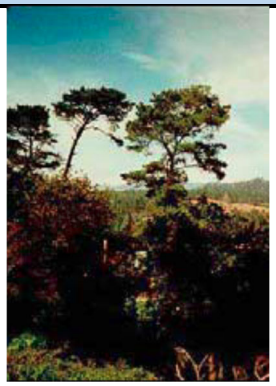
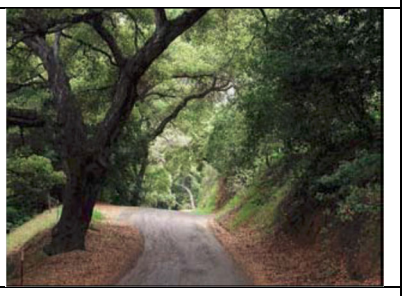
Environmental Resource	Description	Image
Hearst Ranch Conservation Project	With 82,000 acres reaching from the ocean, over the Santa Lucia Mountain Range and to Lake Nacimiento, the Ranch contains extraordinary natural resources. Its 18 miles of coastline includes the spectacular San Simeon Point, beach 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**
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.	

Environmental Resource	Description	Image
Upper Salinas River	The Salinas River has the reputation of being the largest submerged stream in the United States.	
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.	

Environmental Resource	Description	Image
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.	
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.	

Environmental Resource	Description	Image
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.	
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**

Environmental Resource	Description	Image
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.	
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**

Environmental Resource	Description	Image
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 Cambria 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.	
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**

Environmental Resource	Description	Image
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. Sportfishing is very popular in Lake Nacimiento, Santa Margarita Lake, and Lopez Lake.	

3.13 Climate Change

An in-depth description of the anticipated climate change effects in San Luis Obispo County and the methods used to determine these effects are contained in Section P. Some significant climate change effects for the Region include:

- Increased air and water temperatures
- Decreased annual precipitation
- Increased drought frequency
- Increased storm severity
- Rising sea levels
- Increased risk of wildfires
- Increased evapotranspiration

While most of these effects will pertain to the entire County, the resources, assets, and systems impacted by climate change will vary. For that reason, descriptions of the anticipated climate change impacts are separated by subregion.

3.13.1 North Coast Sub Region

Climate change could make it increasingly difficult to meet water demand in the North Coast Subregion. As temperatures increase and droughts become more frequent prominent industries such as hotels, wineries, and agriculture can expect increased, and potentially unmet, water demands. The vital tourism industry in this subregion causes an increased seasonal water demand during summer months for several communities including San Simeon, Cambria, and Los Osos. These seasonal water demands correspond to periods of lower groundwater levels and water supplies leaving them vulnerable to the effects of climate change. Three of the most widespread crops in the subregion – grapes, berries, and avocados – are also sensitive to climate change and could experience decreased yields and increased water demands as temperatures and evapotranspiration rates rise.

Important water supplies in the North Coast Subregion include coastal aquifers, Whale Rock Reservoir, and the SWP. Sea level rise and increased drought conditions will put Pico Creek Valley, San Simeon Valley, Chorro Valley, Morro Valley, and Los Osos Valley Basins at a heightened threat of seawater intrusion. Additionally, droughts in the past have caused water delivered through the SWP to have unsuitable salt levels restricting water supplies for the Chorro Valley Water System.

Growing levels of sedimentation, increased runoff, and rising temperatures will all contribute to increased water contamination risks. The Morro Bay Estuary, Chorro Creek, Los Osos Creek, and Warden Creek Watersheds have histories of bacteria impairment and will be especially vulnerable to increased contamination risks. Not only does this have harmful effects on ecosystems, but it also limits important beneficial uses of these water bodies including recreation and oyster harvesting. Additionally, San Simeon and Whale Rock Reservoir have experienced water contamination due to heavy rain events; the risk of contamination from stormwater will only increase as storm severity worsens.

As sea level rises along the North Coast, coastal erosion will become an increasing concern for areas like San Simeon, which already require coastline armoring. Flooding of low-lying areas in San Simeon, Morro Bay, and Los Osos will also become a growing issue as many of these areas already experience flooding during king tides and storm surges. Lastly, sea water intrusion and flooding can disrupt coastal and low-lying habitats including Morro Bay Estuary that are critical for the ecosystems and economies they support.

Along with increased flooding due to sea level rise, increased storm severity will cause a greater risk of flooding for areas throughout the subregion. Cambria, Cayucos, Los Osos, and San Simeon have insufficient flood control facilities for current storm patterns putting them at great risk of worsening flooding in the future.

Ecosystems throughout the North Coast Subregion will be threatened by a variety of climate change effects. One such effect is increased sedimentation and erosion, which has already been observed in the Morro Bay Estuary. Increased sedimentation has contributed to a significant reduction in eelgrass extent, which is vital for fish habitats and overall estuary water quality and is expected to worsen in the future. Threats to water quality described above could similarly disrupt aquatic habitats and restrict economic and recreational uses of these habitats. Activities like tourism, oyster farming, the Morro Bay Winter Bird Festival, and fishing are vital to the communities of this subregion and are threatened by climate change.

3.13.2 North County Sub Region

The wine industry places a defining role in the North County Subregion. Both wineries and vineyards have significant water demands, which are expected to increase as temperatures and evapotranspiration rates increase. This could have serious implications for water supply sources in the subregion, especially groundwater basins. The Paso Robles Basin is a primary water source for multiple communities in the subregion and has been designated as subject to critical conditions of overdraft by DWR[1]. Therefore, increased drought frequency and decreased annual precipitation compounded with growing domestic, industrial, and agricultural water demands creates will make meeting water demand increasingly challenging in this area.

The other major water supply sources for the North County Subregion are the Nacimiento and Salinas Reservoirs. Not only are these reservoirs at risk of increased droughts and declining precipitation trends, but they are also limited in their storage capabilities during periods of surplus supplies. The Nacimiento Reservoir is overseen by Monterey County and San Luis Obispo water contractors have no storage rights. Storage in the Salinas Reservoir is only permitted when there is a live flow in the Salinas River. These conditions will put the subregion at great risk as water supplies become increasingly unreliable.

In addition to threats to water supply, a myriad of climate change effects is anticipated to cause concerns over water quality for the subregion. Both Nacimiento and Salinas Reservoir are located within areas designated as very high fire hazard zones, and as the risk of wildfires increases, the possibility of wildfire-related contamination also increases. Increased temperatures and drought frequency could increase eutrophication in the subregion's water bodies. This concern is magnified by the observation of increased algae growth, elevated nutrient levels, or low dissolved oxygen conditions for Nacimiento and Salinas Reservoirs and across Middle Salinas-Atascadero and Cholame Creek Watersheds during drought conditions. Lastly, increased storm severity could result in increased storm-related contamination for the area's reservoirs and water bodies.

[1] Per DWR's Bulletin 118, Interim Update 2016, page 12. https://water.ca.gov/LegacyFiles/groundwater/bulletin118/docs/Bulletin_118_Interim_Update_2016.pdf

Increased storm severity is also expected to result in an elevated flooding risk for the North County Subregion. This would be particularly concerning for San Miguel, Templeton, and other communities with insufficient flood control facilities. Growing wildfire threats exacerbate the potential risk of harmful flooding events in this subregion.

The North County Subregion is home to ecosystems rich in biodiversity. However, anticipated climate change effects could disrupt critical habitats and other ecosystem services. Sedimentation has already impacted the health of the Salinas River and is expected to increase. Decreased precipitation and increased drought frequency will contribute to declining instream flows and the fragmentation of the Salinas and Estrella Rivers – critical movement corridors for riparian species. Disruption of aquatic habitats and the species they support could also restrict recreational activities and tourism in the area.

3.13.3 South County Sub Region

Some of the key industries in the South County Subregion rely heavily on water for their operations. Rising temperatures, increased evapotranspiration rates, and decreased precipitation could lead to unmet water demand for prominent industries such as oil production, tourism, and agriculture. Specifically, some of the biggest crops for the subregion – strawberries, avocados, and grapes – are climate-sensitive and could have increased irrigation needs as a result of declining soil moisture or increased soil salinity. This issue is magnified by dependence on drought-sensitive groundwater basins, such as the Cuyama Valley and Santa Maria Valley Basins. Past water curtailment efforts in Nipomo, while successful at decreasing water use, have not resulted in a corresponding increase in groundwater levels indicating the vulnerability of this subregion to increased drought frequency.

Groundwater basins in the South County Subregion are not only at risk of accelerating drought frequency, but those along the coast could also experience an increased risk of saltwater intrusion due to sea level rise. The Avila Valley Sub-basin and Santa Maria Valley Basin are two coastal aquifers that serve as water supply sources for the subregion. Another concern for the area is the lack of storage capacity for surplus water supplies. Lopez Reservoir is the primary storage option, but storage is restricted according to the Low Reservoir Response Plan.

Several climate changes effects will create concerns for water quality in the subregion. Increased wildfire risks could cause contamination concerns for water bodies in the area, especially Lopez Reservoir. Increased temperatures and drought frequency are expected to drive greater eutrophication for critical water bodies throughout the subregion. Some of the water bodies that already struggle with eutrophication issues and will be especially vulnerable include Lopez Reservoir, San Luis Obispo Creek, Pismo Creek, and Santa Maria River. Increased storm severity could also become a growing concern for Lopez Reservoir water quality, which is already impacted by storm runoff.

A NOAA tidal gauge at Port San Luis has been monitoring rising sea levels along the County's coastline. As a result of sea level rise, coastal erosion is anticipated to worsen. This will threaten

coastal communities, especially Avila Beach and Pismo Beach, which have already been forced to take measures to fight coastal erosion. Sea level rise is also anticipated to cause worsening storms and coastal flooding putting low-lying areas at risk. Pismo Beach and Oceano currently experience flooding during kind tides and storm surges indicating their vulnerability to this threat. The South SLO County Wastewater Treatment Plant along with other critical infrastructure and coastal habitats will all be at risk of hazardous flooding.

Intensifying storm severity will also contribute to a growing flood risk for the entire South County Subregion. This illuminates the threat posed to communities like Oceano and Arroyo Grande that rely on aging flood protection infrastructure, such as the Arroyo Grande Creek Channel and creek channels in downtown San Luis Obispo. Additionally, there are several communities with insufficient flood control facilities within the subregion. For example, insufficient drainage facilities in Nipomo and Oceano will leave them especially vulnerable to worsening flooding.

Aquatic habitats and ecosystems in the South County Subregion provide essential ecological and economic benefits to the area. Increased sedimentation and erosion is anticipated putting Critical Habitats for endangered and threatened species, such as the snowy plover, at risk. Tourism is a critical industry for the subregion and is largely tied to the beaches and aquatic systems in the region, such as Avila Beach, Pismo Beach, and Oceano Dunes.

3.14 IRWM Plan Regional Issues and Conflicts

As discussed in **Section 4 – 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 4** 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.

3.14.1 North Coast Sub Region

Figure 4-2 indicates water supply 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 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. 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.

3.14.2 North County Sub Region

Figure 4-3 indicates the most significant issues for the North County Sub-Region, with groundwater management as the clear priority. While the SGMA planning process is on-going and has been managed by a cooperative committee of the various stakeholder agencies (see **Section 12.4.4**). However, regarding SGMA implementation, 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 – SGMA response, land-use based, and court-based - each with their own set of objectives to address the issue.

SGMA: In response the Sustainable Groundwater Management Act (2014), the Paso Basin Cooperative Committee (PBCC) was formed to guide the basin's compliance with SGMA. The PBCC includes the County of San Luis Obispo, the City of Paso Robles, the Shandon-San Juan Water District and San Miguel CSD. The Paso Basin GSP is scheduled for a December 2019 adoption. The most up-to-date information is available at the Paso Robles Basin website: http://www.slocounty.ca.gov/Departments/Public-Works/Committees-Programs/Sustainable-Groundwater-Management-Act-(SGMA)/Paso-Robles-Groundwater-Basin.aspx

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 has since been extended multiple times and it is currently set to expire once the Paso Basin GSP is adopted. However, at the June 18th, 2019 Board of Supervisors meeting, the Board directed staff to produce an extension that would primarily extend the ordinance during the startup phase of SGMA implementation in the basin area.

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. While the process is still on-going, the jury "found that the public water suppliers have established a “prescriptive right” such that they can continue to share in the groundwater supply consistent with historical practice, even during times of shortage.” [2] Quantification of this right has not yet been determined.

3.14.3 South County Sub Regions

Figure 4-3 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.

[2] http://www.slocounty.ca.gov/Departments/Administrative-Office/News/Jury-Affirms-Groundwater-Rights-of-Public-Water-Su.aspx

3.15 Disadvantaged Communities

The San Luis Obispo Region is home to many Disadvantaged Communities (DACs), as depicted on **Map 3-15**. **Table 3-23** summarizes the places within the region that qualify as Disadvantaged or are suspected Disadvantaged or Economically Distressed.

The District is in process of complete a Needs Assessment per the Prop. 1 Disadvantaged Communities Involvement Program, which is includes a comprehensive analysis of DAC and suspected DAC communities, including the Census "Block Group" level. This report will detail various water-related conditions and include next steps for the various communities. When complete, this report will be added as **Appendix K.**

Five communities participated in the Prop 1 DAC-Involvement Program. See **Section 10.3.2.2** for more information about the DAC-I program in the San Luis Obispo Region.

Table 3-23: *Disadvantaged Communities and Suspected Disadvantaged Communities / Economically Distressed Areas.*

Community		Geography	County	IRWM region	Median Household Income (MHI) & Population	IRWM / RWMG Involvement
1	San Miguel	Block Group 60790100162	San Luis Obispo	San Luis Obispo County	MHI $49,464 Pop. 2,696	The San Miguel CSD is a member of the RWMG.
2	Shandon	Shandon CSA - CSA 16	San Luis Obispo	San Luis Obispo County	Income survey in progress Pop. 1,295	The community is represented by the County of San Luis Obispo in the RWMG.
3	Santa Margarita	Santa Margarita CDP	San Luis Obispo	San Luis Obispo County	MHI $50,083 Pop. 1,346	The community is represented by the County of San Luis Obispo in the RWMG.
4	Morro Bay	City of Morro Bay	San Luis Obispo	San Luis Obispo County	MHI $53,348 Pop. 10,519	The City of Morro Bay is a member of the RWMG.
5	Grover Beach	City of Grover Beach	San Luis Obispo	San Luis Obispo County	MHI $58,895 Pop. 13,156	The City of Grover Beach is a member of the RWMG.

Community		Geography	County	IRWM region	Median Household Income (MHI) & Population	IRWM / RWMG Involvement
6	San Simeon	San Simeon CDP	San Luis Obispo	San Luis Obispo County	MHI $48,875* Pop. 462	San Simeon CSD is a member of the RWMG.
7	San Luis Obispo	City of San Luis Obispo	San Luis Obispo	San Luis Obispo County	MHI $47,777 Pop. 46,716	The City of San Luis Obispo is a member of the RWMG.
8	Oceano	Oceano CSD	San Luis Obispo	San Luis Obispo County	MHI $39,000 Pop. 7530	Oceano CSD is a member of the RWMG.
9	California Valley	Block Group 60790127021	San Luis Obispo	San Luis Obispo County	MHI $48,636 Pop. 843	Indirectly, via County of San Luis Obispo and the SLO Flood Control and Water Conservation District.

**denotes 2014 value.*

3.16 Tribal History

For centuries (see **Table 3-24**), San Luis Obispo County was the heart of Chumash and Salinan Native American country. The Chumash and Salinan Tribes 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

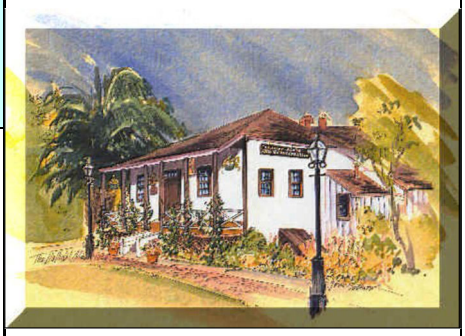
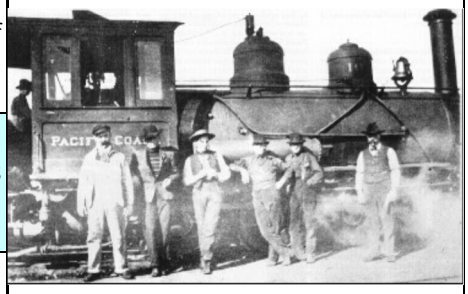
mines. The 1880s and 1890s brought the railroad that connected San Luis Obispo with San Francisco and Los Angeles.

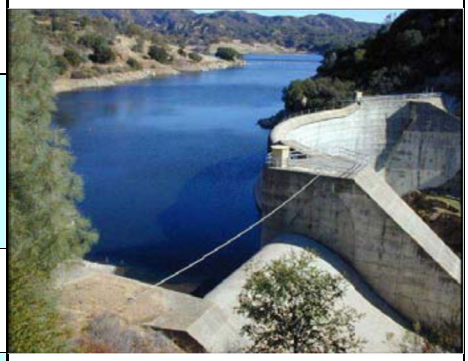
Throughout the 1900's San Luis Obispo County remained largely an agricultural county. The World Wars and the Korean War brought economic growth to San Luis Obispo County as local suppliers supported the war effort. The second half of the century was punctuated with infrastructure projects needed to support 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 3-24: 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 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 was completed in Morro Bay.	
1960	Whale Rock Dam was completed, 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 municipalities south county.	
1985	Pacific Gas and Electric Company's Diablo Canyon Nuclear Power Plant begins 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

3.16.1 Salinan Tribe of Monterey and San Luis Obispo

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 qualify under Senate Bill 18; requiring cities and counties to conduct consultations with California Native American tribes.

3.16.2 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.

The NCTC provided responses to the 2018 Tribal questionnaire and it is included in **Appendix D – Native American Tribal Outreach.**

3.17 References

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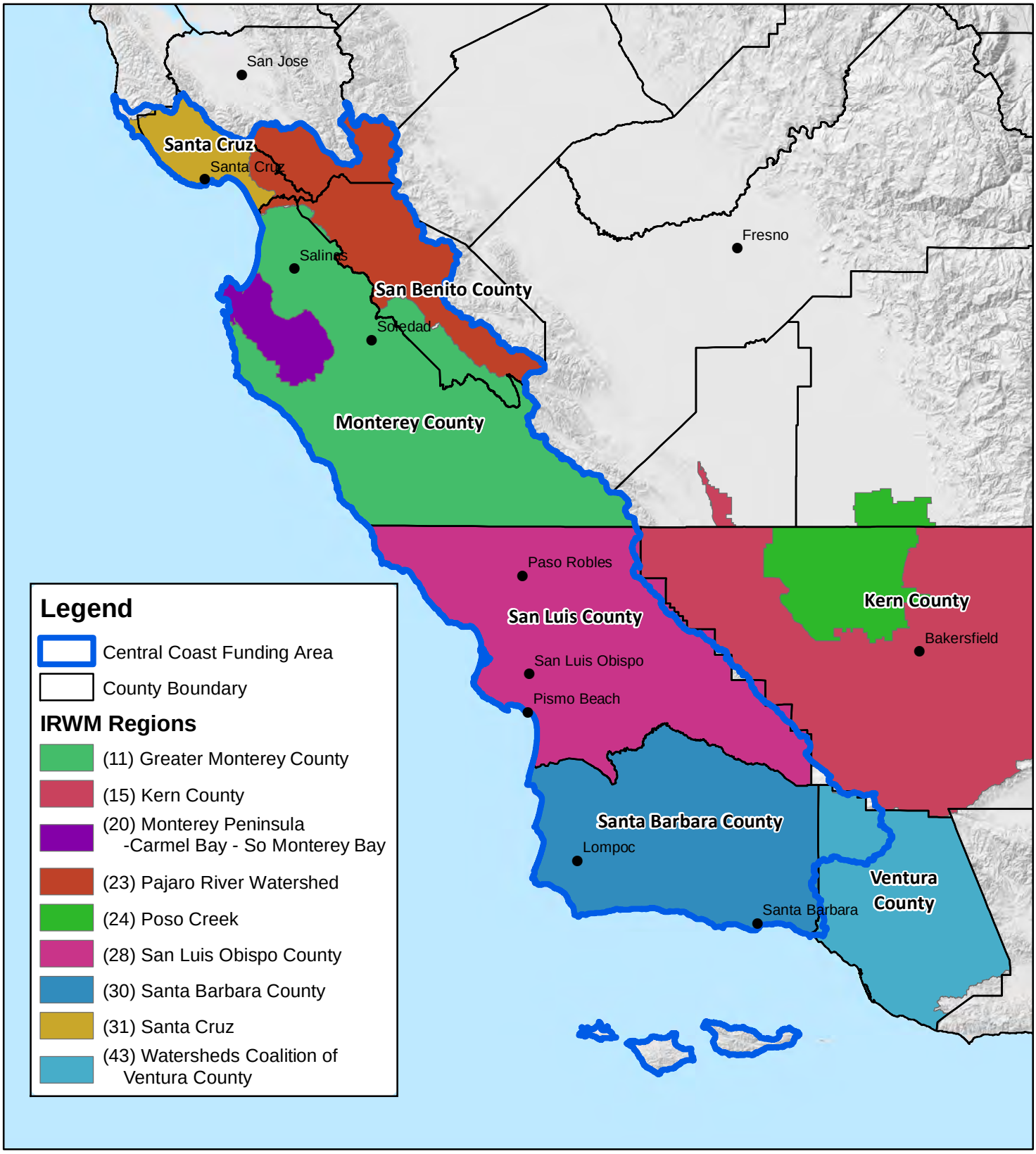


Central Coast Funding Area and Neighboring IRWM Regions

COUNTY OF SAN LUIS OBISPO

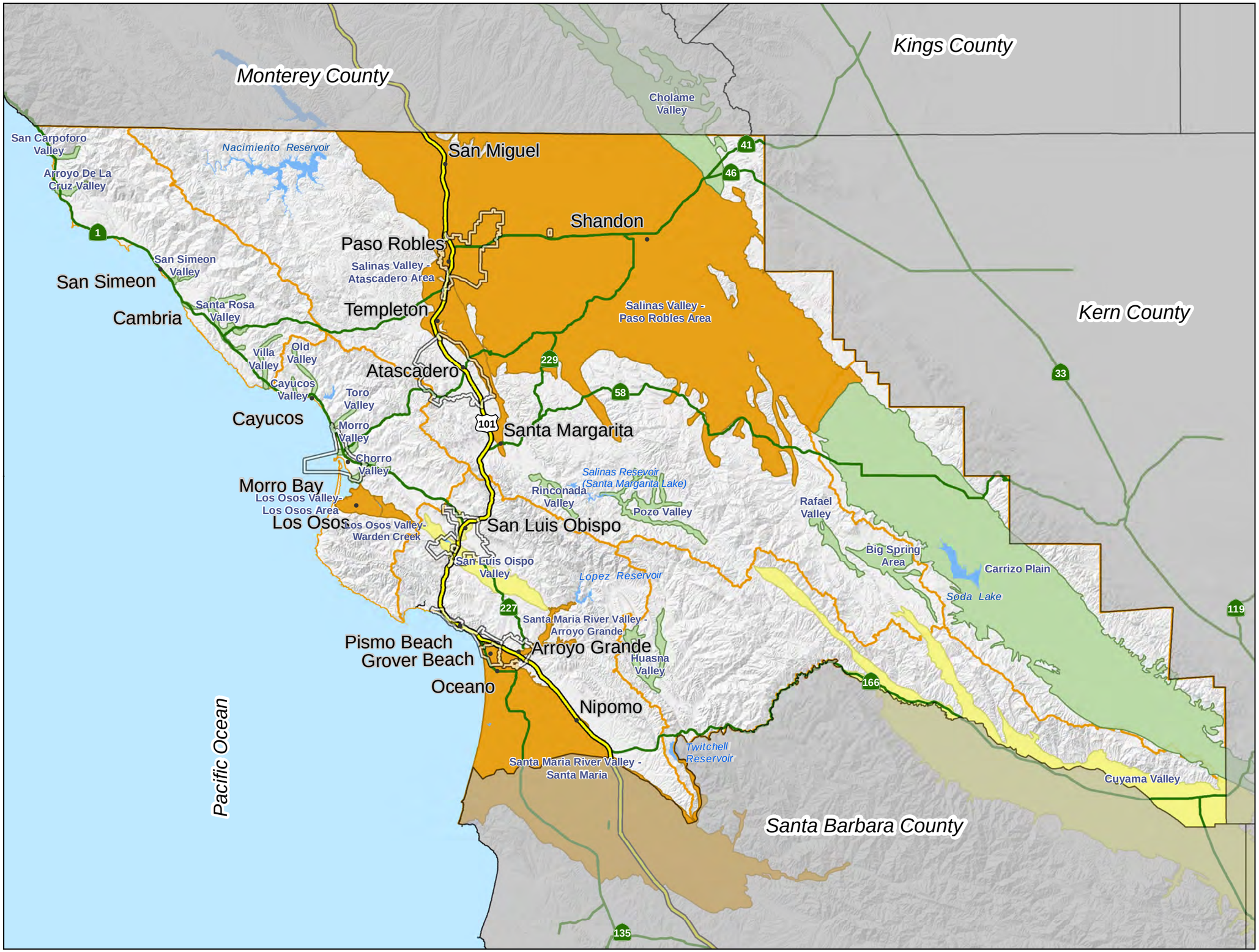
Map: 3-1

0 10 20 30 40 50 100 Miles

N

County of San Luis Obispo
Public Works Water Resources

Printed: 3/25/2019



County of San Luis Obispo
Public Works
Water Resources

Bulletin 118 Groundwater Basins

Map: 3-2

Legend

Highways

- US HIGHWAY
- STATE HIGHWAY
- City Limits

Bulletin 118 Goundwater Basins

CASGEM Priority

- High
- Medium
- Low (None in San Luis Obispo County)
- Very Low

N

0 2.5 5 10
Miles

COUNTY of SAN LUIS OBISPO

Date Created: 3/28/2019

County of San Luis Obispo
Public Works
Water Resources

Water Planning Area Index Map

Map: 3-3

Legend

Highways

- US HIGHWAY
- STATE HIGHWAY
- City Limits
- Bulletin 118 Goundwater Basins

Water Planning Areas (WPA): 2018 IRWM Plan Update

1. WPA 1 San Simeon / Cambria
2. WPA 2 Cayucos / Morro Bay / Los Osos
3. WPA 3 San Luis Obispo / South County
4. WPA 4 Cuyama River
5. WPA 5 North County
6. WPA 6 Carrizo Plain

N

0 2.5 5 10
Miles

COUNTY of SAN LUIS OBISPO

Date Created: 3/28/2019

Monterey County
Kings County
Kern County
Santa Barbara County
Pacific Ocean
San Carpoforo Valley
Arroyo De La Cruz Valley
Nacimiento Reservoir
San Simeon Valley
San Simeon
Cambria
Santa Rosa Valley
Villa Valley
Old Valley
Cayucos Valley
Cayucos
Morro Valley
Chorro Valley
Morro Bay
Los Osos Valley-Los Osos Area
Los Osos
Los Osos Valley-Warden Creek
San Luis Oispo Valley
San Miguel
Paso Robles
Salinas Valley - Atascadero Area
Templeton
Atascadero
Toro Valley
Santa Margarita
Salinas Reservoir (Santa Margarita Lake)
Rinconada Valley
Pozo Valley
San Luis Obispo
Lopez Reservoir
Cholame Valley
Shandon
Salinas Valley - Paso Robles Area
Rafael Valley
Big Spring Area
Carrizo Plain
Soda Lake
Santa Maria River Valley - Arroyo Grande
Pismo Beach
Grover Beach
Arroyo Grande
Huasna Valley
Oceano
Nipomo
Twitchell Reservoir
Santa Maria River Valley - Santa Maria
Cuyama Valley
1
2
3
4
5
6
1
41
46
229
58
33
101
227
166
119
135

County of San Luis Obispo
Public Works
Water Resources

Water Planning Area 1: San Simeon / Cambria

Map: 3-4

Legend

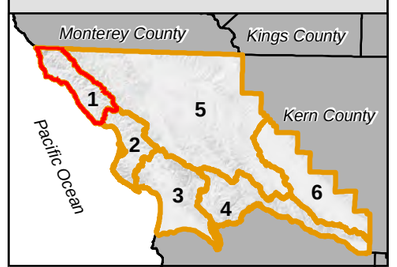
- Streams
- STATE HIGHWAY
- Bulletin 118 Goundwater Basins
- Water Planning Areas

Watershed Boundary Dataset (WBD)

- Hydrologic Unit 08
- Hydrologic Unit 12

N

0 1.25 2.5 5
Miles



COUNTY of SAN LUIS OBISPO

Date Created: 3/25/2019

County of San Luis Obispo
Public Works
Water Resources

Water Planning Area 2: Cayucos / Morro Bay / Los Osos

Map 3-5

Legend

- Streams

Highways

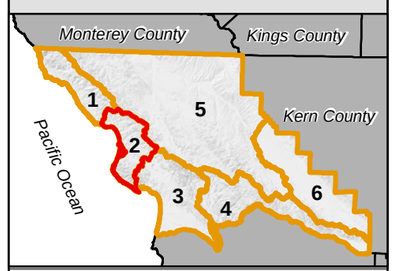
- US HIGHWAY
- STATE HIGHWAY
- Buellton 118 Groundwater Basins
- Water Planning Areas

Watershed Boundary Dataset (WBD)

- Hydrologic Unit 08
- Hydrologic Unit 12

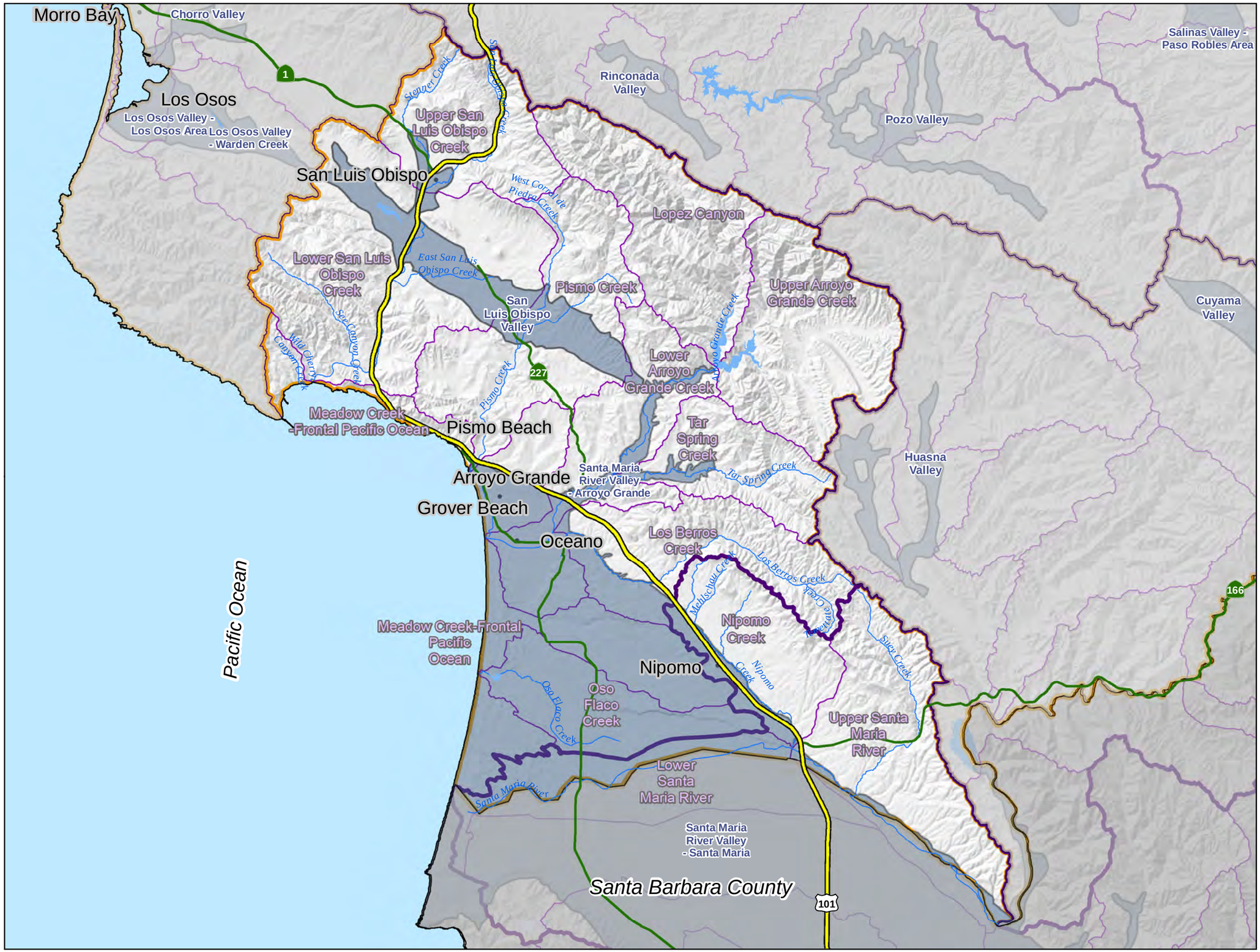
N

0 1.25 2.5 5
Miles



COUNTY of SAN LUIS OBISPO

Date Created: 3/25/2019



County of San Luis Obispo
Public Works
Water Resources

Water Planning Area 3: San Luis Obispo / South County

Map: 3-6

Legend

- Streams

Highways

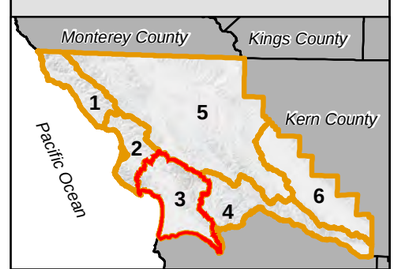
- US HIGHWAY
- STATE HIGHWAY
- Buellton 118 Groundwater Basins
- Water Planning Areas

Watershed Boundary Dataset (WBD)

- Hydrologic Unit 08
- Hydrologic Unit 12

N

0 1.25 2.5 5
Miles



COUNTY of SAN LUIS OBISPO

Date Created: 3/28/2019

County of San Luis Obispo
Public Works
Water Resources

Water Planning Area 4: Cuyama River

Map: 3-7

Legend

- Streams

Highways

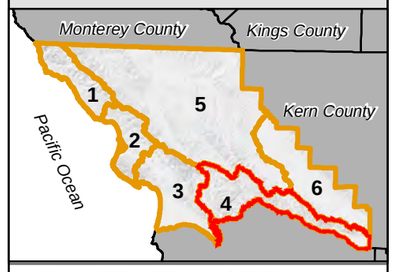
- US HIGHWAY
- STATE HIGHWAY
- Buellton 118 Groundwater Basins
- Water Planning Areas

Watershed Boundary Dataset (WBD)

- Hydrologic Unit 08
- Hydrologic Unit 12

N

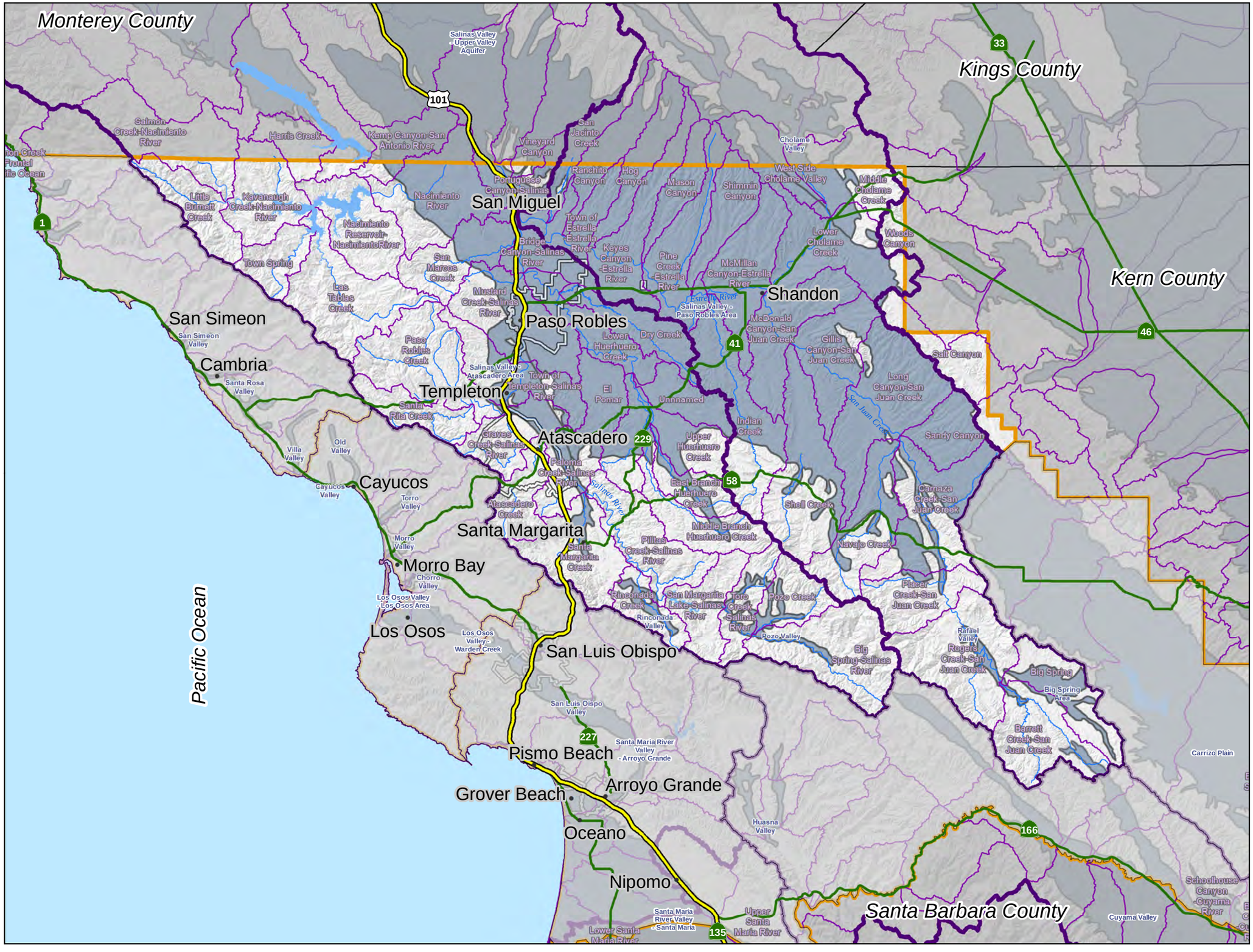
0 1.25 2.5 5
Miles



COUNTY of SAN LUIS OBISPO

Date Created: 3/25/2019

Salinas Valley - Paso Robles Area
Pozo Valley
Rafael Valley
Big Spring Area
San Joaquin Valley
Kern County
Carrizo Plain
Upper Huasna River
Arroyo Seco
Huasna Creek
Huasna River
Huasna Valley
Carrie Creek
Lower Huasna River
Twitchell Reservoir-Cuyama River
Cuyama River
Kenner Creek
Upper Alamo Creek
Lower Alamo Creek
Nuno Creek
Aliso Creek-Cuyama River
Sycamore Creek-Cuyama River
Carrizo Canyon
Red Rock Canyon
Mustang Canyon-Cuyama River
Cottonwood Canyon-Cuyama River
Schoolhouse Canyon-Cuyama River
Bitter Creek-Cuyama River
New River-Cuyama River
The Wash
Tennison Canyon-Cuyama River
Santa Barbara County
Santa Maria River Valley - Santa Maria
San Antonio Creek Valley
Santa Ynez River Valley
Cuyama Valley
58
166
33
101
135
1
119



County of San Luis Obispo
Public Works
Water Resources

Water Planning Area 5: North County

Map: 3-8

Legend

- Streams

Highways

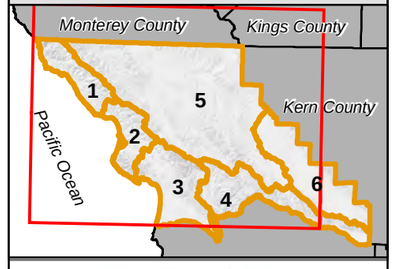
- US HIGHWAY
- STATE HIGHWAY
- Water Planning Areas
- Buellton 118 Groundwater Basins

Watershed Boundary Dataset (WBD)

- Hydrologic Unit 08
- Hydrologic Unit 12

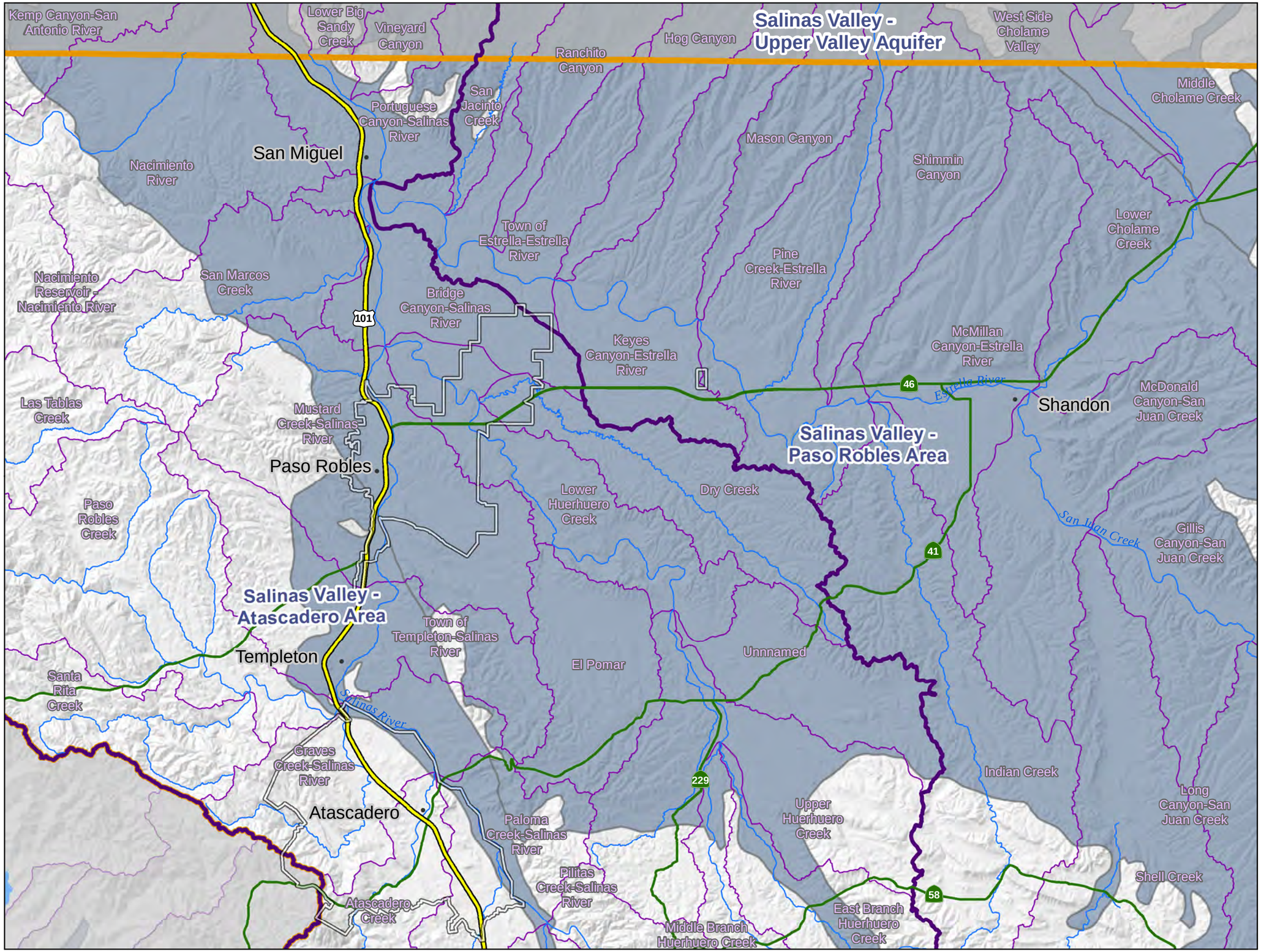
N

0 3 6 12
Miles



COUNTY of SAN LUIS OBISPO

Date Created: 3/25/2019



County of San Luis Obispo
Public Works
Water Resources

Water Planning Area 5: North County (enlarged)

Map: 3-9

Legend

- Streams

Highways

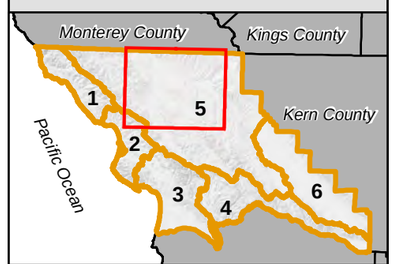
- US HIGHWAY
- STATE HIGHWAY
- Bulletin 118 Goundwater Basins
- Water Planning Areas

Watershed Boundary Dataset (WBD)

- Hydrologic Unit 08
- Hydrologic Unit 12

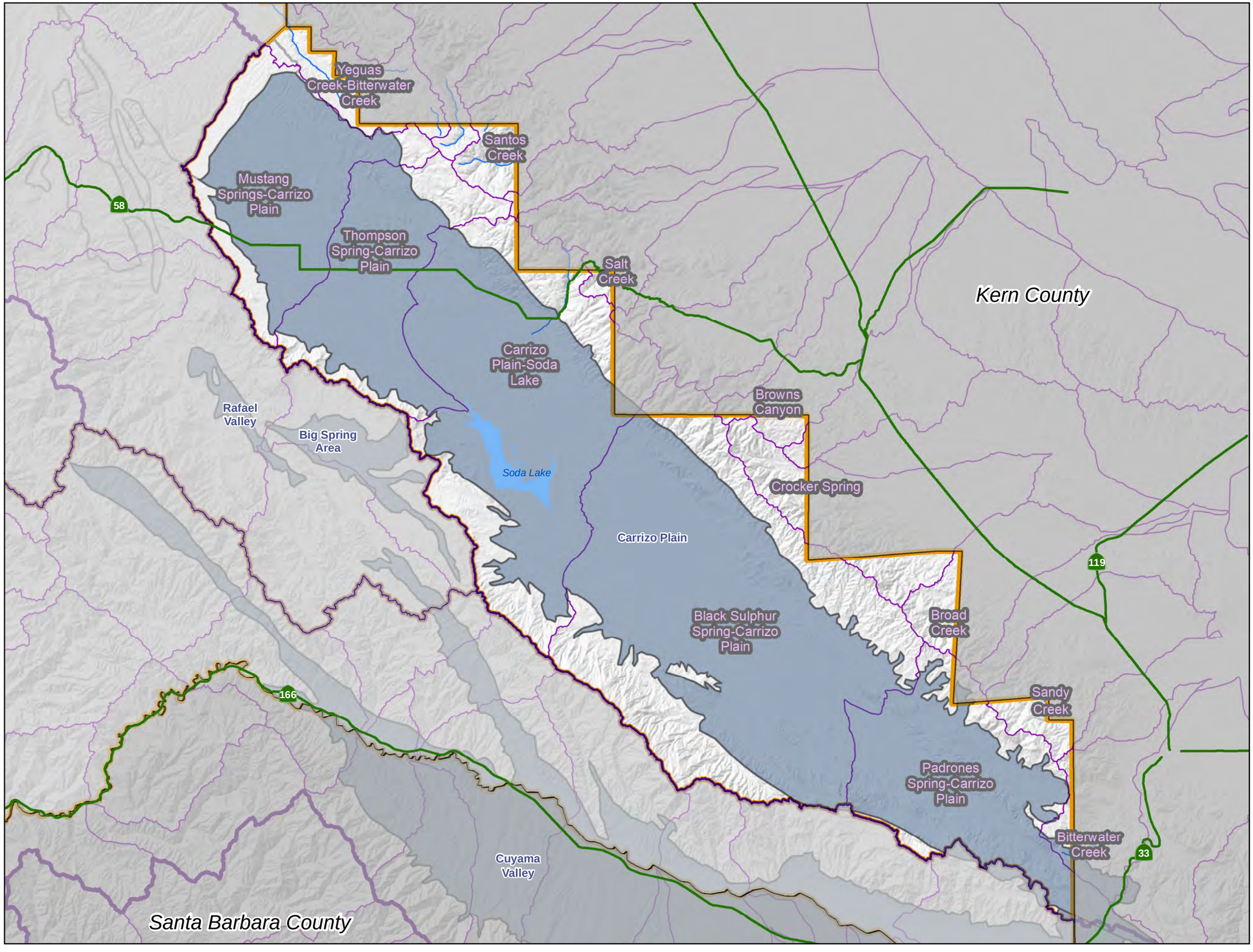
N

0 1 2 4
Miles



COUNTY OF SAN LUIS OBISPO

Date Created: 3/25/2019



County of San Luis Obispo
Public Works
Water Resources

Water Planning Area 6: Carrizo Plain

Map: 3-10

Legend

- Streams

Highways

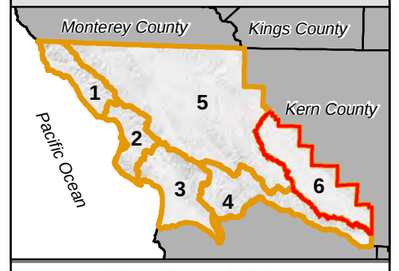
- US HIGHWAY
- STATE HIGHWAY
- Buellton 118 Groundwater Basins
- Water Planning Areas

Watershed Boundary Dataset (WBD)

- Hydrologic Unit 08
- Hydrologic Unit 12

N

0 1.25 2.5 5
Miles



COUNTY OF SAN LUIS OBISPO

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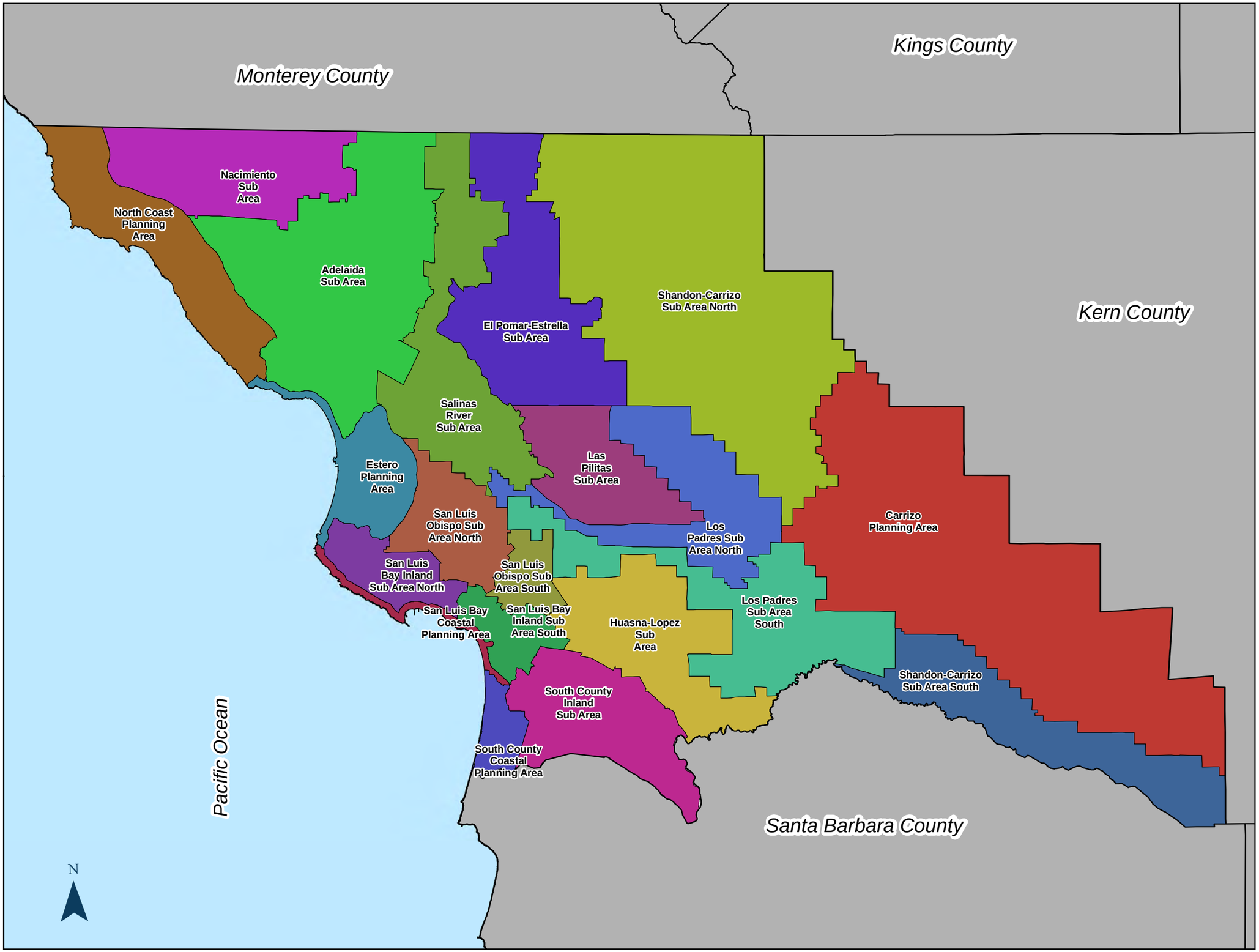


County of San Luis Obispo
Public Works
Water Resources

Land Use Agencies and Planning Areas

Map: 3-11

Legend

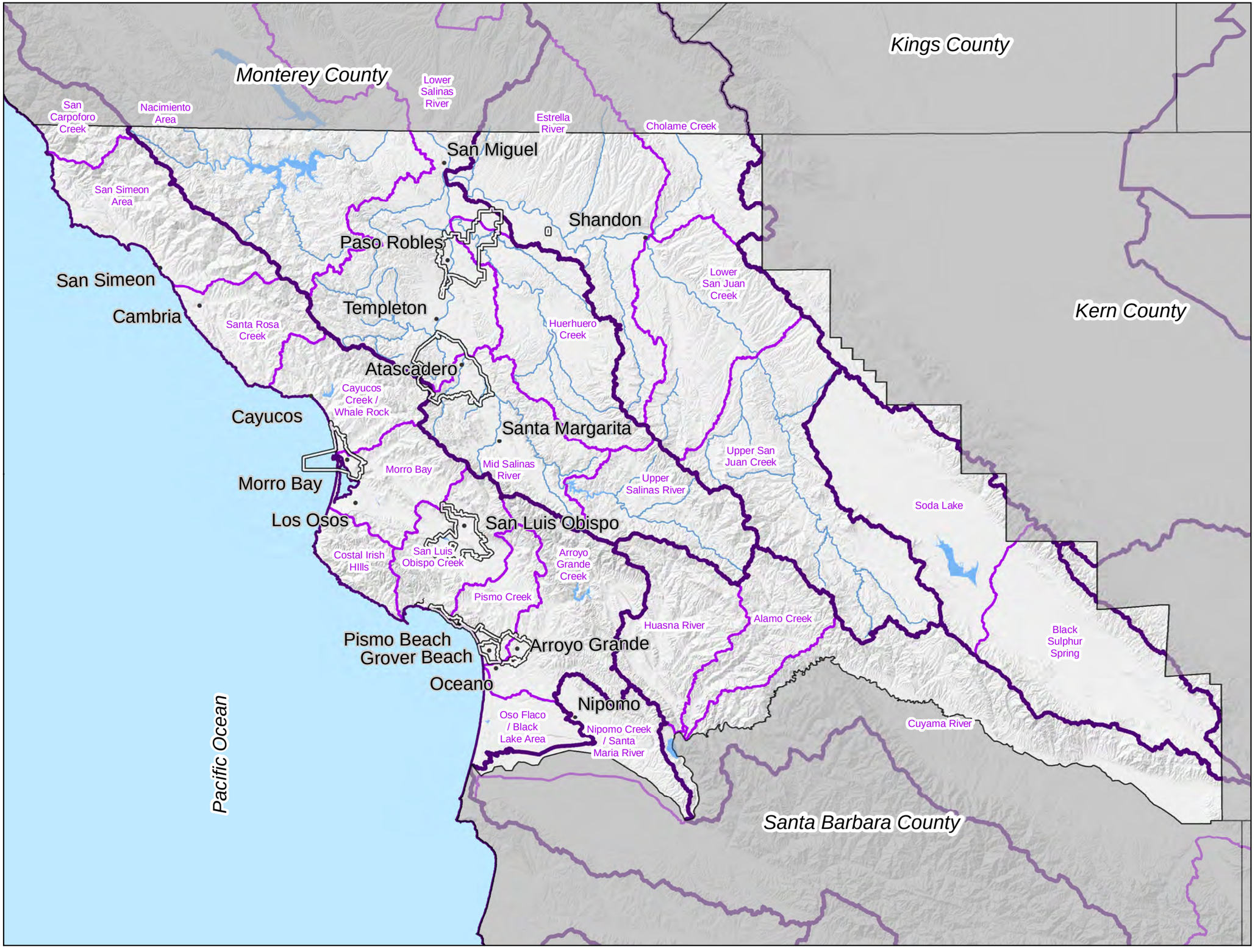
Sub Planning Areas

- Adelaida Sub Area
- Carrizo Planning Area
- El Pomar-Estrella Sub Area
- Estero Planning Area
- Huasna-Lopez Sub Area
- Las Pilitas Sub Area
- Los Padres Sub Area North
- Los Padres Sub Area South
- Nacimiento Sub Area
- North Coast Planning Area
- Salinas River Sub Area
- San Luis Bay Coastal Planning Area
- San Luis Bay Inland Sub Area North
- San Luis Bay Inland Sub Area South
- San Luis Obispo Sub Area North
- San Luis Obispo Sub Area South
- Shandon-Carrizo Sub Area North
- Shandon-Carrizo Sub Area South
- South County Coastal Planning Area
- South County Inland Sub Area

0 2.5 5 10
Miles

COUNTY of SAN LUIS OBISPO

Date Created: 3/25/2019



County of San Luis Obispo
Public Works
Water Resources

Watersheds

Map: 3-12

Legend

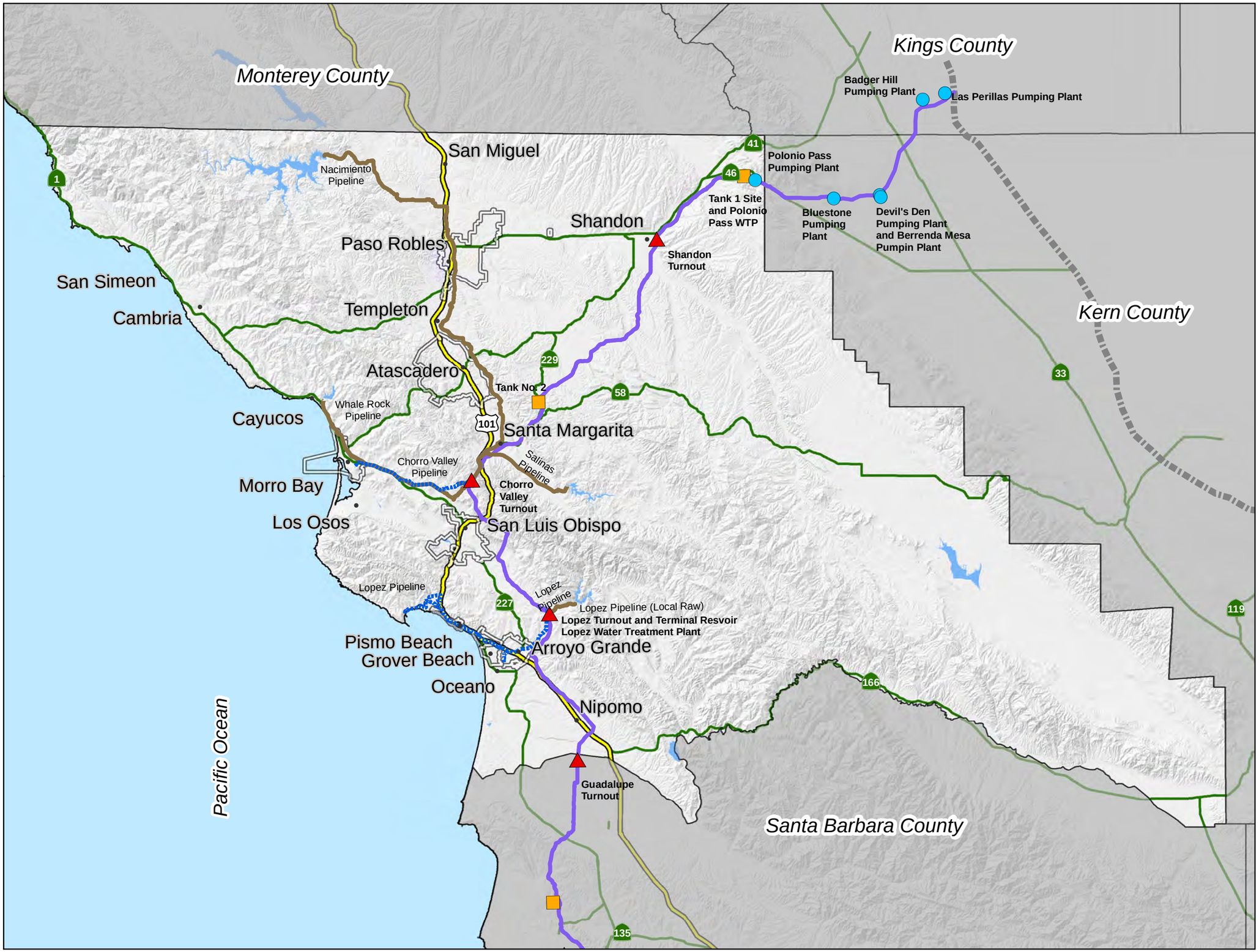
- National Hydrology Dataset Streams
- City Limits
- San Luis Obispo County Watershed (2018)
- USGS Watershed Boundary Dataset (WBD), Hydrologic Unit 08

N

0 2.5 5 10
Miles

COUNTY OF SAN LUIS OBISPO

Date Created: 3/28/2019



County of San Luis Obispo
Public Works
Water Resources

Major Water Conveyance and Storage

Map: 3-13

Legend

Highways

- US HIGHWAY
- STATE HIGHWAY
- City Limits
- Local Raw Water Pipeline

Other Regional and Local Pipelines

- Local Treated State Water Distribution Pipeline (SLOCFCWCD)

State Water Project (SWP) Infrastructure

- Pumping Plant
- Storage Tank
- Turnout
- CA Aqueduct Main Canal
- Coastal Branch Aqueduct

N

0 2.5 5 10
Miles

COUNTY of SAN LUIS OBISPO

Date Created: 3/28/2019

County of San Luis Obispo
Public Works
Water Resources

San Luis Obispo County Reservoirs

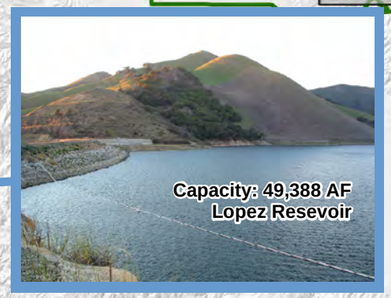
Map: 3-14

Legend

Highways

US HIGHWAY

STATE HIGHWAY



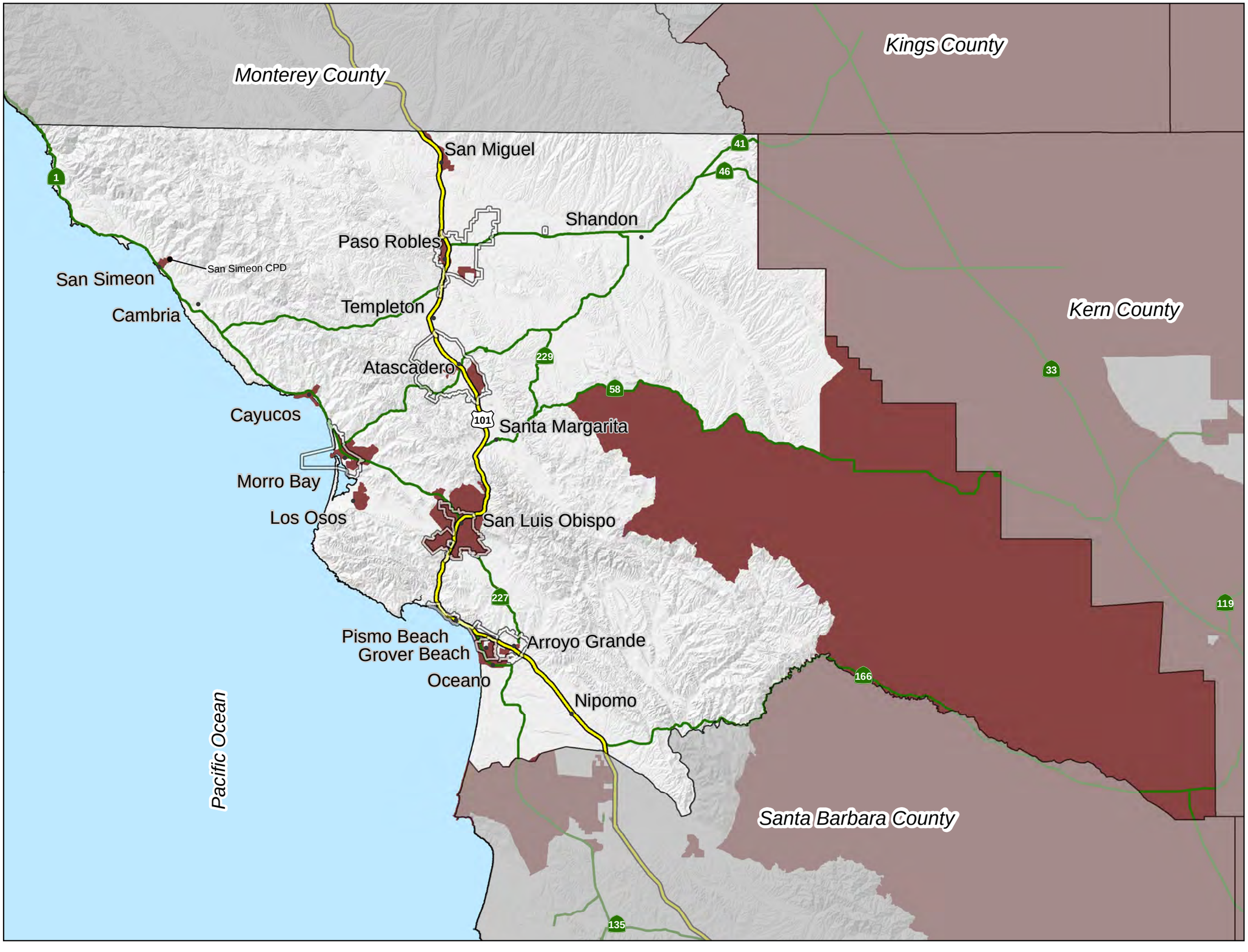
Monterey County
Kings County
Kern County
Santa Barbara County
Pacific Ocean
Paso Robles
Shandon
Templeton
Atascadero
Cayucos
Santa Margarita
Morro Bay
Los Osos
San Luis Obispo
Pismo Beach
Grover Beach
Oceano
Arroyo Grande
Nipomo
1
41
46
229
58
101
227
33
119
166
135

N

0 2.5 5 10
Miles

COUNTY of SAN LUIS OBISPO

Date Created: 3/25/2019



County of San Luis Obispo
Public Works
Water Resources

Disadvantaged Communities

Map: 3-15

Legend

- City Limits
- Disadvantaged Communities

Highways

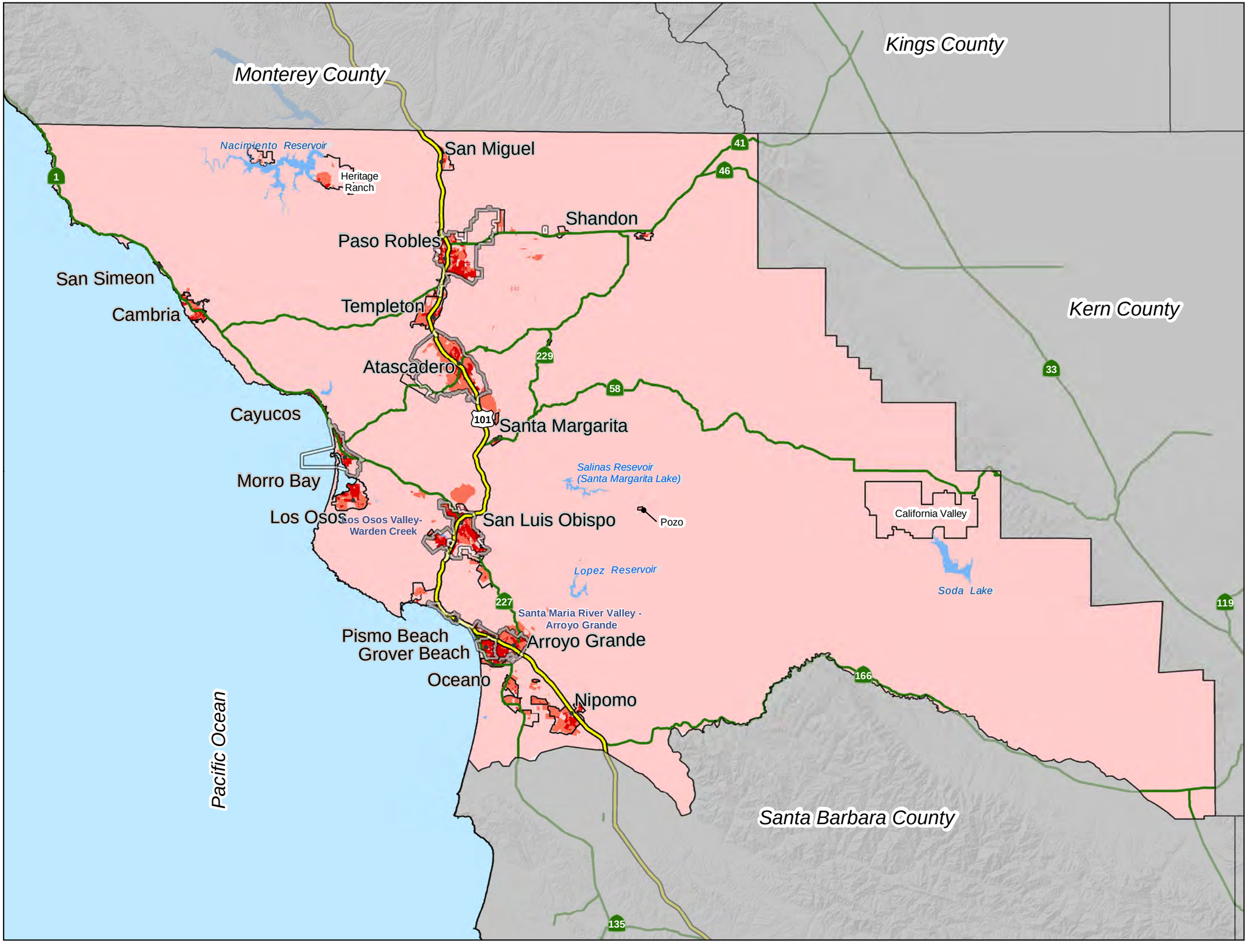
- US HIGHWAY
- STATE HIGHWAY

N

0 2.5 5 10
Miles

COUNTY of SAN LUIS OBISPO

Date Created: 3/25/2019



County of San Luis Obispo
Public Works
Water Resources

Population Density by Census Block

Map: 3-16

Legend

Highways

- US HIGHWAY
- STATE HIGHWAY
- City Limits
- Urban Reserve/Village Reserve

Census Block Data (2010)

Population Per Square Mile

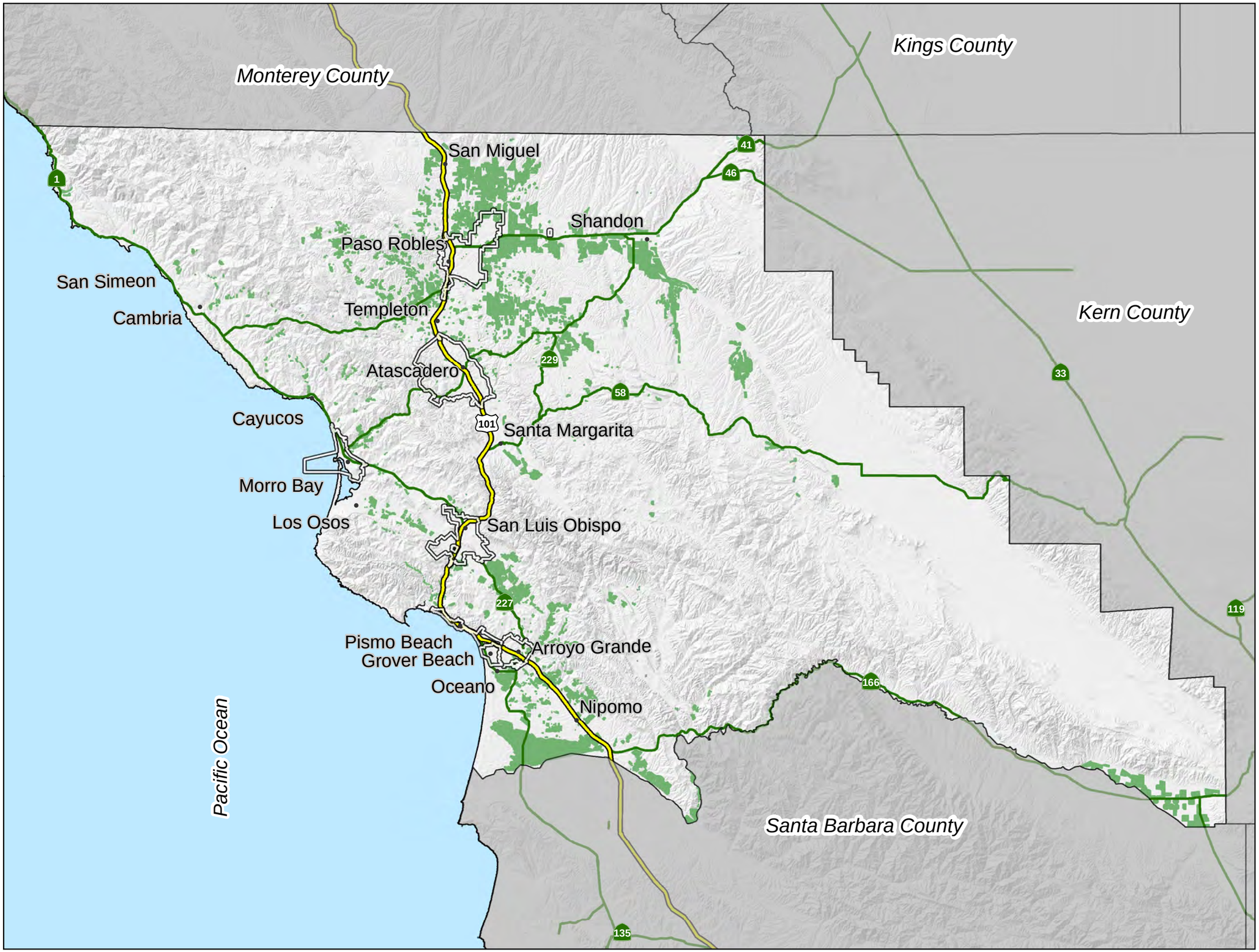
- 0 - 500 People/SqMi
- 501 - 2500 People/SqMi
- More than 2500 People/SqMil

N

0 2.5 5 10
Miles

COUNTY of SAN LUIS OBISPO

Date Created: 3/25/2019



County of San Luis Obispo
Public Works
Water Resources

Irrigated Agricultural Areas

Map: 3-17

Legend

Highways

- US HIGHWAY
- STATE HIGHWAY
- City Limits
- Irrigated Agriculture from the County of San Luis Obispo Department of Agriculture/Weights & Measures

N

0 2.5 5 10
Miles

COUNTY of SAN LUIS OBISPO

Date Created: 3/25/2019

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4.2.1 Stakeholder Engagement 4-2
4.2.2 Relationship to Guidance Documents 4-3
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4 IRWM Goals and Objectives

This section identifies San Luis Obispo County (SLO) IRWM Region (Region) 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 prioritization, development, and implementation

4.1 IRWM Plan Vision

The Goals and Objectives are intended to guide regional efforts toward solving the water resources issues of greatest concern. The Vision statement portrays the Region's overarching aim for the IRWM Plan, and the Mission statement describes how the IRWM Plan will achieve that goal.

IRWM Plan Vision:
Create a united framework among SLO County Stakeholders for sustainable water resource management

IRWM Plan 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 4-1** 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)

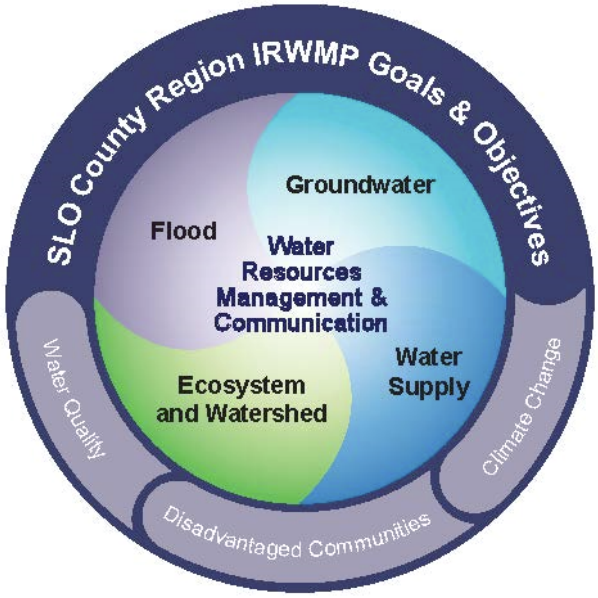

Figure 4-1: *Relationships and Synergies between IRWM Plan Goals*

4.2 Overview of 2014 Update of Goals and Objectives

4.2.1 Stakeholder Engagement

Development of the Goals and Objectives for the 2014 IRWM Plan Update was guided by both stakeholder input and California state guidance documents. As a first step to revising the Goals and Objectives, stakeholder participation was solicited to identify the critical water resources issues of the region. This was facilitated through six Stakeholder/Community Outreach meetings held throughout the County and three Sub-Region workshops (all held in March 2013). Stakeholders in attendance include the following groups:

- 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

4.2.2 Relationship to Guidance Documents

The primary reference document used in the update was 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 2012 DWR IRWM Guidelines specifically required that all IRWM Plans considered the overarching goals of the Water Quality Control Plan for the Central Coast Basin, 20x2020 Water Conservation Plan, and California Water Code. The RWMG took great strides to ensure the IRWM Goals were aligned with the goals outlined in each of these state-led documents. To illustrate this effort, **Table 4-1** summarizes the relationship between the requirements from the California Water Code and the IRWM Plan Goals.

Table 4-1: *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.	Central Coast Basin Plan considered in planning process. 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.

4.2.3 Adoption of the 2014 IRWM Goals and Objectives

The process for adopting the updated 2014 IRWM Plan Goals and Objectives was deliberate in ensuring consistency requirements were met and in 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 for measurement of and reporting on 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 5, 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 2014 IRWM Plan Update. A Sub-Region Priorities list was also developed to speak specifically to Sub-Regional issues and the Sub-Regional objectives to which stakeholders will be committed. This list was considered and finalized by each Sub-Region. The Water Resources Advisory Committee (WRAC) supported the IRWM Plan Goals and Objectives at the June 5, 2013 WRAC meeting.

4.3 2018 Update of Goals and Objectives

4.3.1 2017 Stakeholder Survey

In the summer of 2017 an online survey was conducted to obtain input from the IRWM Region Stakeholders on the region's critical water issues. The survey was completed by over 200 community members from all three Sub-regions and representing a variety of communities and organizations. The results of the survey were presented to the RWMG and reviewed to ensure the IRWM Goals and Objectives maintain relevance to the current challenges faced by the region. As shown in **Figure 4-2**, water supply reliability and groundwater management remain the two leading concerns for water management in SLO County. Another graph, **Figure 4-3**, compares the percentage of respondents by sub-region that selected each of the water issues as one of the region's top three challenges. This breakdown illustrates some of the discrepancies between sub-regional priorities and hints at the RWMG's decision to not prioritize the Plan Objectives (as discussed in the next sub-section).

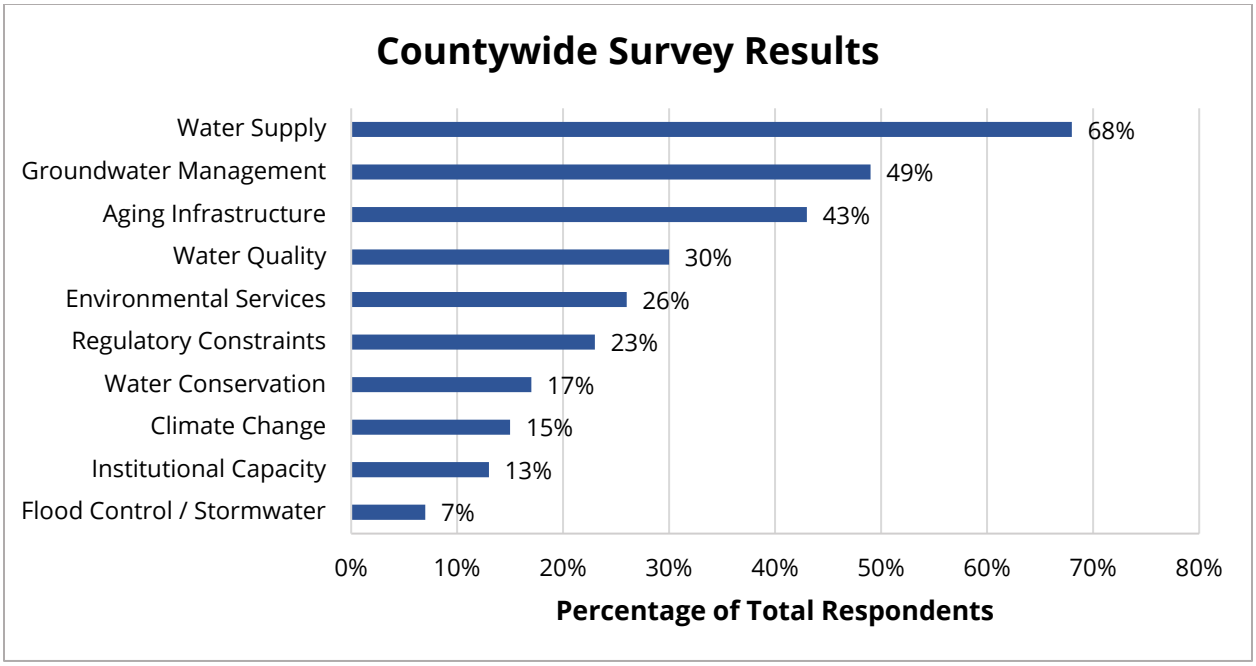

Figure 4-2: *Countywide Survey Results on Top Three Regional Water Issues*

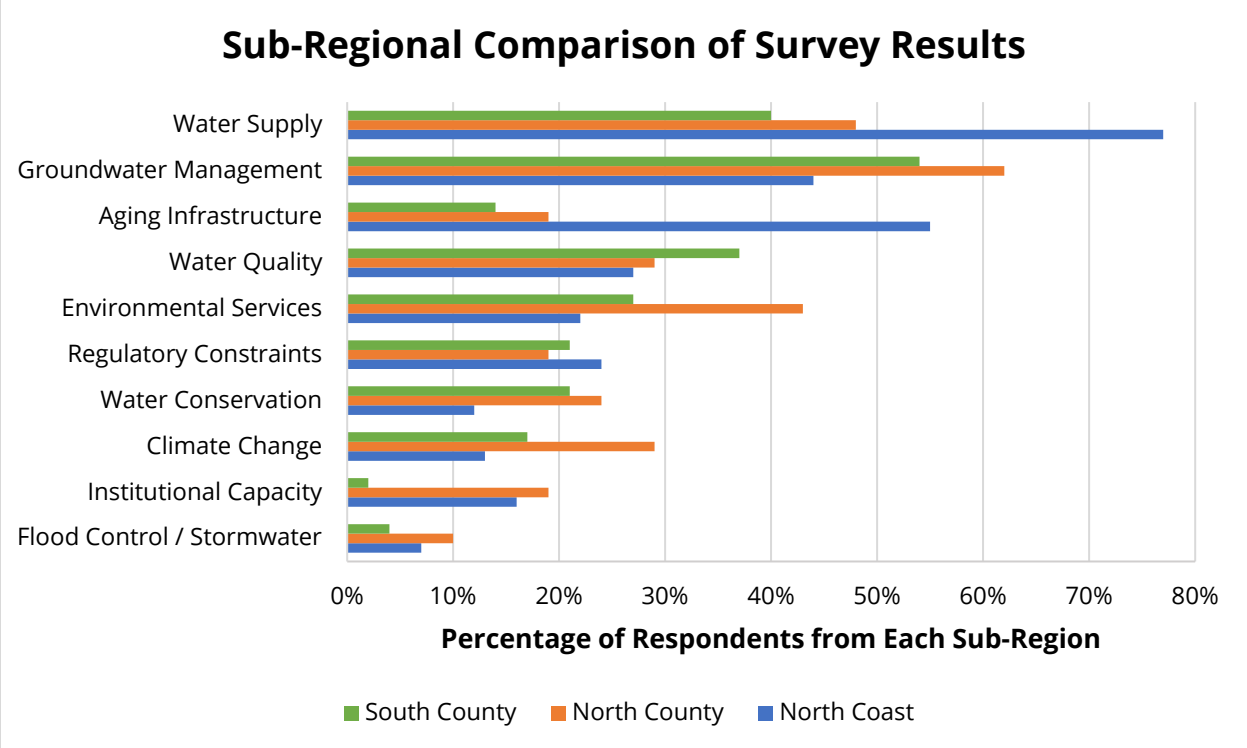

Figure 4-3: *Comparison of Sub-Regional Survey Responses on Top Three Regional Water Issues*

4.3.2 Decision to Not Prioritize

At the April 5th, 2017 regular RWMG meeting, an RWMG Working Group was formed to make recommendations to the larger group for updating the 2014 IRWM Plan to the 2016 DWR standards. The Group included:

- Cambria Community Services District
- City of Morro Bay
- City of San Luis Obispo
- Central Coast Salmon Enhancement
- Morro Bay National Estuary Program
- Nipomo Community Services District
- Templeton Community Services District

This RWMG Working Group met on July 24th, 2017 and subsequently recommended to continue the 2014 IRWM Plan un-prioritized approach to the goals and objectives. This recommendation was accepted by the RWMG at-large at the October 4th, 2017 regular meeting.

4.3.3 Consideration of SGMA

To ensure the Groundwater Management Objectives align with the region's efforts to comply with the Sustainable Groundwater Management Act (SGMA), County of SLO staff members were consulted to suggest appropriate revisions. County staff proposed a few minor edits to the wording of the 2014 Plan Objectives to maintain consistency between the region's efforts under IRWM and SGMA. These changes were approved by the RWMG at the meeting on April 4, 2018.

4.3.4 Climate Change Vulnerability Assessment

During the 2018 IRWM Plan Update, the Plan Objectives were integrated with the region's climate change vulnerability assessment and prioritization, which is summarized in **Section 14 – Climate Change**. Comparison matrices were developed to evaluate if the Plan Objectives address the region's water-related climate change vulnerabilities and to ensure the Objectives promote necessary climate change adaptation and mitigation strategies. **Table 14-9** demonstrates how there are numerous objectives that relate to each of the six "very high" priority climate change vulnerabilities identified for the region. **Table 14-10** illustrates how five climate change adaptation and mitigation requirements from the 2016 IRWM Guidelines are also sufficiently integrated into the objectives. For a more detailed discussion of the relationship between the Plan Objectives and climate change, see **Section 14.11 – Adaptation and Mitigation Strategies**.

4.4 IRWM Goals and Objectives

Based on the list of stakeholder issues and the standards from DWR's IRWM Guidelines, five Goals and associated Objectives were formed. The Goals and abbreviated Objectives are illustrated below in **Figure 4-4**; the content of **Figure 4-4** is described in the following sections.

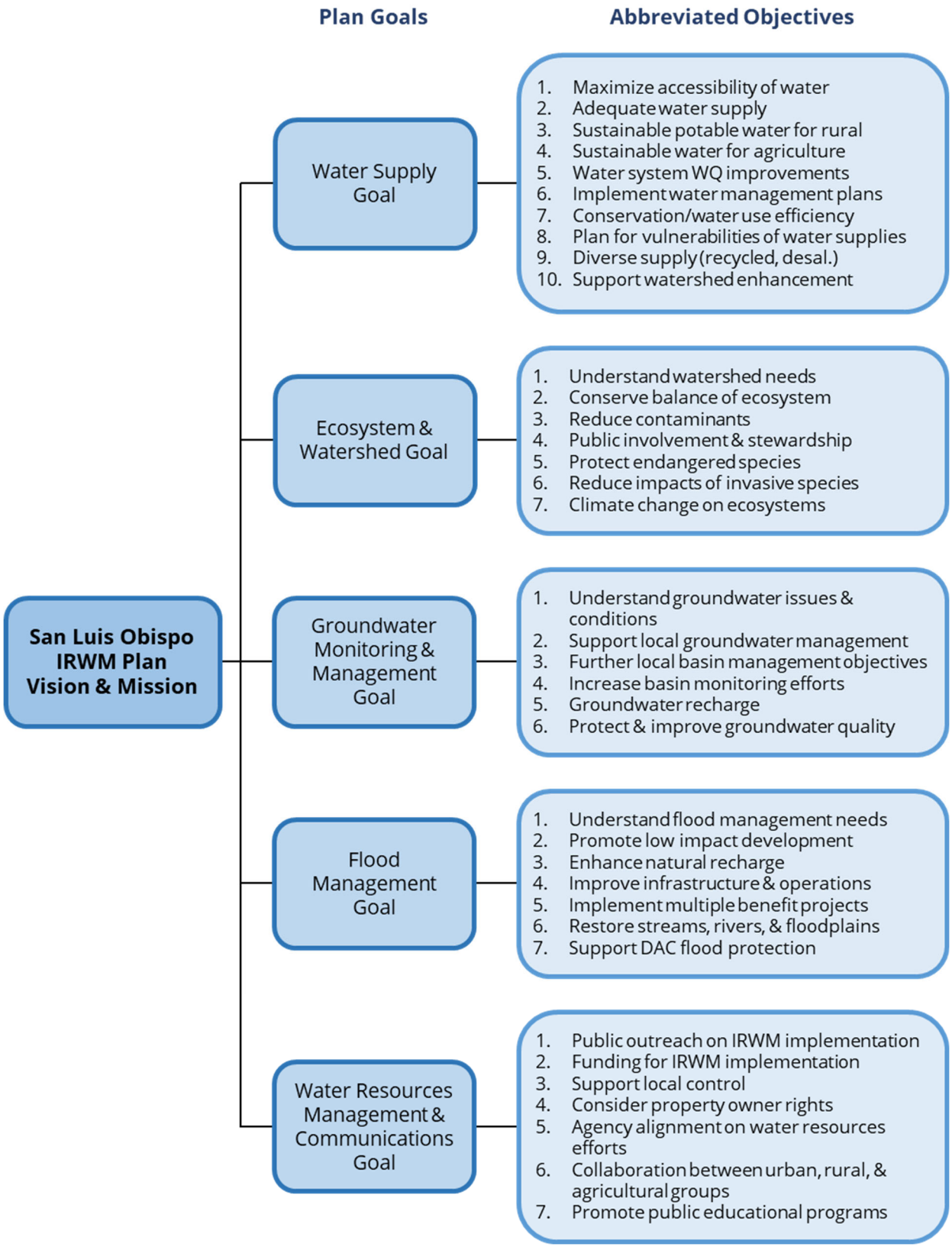

Figure 4-4: *Summary of IRWM Goals, Objectives, and Sub-Region Priorities*

4.4.1 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.

4.4.2 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 creak 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.

4.4.3 Groundwater Monitoring and Management (Groundwater) Goal

Achieve sustainable use of the Region's water supply within groundwater basins through collaborative and cooperative actions.

Objectives:

1. Develop groundwater management plans, including Groundwater Sustainability Plans, Salt and Nutrient Plans, or other methods, to help understand groundwater issues and conditions
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.
3. Develop and implement projects and programs to further basin management objectives of local groundwater management plans or other objectives established under other methods used to define groundwater issues and conditions.
4. Work with local groundwater governance bodies in an effort to increase monitoring for groundwater basins in the region, where plausible, such as is required under Sustainable

Groundwater Management Act (SGMA) and/or California Statewide Groundwater Elevation Monitoring (CASGEM).

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.
6. Protect and improve groundwater quality from point and non-point source pollution, including geothermal contamination and seawater intrusion.

4.4.4 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:

1. Understand flood management needs per watershed or water planning area.
2. Promote the implementation of Low Impact Development projects and practices to reduce storm runoff to protect infrastructure and property from flood damage.
3. Integrate storm water controls, drainage, and flood control structures into development projects and/or floodplain restoration to enhance natural 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.
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.
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.
7. Support the adequate protection of DACs from flooding without unfairly burdening communities, neighborhoods, or individuals.

4.4.5 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:

1. Provide consistent, consolidated, and informative public outreach on the coordination of IRWM implementation projects and water resources programs.
2. Seek funding for IRWM implementation 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 with cities, community service districts, and other water purveyors when possible.
4. Consider property owner rights, existing water supplies, and cultural values in the planning and implementation of IRWM projects and programs.
5. Support efforts by the state, local agencies, water purveyors, and local groundwater governance bodies to align efforts to protect and manage water resources.
6. Seek opportunities for water management collaboration between urban, rural, and agricultural interests.
7. Provide support and promote education for the participation of DACs in the development, implementation, monitoring, and long-term maintenance of water resource management projects.
8. Promote public education programs for water resources management (e.g., groundwater management, watershed protection, conservation, flood management, and water quality).

4.5 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 5 – Resource Management Strategies** and **Section 6 – Project Review Process**. 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 4-5** 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 4-5: *Integration of IRWM Objectives with State Objectives*

Table 4-2 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 4-2: *Relationship between Plan Goals and Plan Objectives*

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	●	●			●	●	●	●			●	●	

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
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	●	●			●	●	●					●	
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	Public outreach on IRWM implementation	●	●	●	●	●	●	●	●	●	●	●	●	●
	Funding for IRWM implementation	●	●	●	●	●	●	●	●	●	●	●	●	●
	Support local control			●				●	●			●	●	

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
Consider property owner rights	●						●			●	●	●	
Agency alignment on water resource efforts	●		●		●		●	●			●	●	
Collaboration between urban, rural, and ag	●		●				●	●		●	●	●	
DAC support and education	●	●	●	●	●	●	●	●	●	●	●	●	●
Promote public education programs	●			●	●		●	●		●	●	●	●

4.6 GOALS AND OBJECTIVES METRICS

The Objectives Standard in the 2016 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 4-3** through **Table 4-7**, by overarching Goal). Please see **Section 8 – Plan Performance and Monitoring**, for a more detailed description of this process.

Table 4-3: *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 4-3: *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 4-4: *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 4-4: *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 4-5: *Groundwater Monitoring and Management (Groundwater) Goal*

OBJECTIVES	QUALITATIVE MEASUREMENT	QUANTITATIVE MEASUREMENT
1. Develop groundwater management Plans, including Groundwater Sustainability Plans, 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 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 an effort to increase monitoring for groundwater basins in the region, where plausible, such as is required under Sustainable Groundwater Management Act (SGMA) and/or California Statewide Groundwater Elevation Monitoring (CASGEM).		Increasing number of basins meeting CASGEM standards (objective = all basins).

Table 4-5: *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~~recharge.	Increasing number of groundwater ~~banking~~ recharge 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 4-6: *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 4-6: *Flood Management Goal, Continued*

OBJECTIVES	QUALITATIVE MEASUREMENT	QUANTITATIVE MEASUREMENT
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.	
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 4-7: *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 4-7: *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.	

4.7 REFERENCES

California Department of Water Resources. (2010). *20x2020 Water Conservation Plan*. Retrieved from https://www.water.ca.gov/LegacyFiles/wateruseefficiency/sb7/docs/20x2020plan.pdf

California Water Code, Section 10540. (2008). Retrieved from http://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?lawCode=WAT&division=6.&title=&part=2.2.&chapter=4.&article=

Regional Water Quality Control Board, Central Coast Region. (2011). *Water Quality Control Plan for the Central Coastal Basin*. Retrieved from https://www.waterboards.ca.gov/centralcoast/publications_forms/publications/basin_plan/previous_editions/2011_basin_plan_r3_complete.pdf

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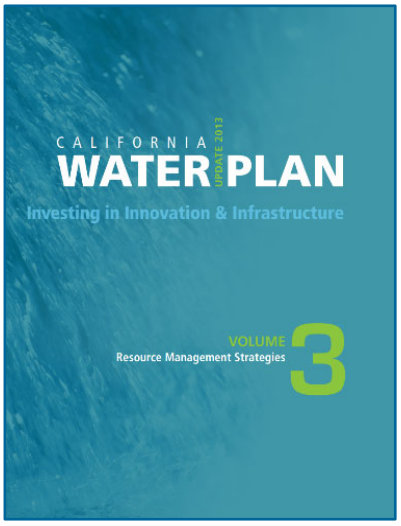
5 Resource Management Strategies

5.1 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 (i.e. the California Public Resources Code and California Water Code). Local groups like the Regional Water Management Group (RWMG) must consider the RMS in the 2013 California Water Plan (CWP) Update when developing their IRWM Plan. The RWMG is also required to consider how RMS can contribute to climate change adaptation and incorporate strategies that address the region's vulnerabilities.

This section provides a summary of the methodology and results of the RWMG's review and evaluation of the DWR RMS.

5.2 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.

5.2.1 2018 Plan Update RMS Selection

At the April 5, 2017 meeting, the RWMG approved the formation the RWMG Working Group to provide recommendations on updating the IRWM plan. The RWMG Working Group consists of representatives from the following RWMG member agencies and organizations:

- Cambria Community Services District
- City of Morro Bay
- City of San Luis Obispo
- Central Coast Salmon Enhancement
- Morro Bay National Estuary Program
- Nipomo Community Services District
- Templeton Community Services District

This RWMG Working Group met on July 24th, 2017 and subsequently recommended to the RWMG to adopt an un-prioritized set of RMS, listed in Table 5-1. This recommendation was accepted by the RWMG at-large at the October 4th, 2017 regular meeting. The strategies shown in green represent additions to the 2019 RMS that were no included in the 2014 RMS.

Table 5-1 provides the list of RMS adopted by the San Luis Obispo RWMG in 2018. Each of the RMS address one or more Plan Objectives.

Table 5-1: *San Luis Obispo IRWM Plan Resource Management Strategies*

San Luis Obispo IRWM Plan Resource Management Strategies (RMS)
Agricultural water use efficiency
Conjunctive management and groundwater storage
Conveyance – Regional/Local
Desalination
Drinking water treatment and distribution
Ecosystem restoration
Flood risk management
Groundwater remediation/aquifer remediation
Land use planning and management
Matching quality to use
Outreach and engagement
Pollution prevention
Precipitation enhancement
Recharge area protection
Recycle municipal water
Salt and salinity management
Sediment management
Surface storage – CALFED/State
Surface storage – Regional/Local
System reoperation
Urban stormwater runoff management
Urban water use efficiency
Water and culture
Water transfers
Watershed management

Table 5-2 lists the DWR management objectives, the applicable RMS, and the corresponding SLO Region IRWM Objectives.

Table 5-2: *Resource Management Strategies as Applied and Grouped for San Luis Obispo Region*

IRWM Plan Objectives		Conjunctive Management and Groundwater Storage	Desalination	Municipal Recycled Water	Surface Storage	*Precipitation Enhancement	Drinking Water Treatment and Distribution	*Groundwater Remediation	Matching Water Quality to Use	Pollution Prevention	Salt and Salinity Management	*Urban Stormwater Runoff Management	Ecosystem Restoration	Land Use Planning and Management	Watershed Management	*Recharge Area Protection	**Sediment Management	Flood Management	Agricultural Water Use Efficiency	Urban Water Use Efficiency	Conveyance	System Reoperation	Water Transfers	**Outreach and Engagement	**Water and Culture
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					●				●			●		●	●									
Ecosystems 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																				●	●	●		
Ground-water	Understand GW issues and conditions	●																							
	Support local GW management	●																							
	Further local basin management objectives	●						●																	
	CASGEM Program	●																							

IRWM Plan Objectives		Conjunctive Management and Groundwater Storage	Desalination	Municipal Recycled Water	Surface Storage	*Precipitation Enhancement	Drinking Water Treatment and Distribution	*Groundwater Remediation	Matching Water Quality to Use	Pollution Prevention	Salt and Salinity Management	*Urban Stormwater Runoff Management	Ecosystem Restoration	Land Use Planning and Management	Watershed Management	*Recharge Area Protection	**Sediment Management	Flood Management	Agricultural Water Use Efficiency	Urban Water Use Efficiency	Conveyance	System Reoperation	Water Transfers	**Outreach and Engagement	**Water and Culture
	Groundwater recharge~~/banking~~	●														●									
	Protect and improve GW quality							●		●	●														
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																	●							
Management and Outreach	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																							●	●

5.2.2 Climate Change Review

During the 2018 Plan Update, the RMS were reviewed to ensure they address the region's anticipated climate change impacts. **Section 14.11 – Adaptation and Mitigation Strategies** includes two tables (**Table 14-11 and Table 14-12)** demonstrating the relationship between the Plan's RMS and climate change adaptation and mitigation strategies, respectively. To ensure regional relevance of the adaptation strategies, the RMS are compared to the types of climate change vulnerabilities identified for through the region's vulnerability assessment.

5.3 RWMG Findings and Recommended Project Elements

Findings and Recommended Project Elements, along with the list of RMS, were presented, reviewed, and adopted by the RWMG. Subsequent sections of the IRWM Plan detail and incorporate recommended project elements based on the adopted RMS.

What follows is a short description of the RMS adopted by the RWMG. The Recommended Project Elements are provided to illustrate how each RMS can be implemented through IRWM planning and projects. 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 Plan Objectives.

5.3.1 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, specifically, "Enhance Natural Recharge" as listed in the Flood Management Goal.. 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

5.3.1.1 *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

5.3.2 Desalination

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. Desalination 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

5.3.2.1 *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

5.3.3 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

5.3.3.1 *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

5.3.4 Precipitation Enhancement

Cloud seeding is a method to increase precipitation by injecting substances into the atmosphere that artificially cause cloud formation. This practice has been used in California since the 1950s often to increase rainfall during drought conditions. According to the 2012 Master Water Report, during the 1990s the County of San Luis Obispo and City of San Luis Obispo partnered for a three-year cloud seeding project, which increased rainfall between approximately 11 and 17 percent each year. This increased water supplies in Lopez and Salinas Reservoirs. The County plans to begin new cloud seeding projects in the future to enhance regional water supplies. Cloud seeding will be a key adaptation strategy to address the anticipated increase in drought frequency and severity for the region.

5.3.4.1 *Recommended Project Elements*

The following Recommended Project Elements were provided:

- Consider and evaluate the potential usefulness and environmental impacts of cloud seeding
- Implement precipitation enhancement projects to enhance surface water supplies and combat drought conditions

5.3.5 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.

5.3.5.1 *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

5.3.6 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

5.3.6.1 *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

5.3.7 Groundwater/Aquifer Remediation

Groundwater remediation constitutes the removal of water contaminants that restrict beneficial use of the water. Remediation can be passive or active and designed to fit the conditions and setting of the aquifer. Passive remediation allows contaminants to naturally over time, and active remediation involves treatment of water in situ or outside of the aquifer. For communities that rely heavily upon groundwater as a supply source, aquifer remediation can be a critical method of increasing the available water supplies when water quality is degraded.

5.3.7.1 *Recommended Project Elements*

The following Recommended Project Elements were provided:

- Implementation of passive or active remediation in contaminated water basins
- Develop education resources on groundwater pollution and aquifer remediation
- Improve monitoring efforts to identify groundwater contaminants as quickly as possible

5.3.8 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

5.3.8.1 *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

5.3.9 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

5.3.9.1 *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

5.3.10 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

5.3.10.1 *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

5.3.11 Urban Stormwater Runoff Management

Urban stormwater runoff management requires a shift away from viewing urban runoff as waste and a pivot towards a watershed approach. A watershed approach attempts to emulate

the natural hydrological cycle and focuses on reducing pollutant loading of runoff as well as minimizing the amount of runoff discharged to surface waters. A key practice of this method is capturing runoff for groundwater runoff. This can improve water supplies, prevent water contamination, and reduce flooding.

5.3.11.1 *Recommended Project Elements*

The following Recommended Project Elements were provided:

- Provide educational resources – guidance documents and workshops – on how to effectively control urban runoff pollution
- Develop stormwater resource plans
- Promote the use of non-point source management measures to reduce uncontrolled urban runoff
- Implement LID techniques and other practices that promote runoff infiltration

5.3.12 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

5.3.12.1 *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

5.3.13 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

5.3.13.1 *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

5.3.14 Recharge Area Protection

Recharge areas are sites where water can infiltrate and replenish underlying groundwater basins. When maintained properly, recharge areas protect groundwater supplies and water quality. Preserving recharge areas can also support conjunctive use management and minimize flood risks.

5.3.14.1 *Recommended Project Elements*

The following Recommended Project Elements were provided:

- Preserve natural recharge areas
- Promote LID techniques
- Develop educational resources on the value of natural recharge areas
- Investigate areas suitable for artificial recharge projects

5.3.15 Sediment Management

Sediment is a valuable natural resource as sediment processes are integral to various environmental and economic systems. Unfortunately, managing sediment is not simple. In certain settings sediment is desirable, but in other settings sediment is unwanted or excessive. There are three main components addressed in sediment management: source and type of sediment, sediment transportation, and site of sediment deposition. When sediment is managed properly, watersheds benefit from improved water quality, improved flood management, and enhanced health of aquatic habitats.

5.3.15.1 *Recommended Project Elements*

The following Recommended Project Elements were provided:

- Implement policies and programs that prevent soil loss and undesirable sedimentation
- Develop educational materials on how to prevent undesirable sedimentation
- Promote the beneficial reuse of dredged and excavated sediments
- Consider sediment transportation when developing flood management systems
- Create initiatives and support interagency collaboration focused on regional sediment management

5.3.16 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

5.3.16.1 *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

5.3.17 Improve 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

5.3.17.1 *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

5.3.18 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

5.3.18.1 *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

5.3.19 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

5.3.19.1 *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

5.3.20 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 2 - City of Morro Bay, CMC, County Operations Center, Cuesta College
- WPA 3 – City of Pismo Beach, Oceano CSD, San Miguelito Mutual Water Company (MWC), Avila Beach Community Services District (CSD), Avila Valley MWC, San Luis Coastal Unified School District
- WPA 5 - Shandon

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

5.3.20.1 *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~~opportunities to take advantage of unutilized SWP capacity and contract amounts during off-peak periods when surface water can be pumped south of the Delta

5.3.21 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

5.3.21.1 *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

5.3.22 Water Transfers

Water transfer opportunities include both local and regional transfers in San Luis Obispo County of surface water and groundwater for enhancing drought resiliency and mutual aid/emergency aid scenarios. 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 and the potential for longer periods of drought ~~will~~ necessitate a more robust ability for SLO County agencies to utilize mutual aid/emergency aid agreements and water transfers for portfolio diversification. ~~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 in San Luis Obispo County 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

5.3.22.1 *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

5.3.23 Outreach and Engagement

Water management can be promoted through outreach and engagement of the public by water agencies. This communication provides decision-makers with insights on local practices and opinions, educates members of the public about best practices and water management activities, and supports collaboration and conflict resolution. As described in the CWP, an effective outreach and engagement strategy has the following characteristics:

- Relevant
- Focused
- Scale-appropriate
- Innovative
- Collaborative
- Factually and scientific sound
- Adaptive
- Visible
- Effective
- Sustainable
- Measurable

5.3.23.1 *Recommended Project Elements*

The following Recommended Project Elements were provided:

- Promote collaborative policy making
- Develop programs for youth education on water management
- Create tools to inform and educate the public on water management activities
- Utilize social media and other online resources to obtain public feedback

5.3.24 Water and Culture

Water and culture are inextricably linked. Cultural values are reflected in policies related to water management. Water use is tied to cultural norms and practices. The condition of current water resources has been shaped by California's history and culture. This strong relationship necessitates the consideration of culture and cultural activities when making water management decisions. Understanding how culture interacts with water management can prevent conflict, promote sustainability, encourage collaboration and support, reduce costs, and facilitate partnerships.

5.3.24.1 *Recommended Project Elements*

The following Recommended Project Elements were provided:

- Create partnerships with cultural groups
- Research TEK and cultural practices related to water management decisions
- Present management decisions in their historical and cultural context

5.4 REFERENCES

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6 PROJECT REVIEW PROCESS

This section documents the project review process and contains the following three components taken from the 2016 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. Procedures for communicating lists of selected projects.

Furthermore, the section will specifically answer the following three questions:

1. Who will be responsible for approving the project list?
2. How stakeholders provide input during the submittal, review, selection, etc.?
3. How and when is the list updated and does it require re-adoption of the Plan?

6.1 PROJECT LISTS

The State Guidelines (pg. 53) make explicitly clear there are to be a minimum of two lists:

- Projects that will be necessary to implement the IRWM Plan and
- Projects that may qualify for a specific funding source

Our Region takes this one step farther to differentiate projects that will be necessary to implement *this* iteration of the Plan from projects, regardless of stage of development, that will implement the plan. This is the primary differentiator of the Full Project List and the Implementation List. These are three project lists for the SLO County IRWM Region:

1. Full Project List (**Section 6.2**)
2. Implementation List (**Section 6.3**)
3. Grant Opportunity Specific List (**Section 6.4**)

The relationship of these lists is shown in **Figure 6-1** and each further described in this section.

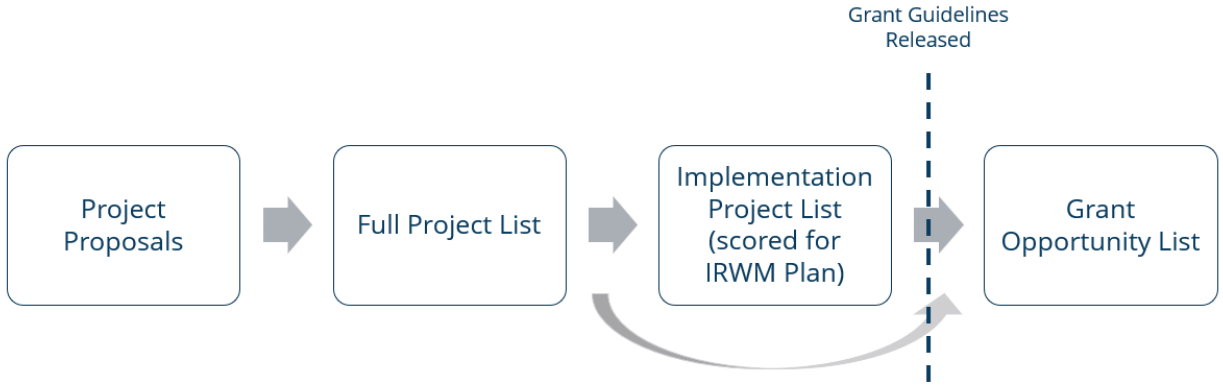

Figure 6-1: *Relationship of the Full Project List, Implementation List and Grant Opportunity List*

6.2 FULL PROJECT LIST

The San Luis Obispo County Region Full Project List represents all the projects and programs being worked on by RWMG members, and a few not-yet RWMG members. These projects span the gamut of development stages: conceptual, planning, design, and ready for implementation. RWMG members are encouraged to submit projects even in their infancy, to be able to leverage IRWM for other partnership, funding, and marketing opportunities.

The Full Project List is attached as **Appendix F**.

6.2.1 Criteria and Process for the Full Project List

To be considered as an IRWM project, all prospective project proponents must meet 3 screening criteria, as described in **Table 6-1.**

Table 6-1: *Full Project List Screening Criteria*

Full Project List – Screening	
How a project contributes to the IRWM Plan Objectives	**Pass,** if project satisfies at least one IRWM Plan Goal
Project Understanding	**Pass,** if sufficient knowledge of the project location, systems, materials, methods, or processes proposed is provided to indicate that the project will likely result in a successful outcome. Demonstrable understanding of technical, financial and operations & maintenance of the project.
Plan Adoption	**Pass,** if project proponent had adopted the SLO IRWM MOU and Plan or plans to do so.

To accomplish "Project Understanding", the standardized submittal form requests the following information for each project submitted:

- Project Name and Summary
- Description of Need for Project
- If the Project will involve partnership with other organizations or communities (and to explain if so)
- Estimate Project Cost
- Funding Sources (if any)
- Construction Start and End dates
- Project Status (conceptual, planning/design, ready for implementation)
- CEQA and Construction Permit Status

In addition to this basic information, the form includes check-box fields for if a project addresses:

- Needs of a Disadvantaged Community
- Needs of a Native American Tribal Community
- Our Region's climate change vulnerabilities
- Greenhouse gas emission reduction

This information is received by the Lead Agency, the San Luis Obispo County Flood Control and Water Conservation District (District). District staff, on behalf of the RWMG, reviews this initial information. If a project meets the 3 screening criteria it is provisionally added to the Full Project List. A project is provisionally added to the list until the RWMG moves to approve the addition of the submitted projects to the Full Project List.

This list is updated, reviewed and approved biennially at a minimum by the RWMG. Provisional submissions are taken under consideration by the RWMG at this time and either added to the Full Project List or rejected. Special circumstances, such as a plan update or funding opportunity, may require an additional RWMG action to update the Full Project List.

6.2.2 Location of the Project Submission Form

Projects may be submitted for initial review by the District at any time. The Project submission form can be accessed from the Region's IRWM website, www.slocounty.ca.gov/IRWM or directly via SurveyMonkey[1].

6.2.3 Full Project List Development for the 2019 Plan

In preparation for the 2019 IRWM Plan update, the RWMG held a call for projects in May 2017 to update the Full Project List. In total, **14** new projects were submitted and **9** existing projects on the Full Project List were updated to reflect their current status. The submitted projects for the 2017 update are included in **Appendix F.**

Additionally, as part of preparation of the Implementation List (**Section 6.3**) in August 2018, the draft Full Project List was presented to the RWMG for review. The intentions of this exercise were two-fold:

- Review, update or remove projects from the existing Full Project List
- Add any new projects being considered for the Implementation List

This 2018 Full Project List review included updates to **10** projects, addition of **12** projects to the Full Project List and removal of **48** projects from the list that are no longer being pursued by

[1] https://www.surveymonkey.com/r/SLO-IRWM-Project-Form

RWMG Members. In total, at approval of the 2019 IRWM Plan, the Full Project List included **103** projects from **30** different project sponsoring agencies or organizations.

6.3 IMPLEMENTATION LIST

The 2019 IRWM Plan Implementation List represent the projects expecting to be completed by the RWMG members in the next 5 years. This list represents *some of* the projects that would implement the 2019 Plan.

6.3.1 Implementation List Development

Based on the 2016 Guidelines as well as the Lead Agency's push for a simplified process compared to the 2014 Plan, the San Luis Obispo County RWMG spent most of 2018 developing the Implementation List process and the list itself.

Timeline of List development:

- April 4th, 2018 – RWMG Meeting. Members moved create an RWMG Working Group to develop the implementation scoring process and rubric, following the State Guidelines.
- April 9, 16, 23, 2018 – RWMG Working Group Meetings. The group met to discuss scoring priorities and weighting as well as adjustments to be made from the 2014 IRWM Plan process.
- May to June – District (Lead Agency) staff develop ed the fillable forms for RWMG use in the scoring efforts.
- July 20, 2018 – Draft forms were distributed to and reviewed by the RWMG Working Group.
- August 1st, 2018 – RWMG Meeting. Call for projects was opened to all RWMG members. Final forms were distributed. The final hour of the RWMG meeting was a workshop for members to begin the Implementation List forms.
- August 1st to 31st, 2018 – Call for Projects and Stakeholder meetings. District Staff met with individuals and groups of stakeholders/members to assist in the scoring process and discuss their projects. In total, 8 meetings were held, and 12 projects were discussed.
- September to October – District staff compiled the submitted projects and forms, organized the projects and prepared the draft Implementation List presentation.
- November 7th, 2018 – RWMG Meeting. Draft Implementation List presented to RWMG.

6.3.2 Scoring Priorities and Weights

The RWMG Working Group meetings in April focused on scoring priorities and how to weigh them. The Review Factors are prescribed by the Guidelines, starting on page 53. These factors were discussed, grouped and weighed in these Working Group meetings. **Table 6-2** shows what

these Review Factors are and where they were implemented in the Scoring Rubric, described below

A lesson learned from the 2014 IRWM Plan Implementation List was that its scoring process de-emphasized project readiness factors (i.e. Project status, economic feasibility, etc.) in favor of meeting objectives and proposed benefits. Taking those lessons and these factors from the Guidelines, the Working Group developed groupings, or categories, of the Review Factors and weighed them for 2019 Implementation List, as shown in **Table 6-3.** Once these weights were agreed upon, the Working Group went criteria-by-criteria for how to appropriate the categorical weight. In addition to setting the scoring of each criteria, the Working Group set guidelines for how to evaluate the projects for scoring. The summary of these efforts are presented in the Implementation List Scoring Rubric, show as **Table 6-4**.

Table 6-2: *Relationship between Guidelines' Review Factors and the SLO IRWM Implementation List Rubric*

Review Factors from Guidelines	Scoring Criteria
Contribution to objectives	A
Relation to resource management strategies (RMS)	B
Technical feasibility	D
Specific benefits to critical DAC water issues	H
Specific benefits to Native American Tribal Communities critical water issues	H
Environmental justice considerations	H
Project costs and financing	F
Economic feasibility	F
Project status	E
Strategic considerations for IRWM Plan Implementation	C
Adapting to climate change	I
Reduction of GHG emissions, compared to project alternatives	J
Plan Adoption	See **Section 6.2.1**
Reduced reliance on Delta	K

Table 6-3*: Review Factor Categories and Weights*

Scoring Category	Rubric Criteria	Scoring Weight
Plan Objectives	A, B, C	40
Readiness to Proceed	D, E, F, G	40
Environmental Justice	H	10
Climate Change & Delta	I, J, K	10

Table 6-4: *Implementation List Scoring Rubric*

Criteria	Scoring Guidelines	Points	
		Subtotal	Total
A. How a project contributes to the IRWM Plan Objectives	- Projects that contribute to 5 or fewer objectives, 1 point - Projects that contribute to 6-10 objectives, 2 points. - Projects that contribute to 11-15 objectives, 3 points. - Projects that contribute to 16-20 objectives, 4 points. - Projects that contribute to 21 or more, 5 points. *Note: Include any direct, indirect or qualitative contribution.*	5	**25**
	- Project that documents how it directly contributes to objectives: - Evidence of contributing to 5 or less objectives: 4 pts. - Evidence of contributing to 6-10 objectives: 8 points. - Evidence of contributing to 11-15 objectives: 12 points. - Evidence of contributing to 16-20 objectives:16 points. - Evidence of contributing to 21 or more objectives, 20 points.	20	
B. Utilized RMS, Resource Management Strategies	- Projects including 1-3 RMSs are given 3 points. - Projects including 4-9 RMSs, 6 points. - Project that includes 10 or more RMSs, 10 points.	-	**10**
C. Strategic considerations for IRWM Plan Implementation	- If the project demonstrates the ability to integrate with other projects or be modified to encourage regional planning and produce multiple benefits, it is given 5 points. No partial points are given for this criterion.	-	**5**
D. Technical feasibility of the project	- If project plans/designs have been completed and if there is evidence to indicate it will have a successful outcome (i.e. achieve the claimed benefits of the project), the project is given all 10 points. - If project plans/designs have not been completed and evaluated for feasibility, the subsequent guidelines are followed: - For completed technical feasibility studies, the project is given 2 points. - For the completion of background studies and reconnaissance (before design), it is given 2 points. - For completed designs or technical project plans, the project is given 3 points. - For completed report(s) that document a successful outcome of the project, the project is given 3 points.	10	**10**
E. Project status / Readiness to Proceed	- If fully prepared for implementation (i.e. CEQA complete or exempt, Easements executed, etc.), project earns 10 pts. - If a project is not ready for implementation, the subsequent guidelines are followed: - For a project that has identified it's permitting needs and a timeline to completion, 2 points are given. - A portion of the remaining 8 points will be given based on the percent-complete of the project's permitting needs and timeline.	-	**10**

Criteria	Scoring Guidelines	Points	
		Subtotal	Total
F. Project costs and financing	- Project Costs. If project costs are known to best extent possible and documented, the full 5 points will be given. A full 5 points will be awarded for projects with contractor bids and an engineer's estimate. If there is only an estimate without bids, 3 points will be awarded.	5	**10**
	- Financing. A project will receive the full 5 points if it can document 80% financing or more. If partially financed, points will be given according to the percent financed, rounded up to the nearest whole number. (i.e. 62% financed rounds to 4 pts).	5	
G. Economic feasibility (O&M)	- Is the O&M cost of the completed, operational project accounted for? An analysis or report of these anticipated O&M costs, and how any additional financial needs are being covered is required to receive 10 points. No increase in O&M costs, with proof, will receive 10 points.	-	**10**
H. Environmental justice considerations	- If the project specifically addresses critical water issues of a disadvantaged community (DAC), it is given 4 points.	4	**10**
	- If the project specifically addresses critical water issues of Native American Tribal communities, it is given 3 points.	3	
	- If the project specifically addresses Environmental Justice concerns (i.e. pollution, industrial contamination), then the project is given 3 points.	3	
I. Climate Change Adaption	- For each climate change vulnerability addressed, the project is given points based on a weighting of the vulnerability's priority.	4	**6**
	- If changes in runoff and recharge are addressed in the project planning, then the project is given 1 point. - If sea level rise impacts, specifically to water supply, are addressed in project planning, the project is given 1 point.	2	
J. Climate Change Mitigation (GHG Emission Reduction)	- If the selected project reduces GHG emissions compared to other project alternatives, and can provide documentation of this analysis, it is given 1 point.	1	**3**
	- If the project qualitatively reduces energy consumption, especially energy embedded in water, it is given 1 point.	1	
	- When evaluating the project-related GHG emissions on a 20-year planning horizon, projects that reduce GHG emissions are given 1 point.	1	
K. Reduce Delta reliance	- If the project reduces dependence on the Sacramento-San Joaquin Delta for water supply, it is given 1 point.	-	**1**
	Total Possible Score	**100**	

6.3.3 Call for Projects and Stakeholder Meetings

Upon completion and Working Group approval of the Scoring Rubric, District staff prepared the Implementation List Scoring worksheets and call for projects package for interested project sponsors. The call for projects was open from August 1st, 2018 to August 31st, 2018. In this time, 26 projects were submitted. District staff used this opportunity to meet with new RWMG members and new representatives of existing members. These meetings included evaluating projects, discussing IRWM in San Luis Obispo County, exploring opportunities for integration, and the future of IRWM as a whole.

Of the 26 projects submitting, 25 projects were considered eligible and presented to the RWMG membership at the November 7th, RWMG Meeting. No comments were received by the RWMG regarding the list and project scores.

6.3.4 2019 Implementation List

Table 6-5 is the 2019 Implementation List of projects for the San Luis Obispo County IRWM Region. In general, true "multi-benefit" projects scored higher than singular focused projects.

As expected, given the 40% weight to "readiness", projects further along in design, permitting and financing also generally scored higher.

Because of the "readiness" emphasis, it is vital to note that the scores were snapshots in time. Therefore, it's important to acknowledge what the list is, and what the list is not. This list represents the projects that are necessary to implement the 2019 IRWM Plan and the priorities for RWMG Members for the next 5 years. It is possible that a high-scoring project will not be eligible for Prop 1, Round 1 funding and will need to wait for Round 2, or future funding opportunities. As required by the Guidelines (pg. 53), this list is not a grant-prioritization process.

***Table 6-5**: 2019 IRWM Plan Implementation List, alphabetical by Project Sponsor*

Project Sponsor	Project Name	Status
Cambria CSD	WWTP Nutrient Removal and Efficiency Improvements	Design
Cayucos Sanitary District	Cayucos Sustainable Water Project, Phase 1	Ready for Implementation
Cayucos Sanitary District	Cayucos Sustainable Water Project, Phase 2	Planning
City of Pismo Beach	Central Coast Blue	Design
City of San Luis Obispo	One Water SLO	Design
City of San Luis Obispo	Mid Higuera Bypass	Design
City of San Luis Obispo	Recycled Water Distribution System Expansion	Design
City of San Luis Obispo	Meadow Park Stormwater Capture and Use	Concept
Coastal San Luis RCD	Remediation and BMP Implementation in the Oso Flaco Watershed	Design
Coastal San Luis RCD	Livestock and Land Program	Ready for Implementation
County of San Luis Obispo	Oceano 13th Street Drainage Project	Ready for Implementation
County of San Luis Obispo	Mountain Springs Road Sediment Control	Design
Estrella-El Pomar-Creston Water District	Huer Huero Recharge Project	Concept
Los Osos CSD	8th Street Well Construction	Ready for Implementation
Morro Bay National Estuary Program (NEP)	Los Padres CCC Center Stormwater LID	Planning
Morro Bay NEP	Water Conservation Partnerships in Chorro Valley	Planning
Morro Bay NEP	Baywood Park 2nd St. Stormwater Management	Concept
Nipomo CSD	Supplemental Water Project, Final Phase	Ready for Implementation
Oceano CSD	Oceano LID Project	Design
San Miguel CSD	Wastewater Treatment Plant Expansion	Planning
San Miguelito Mutual Water Company	Lower San Luis Obispo Creek Fish Passage Improvement and Seawater Intrusion Barrier	Planning
San Simeon CSD	Reservoir Expansion Project	Design
Upper Salinas-Las Tablas RCD	Santa Rosa Creek Floodplain Feasibility Study	Ready for Implementation
Upper Salinas-Las Tablas RCD	Santa Rosa Creek Streamflow Enhancement	Design
Upper Salinas-Las Tablas RCD	SLO County Key Percolation Zone Study	Ready for Implementation

6.4 GRANT OPPORTUNITY SPECIFIC LIST

The Grant Opportunity Specific List is created in response to a specific funding opportunity opened by DWR for IRWM projects. Each opportunity has its own eligibility and scoring metrics, as well as priorities and preferences for project types and methods. Because of these vary from opportunity to opportunity, each new opportunity requires the formation and vetting of its own local list of projects.

DWR has overhauled the grant process for IRWM after the passage of Proposition 1 (2014). The local selection process is intended to mirror DWR's process for the Prop 1 IRWM Implementation grants. This overhaul includes a fillable form-based application and funding area-wide presentations. In response, the San Luis Obispo County Region will utilize the same form and require presentations by prospective applicants, as described below.

The basic schedule for responding to a Prop 1 grant opportunity is as follows:

1. Review Draft PSP at Regular RWMG Meeting.
2. Call for projects.
3. Project showcase.
4. Application Recommendation by RWMG Working Group.
5. Application Recommendation by RWMG.
6. Application Recommendation by WRAC.
7. *Funding Area Workshops with DWR.*
8. Application approved by Board of Supervisors for submittal to DWR.

6.4.1 Review of Draft PSP at Regular RWMG Meeting

The purpose of this meeting is to review the eligibility criteria, timeline and funding available. This meeting will also highlight priorities and preferences of DWR for the solicitation and review the opportunity-specific scoring criteria.

6.4.2 Call for Projects

This would be based on the provided eligibility forms, scoring summary and project information form, or similar, as provided by DWR. Information, forms and references for this local solicitation of projects are communicated via the mailing list and the website. The Project Information Form (PIF) is supplied by DWR and connects directly the scoring rubric used by DWR to evaluate projects.

6.4.3 Project Showcase

Immediately following the close of the call for projects, a project showcase will be held at a regular RWMG Meeting. Agencies/organizations who submit a project for the funding opportunity will be required to present their projects at a regular RWMG meeting.

Presentations are intended to be brief, but highlight the need, design, financing and benefits of the project.

6.4.4 Application Recommendation by RWMG Working Group

District staff will provide a list of submitted projects and their files to the RWMG Working Group for review. Approximately one week after supplying this information, the Working Group will meet in a public setting to discuss the projects. Discussion will be facilitated in the following order: eligibility, scoring and Funding. Eligibility and scoring are based on the information provided by DWR in the Proposal Solicitation Package. Once the Working Group confirms a project's eligibility and score, the Group will prepare an application package recommendation to be reviewed by the entire RWMG at their next meeting. In addition, the Working Group will heed any direction provided by the entire RWMG. For example, the RWMG could direct the Working Group to identify the top 3 critical needs, match these with DWR's guidance and then provide a recommendation. In the end, the recommendation will include not only a list of projects, but a funding recommendation for each.

6.4.5 Application Recommendation by RWMG

Upon receipt of the recommendation of projects and funding for the application from the RWMG Working Group, a regular RWMG meeting will be held. At this meeting, the RWMG at large will formally approve, reject or approve with modifications the recommended application package.

6.4.6 Application Recommendation by WRAC

Per the RWMG MOU (**Appendix B**), the pathway of an IRWM funding application moves from the RWMG, to the Water Resources Advisory Committee (WRAC) and then the District's Board of Supervisors. (See **Section 2 – Governance** for more information about the relationship of the RWMG, WRAC and the District's Board of Supervisors.) Upon recommendation of the RWMG for inclusion in a specific funding opportunity, project sponsors will present their projects to the WRAC. These presentations are intended to be informational. After these presentations and any questions, the WRAC will entertain a motion to recommend the presented projects for submittal to DWR.

6.4.7 Funding Area Presentation to DWR

As part of the implementation grant program for Proposition 1 (2014) IRWM, the Department of Water Resources (DWR) will be hosting each funding area for application-level presentations by each submitting agency. These presentations will include DWR and other State agencies. These workshops are designed to increase engagement between DWR and the funding areas. Each project applicant will be required to present their project to DWR and other State

representatives. Initial application feedback will be provided by DWR for each Region's application, looking ahead to the formal application submittal 12 weeks after the presentations.

6.4.8 Application Submittal Approval by Board of Supervisors

The final local step in the application process is to receive approval of the selected projects by the Board of Supervisors of the San Luis Obispo County Flood Control & Water Conservation District (District). This approval authorizes District staff to officially submit the grant application and provides District staff authority to enter into grant agreements, funding agreements and any future amendments to either.

6.5 PROJECT LIST COMMUNICATION AND UPDATES

6.5.1 Communication of Project List Updates

Updates to project lists and distribution of submitted documentation occurs on the San Luis Obispo County Region's IRWM website, www.slocounty.ca.gov/irwm. The primary channel for all communication from the District, the Lead Agency, is through the mailing list. These emails occur once a month, and more frequently when a call for projects or another similar event is taking place. Additionally, information is provided at the regular RWMG meetings. In all three of these primary communication methods – website, mailing list, meetings – RWMG members, interested stakeholders and members of the public are able to receive and review available information.

6.5.2 Future of Project Lists

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.

6.6 PROJECT INTEGRATION

Lastly, as understanding expands regarding the interconnectedness of our water systems, project integration is an essential component of water management in the 21st century.

As shown in the RWMG member list (**Table 2-1**), San Luis Obispo County IRWM includes the County, municipalities, services districts, county-wide resource groups and other specific resource programs (i.e. Morro Bay National Estuary Program).

This plan cycle intends to include integration workshops, primarily between restoration/ecosystem groups and agencies implementing water/wastewater service projects. The opportunities for integration exist and the benefits are well known. Integrated projects, particularly those between restoration and municipal partners, maximize resources, serve a population while stewarding the environmental and provide a more advantageous position for additional funding opportunities.

Another opportunity for project integration is in the "information sharing" and the unique place IRWM has to create and be the catalyst for conversation. For example, in preparation for the Proposition 1, Round 1 Implementation Grant opportunity, each submitting agency/group, presented their projects at the April 3rd, 2019 regular RWMG meeting. This meeting served as the "Project Showcase" described in **Section 6.4.3**. Members, interested stakeholders as well as members of the public attended this meeting. In all, 14 projects were presented, and Q&A followed each presentation. In addition to these formal conversations, after the meeting, many conversations ensued including various wastewater plant general managers discussing treatment processes/technologies/operating strategies, project managers discussing permitting timelines and design challengers, and others. Few other places bring together wastewater plant managers from across the County and the RWMG will continue to foster these conversations and opportunities during the 2019 plan cycle.

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7 PLAN BENEFITS AND IMPACTS

This section contains a "high" level discussion of the plan implementation to help stakeholders begin to understand the potential benefits and impacts of implementing the IRWM Plan. 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. At a minimum, the section will be updated as part of a normal 5-year plan update and re-adoption cycle.

This section examines benefits and impacts three different ways. The first considers the IRWM Plan's overall Goals and Objectives (**Section 4**) and associates primary benefits and impacts to each. The second discusses the benefits and impacts of implementing the Plan's Goals and Objectives specifically to adjacent IRWM Regions, Disadvantaged Communities (DACS), Environmental Justice and Native American Tribal Communities.

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.

7.1 BENEFITS AND IMPACTS TO SLO REGION

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 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 within the San Luis Obispo County IRWM Region.

7.1.1 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 goal's 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 the quantity and quality of water sources
- 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 Water Supply Goal provides numerous benefits to the region as a whole, with some impacts to the locally affected communities and adjacent areas. **Table 7-1** identifies potential benefits and impacts of implementing this goal.

Table 7-1: *Benefits and Impacts of the Water Supply Goal*

Water Supply Goal
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.

7.1.2 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 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 7-2** identifies potential benefits and impacts of implementing projects under this goal.

Table 7-2: *Benefits and Impacts of the Ecosystem and Watershed Restoration Goal*

Ecosystem and Watershed Restoration Goal
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.

7.1.3 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 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 7-3** *identifies potential benefits and impacts of implementing projects under this goal.*

Table 7-3: *Benefits and Impacts of the Groundwater Monitoring and Management Goal*

Groundwater Monitoring and Management Goal
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.

7.1.4 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 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 7-4** identifies potential benefits and impacts of implementing this goal.

Table 7-4: *Benefits and Impacts of the Flood Management Goal*

Flood Management Goal
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.

7.1.5 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 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 7-5** identifies potential benefits and impacts of implementing this goal.

Table 7-5: *Benefits and Impacts of the Water Resources Management and Communications Goal*

Water Resources Management and Communications Goal
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.

Water Resources Management and Communications Goal
Impacts • Potential higher cost of water to maintain finance options and increased local funding.

7.2 BENEFITS AND IMPACTS TO OTHERS

Project activities invariably have direct and indirect benefits and impacts to neighboring Regions and other communities. **Map 3-01** depicts the neighboring IRWM Regions to San Luis Obispo County. Our adjacent Regions include Greater Monterey County, Kern County and Santa Barbara County. Greater Monterey County and Santa Barbara County Regions are a part of the Central Coast Funding Area along with the SLO Region, so we enjoy an "integrated" partnership in achieving sustainable water resources for the Central Coast.

Beyond the inter-Region connectivity, this section also identifies general benefits and impacts any project proponent will need to be cognizant of when developing projects. Effects of achieving the Goals (**Section 4**) of the SLO County IRWM Plan on Disadvantaged Communities (DACs), achieving Environmental Justice (EJ) and on Native American Tribal Communities are broadly discussed in **Table 7-6** through **Table 7-10.**

Table 7-6: *Inter-Regional, DAC, EJ and Tribal Benefits and Impacts of the Water Supply Goal*

Water Supply Goal (Section 4.4.1)		
	Benefits	**Impacts**
Inter-regionally	n/a	Watershed or groundwater projects in areas that outflow into two adjacent regions could reduce the water available to those regions.
Disadvantaged Community (DAC)	Supply enhancement projects are particularly vital to DAC's as many of the Region's DAC's have a single water source. These projects allow DAC's to weather changes to their water supply due to climate change, overuse, etc.	Additional and/modernized infrastructure could require additional maintenance funding.
Environmental Justice (EJ)	Regional supply projects could alleviate EJ stress on communities with impacted local groundwater supply.	Additional and/modernized infrastructure could require additional maintenance funding.
Native American Tribal Communities	n/a	Watershed or groundwater supply projects could negatively impact in-stream flows and fish populations. In addition, with many archaeological resources in the region, construction projects could disturb existing artifacts and in-situ cultural resources.

Table 7-7: *Inter-Regional, DAC, EJ and Tribal Benefits and Impacts of the Ecosystem and Watershed Restoration Goal*

Ecosystem and Watershed Restoration Goal (Section 4.4.2)		
	Benefits	**Impacts**
Inter-Regionally	Upstream projects on watersheds that flow out of SLO County (i.e. Salinas River) will provide enhanced ecological conditions for the receiving regions to build upon.	n/a
Disadvantaged Community (DAC)	Regional watershed projects that include DAC areas provide enhancement that a DAC could not bring about on their own.	Any additional maintenance requirements of DAC's could be financially burdensome.
Environmental Justice (EJ)	Any users of watersheds that have been impacted by pollution benefit from pollution reduction.	Any additional maintenance requirements of could be financially burdensome, particularly if the affected community is small and the environmental burden is large.
Native American Tribal Communities	Increased stream flows and enhancement of conditions for fish population growth are priorities of our local Tribal communities.	n/a

Table 7-8: *Inter-Regional, DAC, EJ and Tribal Benefits and Impacts of the Groundwater Monitoring and Management Goal*

Groundwater Monitoring and Management Goal (Section 4.4.3)		
	Benefits	**Impacts**
Inter-Regionally	Upstream projects that benefit groundwater basins with interconnectivity outside of SLO County (i.e. Santa Maria Basin) will qualitatively improve basin-wide conditions.	Projects with groundwater extraction can put additional strain on basins.
Disadvantaged Community (DAC)	Many local DAC's rely on groundwater. Any basin improvement would have direct benefit to DACs.	Projects increasing supply or improving groundwater quality take time to show material benefits.
Environmental Justice (EJ)	Projects addressing groundwater contamination directly address EJ concerns.	Groundwater remediation projects can take decades to complete and produce odors, sounds, etc.
Native American Tribal Communities	Healthier groundwater water basins lead to healthier streams and would benefit Tribal interests.	Given there are interactions between groundwater and surface water, any reduction to groundwater could negatively impact fish and stream health.

Table 7-9: *Inter-Regional, DAC, EJ and Tribal Benefits and Impacts of the Flood Management Goal*

Flood Management Goal (Section 4.4.4)		
	Benefits	**Impacts**
Inter-Regionally	Upstream flood management projects on watersheds that flow out of SLO County (i.e. Salinas River) will provide enhanced flood control for those receiving regions.	Conversely to benefits, flood control projects could meter and/or reduce the total flow in streams that leave the County and negatively affect supply or other beneficial uses of the stream in neighboring regions.
Disadvantaged Community (DAC)	Aging flood protection infrastructure (i.e. Arroyo Grande Creek levee) threatens a local DAC, improvement projects provide increased protection for communities like these.	Flood control projects can be financially burdensome given the local, state, and federal permitting requirements. Flood projects can take decades to be implemented for the same reasons.
Environmental Justice (EJ)	Flood control projects can help mitigate costs of flood insurance and raise property values.	n/a
Native American Tribal Communities	Flood-related projects that restore existing floodplains and nature flows help achieve Tribal goals.	Flood control projects that alter natural flow patterns impact Tribal communities and their interests.

Table 7-10: *Inter-Regional, DAC, EJ and Tribal Benefits and Impacts of the Water Resources Management and Communications Goal*

Water Resources Management and Communications Goal (Section 4.4.5)		
	Benefits	**Impacts**
Inter-Regionally	Increased communication between regions enhances breaks down silos and aid in achieving shared regional goals.	Projects may experience delays gathering additional input from stakeholders, though the input is valuable, it does take time.
Disadvantaged Community (DAC)	DACs tend to lack Technical, Managerial and Financial (TMF) resources to execute management and communication projects/programs that would help inform DACs of the issues facing the community and provide avenues for participation in the solution.	n/a
Environmental Justice (EJ)	Enhanced communication and management can increase awareness and information sharing, as well as be a catalyst for change in one's community.	n/a
Native American Tribal Communities	Enhanced communication with Tribal communities increases an agency's or community's ability to engage with and learn from our Native American Tribal Communities.	n/a

7.3 BENEFITS AND IMPACTS TO RESOURCES

Other resources affected by the IRWM Plan, other than water resources and ecosystem management are included in **Table 7-11** 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 7-11: *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.
Agricultural Resources Includes the protection and enhancement of agricultural activities in the region.	Changes in crop types and 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 may 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.

Table 7-11: *Other Resource Impacts and Benefits, Continued*

Resource	Impacts	Benefits
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.
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.

Table 7-11: *Other Resource Impacts and Benefits, Continued*

Resource	Impacts	Benefits
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.
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 because 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.

7.4 Benefits and Impacts of Past IRWM Plan Implementation

A comprehensive look back of the past plans and projects completed in SLO County through the IRWM Program can be found in **Section 8 - Plan Performance and Monitoring**.

7.5 Implementation List Projects Benefits and Impacts

As described in **Section 6 – Project Review Process**, the RWMG compiled a list of 25 projects being developed by members, the Implementation List. The projects expect to have a horizon of 5 years or less for implementation. **Table 7-12** provides a general benefit and impact discussion of each project and highlights DAC, EJ, and Native American Tribal Communities where appropriate.

Specific project benefits and impacts are discussed and explored in detail in a project's CEQA document. Additionally, should a project receive funding from an IRWM grant opportunity, projects will provide detailed impact and benefit analysis in a Project Performance and Monitoring Plan.

Table 7-12: *Benefits and Impacts of Implementation List Projects*

2019 Implementation List Projects Benefits and Impacts		
Project Sponsor *Project Name* (Alphabetical by Sponsor)	**Benefit(s)**	**Impact(s)**
Cambria CSD *WWTP Nutrient Removal and Efficiency Improvements*	Provides supply relief to a community with active water curtailment. Additional benefits from the energy saving measures.	n/a
Cayucos Sanitary District *Cayucos Sustainable Water Project, Phase 1*	The project enables the community of Cayucos to have control of their Wastewater process and provide recycled water for agricultural uses.	As with many wastewater treatment projects, brine effluent will impact the disposal area
Cayucos Sanitary District *Cayucos Sustainable Water Project, Phase 2*	Sustainable supply opportunity for Cayucos and Whale Rock Reservoir as a whole	Construction impacts, undetermined affects to reservoir of augmenting natural supply with treated wastewater
City of Pismo Beach *Central Coast Blue*	Provides additional supply to the Northern Cities Mgmt. Area of the Santa Maria Groundwater Basin. Multi-agency collaboration for a regional solution	Construction impacts of the groundwater injection wells and advanced treatment facilities proposed are primarily in a DAC.
City of San Luis Obispo *One Water SLO*	Increased recycled water production, effluent treated to the Municipal and Domestic Water Supply standard	Construction impacts change in effluent patterns to lower San Luis Obispo Creek.
City of San Luis Obispo *Mid Higuera Bypass*	Enhanced flood protection for downtown SLO which historically floods during high flow events	The project will disturb riparian and streambed corridors.
City of San Luis Obispo *Recycled Water Distribution System Expansion*	Provides additional access to recycled water, allowing users where able to reduce consumption of potable water	Construction impacts, additional vegetation monitoring/placement for species/types that are more favorable to recycled water.
City of San Luis Obispo *Meadow Park Stormwater Capture and Use*	Reduces dependence on potable water for irrigation of a large park. Provides stormwater control in flood area.	Construction impacts and temporary closure of park faculties. Potable water reduction dependent on rainfall
Coastal San Luis RCD *Remediation and BMP Implementation in the Oso Flaco Watershed*	Helps reduce Total Maximum Daily Load (TMDL) levels for in Oso Flaco Lake for pesticides and toxicity.	n/a
Coastal San Luis RCD *Livestock and Land Program*	Provides tools and educations to reduce the flow of animal byproduct to water supplies (i.e. streams) during rain events	Requires multiple individual property owners to buy in to see regional benefits
County of San Luis Obispo *Oceano 13th St. Drainage*	Project will help alleviate annual flooding in a high traffic area of a DAC	Construction impacts of road closures and land disturbances.

Table 7-12: *Benefits and Impacts of Implementation List Projects, continued*

2019 Implementation List Projects Benefits and Impacts		
Project Sponsor *Project Name* (Alphabetical by Sponsor)	**Benefit(s)**	**Impact(s)**
County of San Luis Obispo *Mountain Springs Road Sediment Control*	Protects urban population downstream from debris flows and flash floods	Construction and environmental impacts of expanded basin
Estrella-El Pomar-Creston Water District *Huer Huero Recharge Project*	Increases groundwater recharge in a priority basin (see map 3-2)	Would reduce downstream flow potential
Los Osos CSD *8th Street Well Construction*	Implements part of a multiple agency groundwater management plan, project helps mitigate seawater intrusion issues	Construction impacts and possible impacts to upper aquifer due to increased reliance.
Morro Bay National Estuary Program (NEP) *Los Padres CCC Center Stormwater LID*	Captures and treats runoff from the California Conservation Corps (CCC) center that enters adjacent Chorro Creek	Minor immediate impacts of changing flow patterns
Morro Bay NEP *Water Conservation Partnerships in Chorro Valley*	Achieves IRWM Integration and regional approaches to enhancing supply and habitat of the Chorro creek watershed and therefore Morro Bay.	n/a
Morro Bay NEP *Baywood Park 2nd Street Stormwater Management*	Captures and treats stormwater runoff that enters Morro Bay, infiltrates water to a basin with known seawater intrusion	Construction impacts and maintenance requirements
Nipomo CSD *Supplemental Water Project, Final Phase*	Additional supply for a groundwater dependent area, multi-agency collaboration for a regional solution	construction impacts and increased embedded energy in water
Oceano CSD *Oceano LID Project*	Project provides stormwater control faculties and infiltration for a DAC with known flooding issues	Construction impacts at a school and in residential neighborhoods
San Miguel CSD *Wastewater Treatment Plant Expansion*	Increased effluent treatment and provides supplemental water supply to a Disadvantaged Community	Construction impacts increase in costs of service to a DAC
San Miguelito Mutual Water Company *Lower San Luis Obispo Creek Fish Passage Improvement and Seawater Intrusion Barrier*	Project co-developed between SMMWC and Central Coast Salmon Enhancement. Mutual benefits to environment and a small groundwater basin supply	Habitat disturbance and in-stream construction impacts
San Simeon CSD *Reservoir Expansion Project*	Provides additional fire protection and capacity to store potable water for periods of drought or low groundwater levels	Construction impacts increase in costs of service to a DAC

Table 7-12: *Benefits and Impacts of Implementation List Projects, continued*

2019 Implementation List Projects Benefits and Impacts		
Project Sponsor *Project Name* (Alphabetical by Sponsor)	**Benefit(s)**	**Impact(s)**
Upper Salinas-Las Tablas RCD *Santa Rosa Creek Floodplain Feasibility Study*	Expects to provide options for improving the function and effects of the floodplain to the ecosystem (steelhead) and groundwater	n/a (study)
Upper Salinas-Las Tablas RCD *Santa Rosa Creek Streamflow Enhancement*	Achieves supply, ecosystem, flood control, groundwater and water mgmt. objectives for the Santa Rosa Creek watershed	Agricultural impacts in order to increase dry season flows
Upper Salinas-Las Tablas RCD *SLO County Key Percolation Zone Study*	Project will map areas that would be most effective for groundwater recharge	n/a (study)

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8 PLAN PERFORMANCE AND MONITORING

8.1 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 6 – Project Selection Process**). 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.

8.2 IRWM Program Level Performance Measures and Monitoring Methods

The IRWM Plan Objectives were established by the RWMG (**Section 4 – Goals and Objectives**). The RWMG broadly defines the objectives so that they are easy to communicate and achieve stakeholder consensus. **Section 4 – Goals and Objectives** (**Tables 4-3** to **4-7**) 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 **Table 8-1** through **Table 8-5** 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.

8.2.1 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 allowable.

Table 8-1: *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 9 – 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 12 – 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 8-1: *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 **Section 9 - 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. 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 12 – 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 8-2: *Ecosystem and Watershed 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 8-2: *Ecosystem and Watershed 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 8-3: *Groundwater Monitoring and Management Goal*

OBJECTIVES	PERFORMANCE MEASURES	MONITORING METHODS
1. Develop groundwater management Plans, including Groundwater Sustainability Plans, 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 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 an effort to increase monitoring for groundwater basins in the region, where plausible, such as is required under Sustainable Groundwater Management Act (SGMA) and/or California Statewide Groundwater Elevation Monitoring (CASGEM).	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 8-3: *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~~recharge. Increasing number of groundwater ~~banking~~ recharge projects implemented where technically feasible and cost-effective.	The District will inventory the number of basins that have been evaluated for ~~banking~~ recharge 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~~recharge 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 8-4: *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 8-4: *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 8-5: *Water Management and Communications 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 8-5: *Water Management and Communications 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.

8.3 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 6 – Project Selection Process**). 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 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.

8.4 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 9 – 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, 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 4 – 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.

8.4.1 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 8-1** to **Table 8-5**, 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 8-6** 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 4-11**) 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 8-6: *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 to 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.

8.4.2 Project-Level Monitoring and Reporting

8.4.2.1 IRWM Past, Present, and Future Projects

By receiving Proposition 50 and Proposition 84 Implementation Grants between 2008 and 2016, 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. **Table 8-7** shows all IRWM funded projects and studies and which goals of the IRWM Plan were advanced by the project. **Table 8-8** shows implementation projects funded through IRWM with a brief description of the monitoring activities taking place. These activities correlate directly to the Project Performance Monitoring Plans as described in the grant agreements.

***Table 8-7**: Existing IRWM Project Benefits Classified by IRWM Goals*

Project	IRWM Goals				
	Water Supply	Ecosystem & Watershed Restoration	Groundwater Management	Flood Management	Water Management & Communication
Completed					
Groundwater Banking Plan	■		■		■
Regional Permitting Plan		■			■
Flood Management Plan				■	■
Data Enhancement Plan					■
Identification of Basins Requiring SNMPs	■		■		■
Santa Maria Groundwater Basin Study	■		■		■
Paso Robles Groundwater Basin SNMP			■		■
Paso Robles Groundwater Basin Model	■	■	■		■
Regional Recycled Water Strategic Plan	■	■	■		■
Watershed Management Planning		■			■
Los Osos Wastewater Project		■			■
Nipomo Supplemental Water Project	■		■		■
CSA 23-Atascadero MWC-Garden Farms Emergency Intertie	■		■		■
Heritage Ranch CSD Emergency Turnout	■		■		■
Cambria CSD Emergency Water Supply	■		■		■
Well Head Treatment Project (San Simeon CSD)	■		■		■
In Progress					
Flood Control Zone 1/1A - Modified 3c Project		■		■	

Project	IRWM Goals				
	Water Supply	Ecosystem & Watershed Restoration	Groundwater Management	Flood Management	Water Management & Communication
Upper Salinas River Basin Conjunctive Use Project (Templeton CSD)	■	■	■		■
Water Resources Reliability Program (Oceano CSD)	■		■	■	■
Disadvantaged Community Needs Assessment	■				■
Turnout Pump Station Design and Water Master Plan Update (City of Grover Beach)	■	■			■
Water Resource Recovery Facility Project (City of San Luis Obispo)	■		■		■
Reservoir Expansion Project Development & Water Master Plan Update (San Simeon CSD)	■	■	■		■
Wastewater Plant Upgrade Study & Recharge Basin Study (San Miguel CSD)	■		■		■

Table 8-8: *Existing Implementation Projects Monitoring Activities*

Project Name	Grant	Monitoring Activities (Per Project Performance Monitoring Plans)
Los Osos Wastewater Project	Prop 84 Impl. Grant (2011) DWR No. 4600009717	Influent, effluent, recycled water, groundwater, disposal area, and biosolids monitoring. Specifically: Nitrate concentrations and trends in groundwater; gpd potable water use reduction; retrofit program participation.
Flood Control Zone 1/1A – Modified 3c Project		Streamflow and flood protection capacity
Nipomo Supplemental Water Project		Water supply increase (acre-feet per year); reduced reliance on groundwater
CSA 23-AMWC-Garden Farms Emergency Intertie	Prop 84 Expedited Drought Grant (2014) DWR No. 4600010880	Water supply increase in declared emergencies (acre-feet per year)
Heritage Ranch CSD Emergency Turnout		Water supply increase in declared emergencies (acre-feet per year)
Cambria CSD Emergency Water Supply		Water supply increase in declared emergencies (acre-feet per year)-
Templeton CSD Upper Salinas River Basin Conjunctive Use	Prop 84 Impl. Grant (2015) DWR No. 4600011487	Water Supply increase, reduction of Arsenic concentrations in groundwater supply
San Simeon CSD Well Head Treatment		water supply increase, reduction of seawater concentrations of groundwater supply

8.4.3 IRWM Future Project Monitoring

Foreseeable project-specific monitoring activities related to each of the selected IRWM projects include the following:

Table 8-9: *Future Project Monitoring, Based on the Implementation List*

Project Sponsor	Project Name	Projected Monitoring Activities
Cambria CSD	WWTP Nutrient Removal and Efficiency Improvements	Reduced Nitrate and other key nutrients values; reduction of power consumption
Cayucos Sanitary District	Cayucos Sustainable Water Project, Phase 1	Quantity of advanced treated effluent
Cayucos Sanitary District	Cayucos Sustainable Water Project, Phase 2	Acre-feet per year added to Whale Rock Reservoir
City of Pismo Beach	Central Coast Blue	Acre-feet per year injected to groundwater basin
City of San Luis Obispo	One Water SLO	Decreased nutrient concentrations in effluent, increased available recycled water available
City of San Luis Obispo	Mid Higuera Bypass	Increased flow and flood conveyance capacity
City of San Luis Obispo	Recycled Water Distribution System Expansion	increased connections and use
City of San Luis Obispo	Meadow Park Stormwater Capture and Use	Capture and Reuse volume available
Coastal San Luis RCD	Remediation and BMP Implementation in the Oso Flaco Watershed	Acres of ecosystem protection
Coastal San Luis RCD	Livestock and Land Program	Quantity of participating ranchers and capacity of installed BMPs
County of San Luis Obispo	Oceano 13th Street Drainage Project	Acre-feet of storage, reduction of flood events, Infiltration quantity
County of San Luis Obispo	Mountain Springs Road Sediment Control	Acre-feet of storage and sedimentation capacity
Estrella-El Pomar-Creston Water District	Huer Huero Recharge Project	Increased recharge capacity to groundwater basin
Los Osos CSD	8th Street Well Construction	Acre-feet per year reduction of sea-water contaminated well use
Morro Bay National Estuary Program	Los Padres CCC Center Stormwater LID	Stormwater flow reduction
Morro Bay National Estuary Program	Water Conservation Partnerships in Chorro Valley	Implementation of the Morro Bay comprehensive Conservation and Management Plan

Project Sponsor	Project Name	Projected Monitoring Activities
Morro Bay National Estuary Program	Baywood Park 2nd Street Stormwater Management	Quantity of stormwater captured and treated
Nipomo CSD	Supplemental Water Project, Final Phase	Increased capacity and deliveries of water system
Oceano CSD	Oceano LID Project	Quantity of stormwater captured and treated
San Miguel CSD	Wastewater Treatment Plant Expansion	Decreased nutrient concentrations in effluent; quantity of recharge to groundwater basin
San Miguelito Mutual Water Company	Lower San Luis Obispo Creek Fish Passage Improvement & Seawater Intrusion Barrier	Increased fish populations; groundwater basin health improvement
San Simeon CSD	Reservoir Expansion Project	Quantity increased storage for supply and fire protection
Upper Salinas-Las Tablas RCD	Santa Rosa Creek Floodplain Feasibility Study	Identification of implementable habitat restoration and enhancement projects
Upper Salinas-Las Tablas RCD	Santa Rosa Creek Streamflow Enhancement	Quantity of recharge and retention capacity
Upper Salinas-Las Tablas RCD	SLO County Key Percolation Zone Study	Identification of prime groundwater recharge basin areas for project priority and development

8.4.4 Plan & Program 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) Description of Changes in Governance Structure, RWMG Actions and Plan Amendments
d) Plan & Program 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 Plan Performance Measurements (where data exists)
    iii) Project-Specific Monitoring
        1) Monitoring Results
        2) Comparison with Stated Project Benefits, if applicable
e) Interpretations and conclusions of Plan and Project-specific monitoring
    i) RWMG Recommended actions to be Taken Over Next 5-Year Monitoring Period

Section 'd' in the outline includes the Plan Performance and Monitoring results. The Plan Performance Evaluation Report is estimated to occur by Winter 2021.

8.4.5 Climate Change Evaluation

The information and tools available for addressing climate change are developing and progressing at rapid rates. As a result, a regular review and update of the climate change-related sections of the IRWM Plan is essential. As mentioned in **Section 14.12.7 – Annual Climate Change Update**, the San Luis Obispo RWMG agrees to hold an annual meeting dedicated to reviewing information, data, and tools relevant to the nexus of water management and climate change. The Plan's list of climate change vulnerabilities and other related sections will be updated in accordance with the new developments in technology and information; this will ensure the procedures and recommendations included in the Plan remain appropriate for promoting adaptive management in the San Luis Obispo Region.

8.5 Quarterly Reporting

For projects awarded IRWM grants, the process includes not only a Project Performance Monitoring Report, but also quarterly reports. These reports document:

- Task Level Discussion
    - Progress of Work Plan
    - Deliverable status
    - Milestones
- Project Level Discussion
    - Anticipated Work
    - Photo documentation
    - Schedule/Budget Status

Within these reports, each implementing agency details the status of the project in regard to the work plan and deliverables in a grant agreement. This discussion includes items such as invoicing, permitting, CEQA, design, construction, etc. Each of these discussions informs both the lead agency (District) and DWR of the project's status in order to provide oversight and monitor compliance. For example, if a project requires a local coastal permit, RWQCB Discharge order and/or other types of permits, the quarterly report is key opportunity to check in on the status of a permit. All permits listed in a grant application and Environmental Information Form's "permit acquisition plan" are listed in the quarterly report for oversight by DWR and the District.

8.6 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 2040.

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9 DATA MANAGEMENT

Data Management plays a significant role in the implementation of 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 3 – 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.

9.1 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) Proposition 1 from 2016, 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)

9.1.1 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 (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.

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:

9.1 Introduction – summarizes the contents of **Section 9**

9.2 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

9.3 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.

9.4 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.

9.5. 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

9.6 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

9.7 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 9** 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.

9.1.2 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 8 – 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.

9.2 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 8 – Plan Performance and Monitoring**. The 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 its applicability for upload to a State database.

9.3 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 its applicability for upload to a state or federal database system. Popular statewide databases currently include, but are not limited to, the following:

California 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.ceden.org/

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://geotracker.waterboards.ca.gov/gama/gamamap/public/

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://wdl.water.ca.gov/groundwater/casgem/online_system.cfm

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.

https://catalog.data.gov/harvest/california-environmental-information-catalog

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 9-1**. 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.

Other specific points of monitoring include the coastal beaches, estuaries, and groundwater wells. **Section 9.4** provides a summary of the various programs. For additional detail, please refer to the 2012 MWR, Chapter 3, Section 3.2.

9.4 Current Data Programs and Collection Techniques

Table 9-2 lists all the region's data collection activities including a short definition of the data and description of how it is 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.

Table 9-1: *Sub-Region Areas of Concern Requiring Data Collection*

Regional Interest Classifications	Primary Definitions as Related to the Plan & 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 9-1: *Sub-Region Areas of Concern Requiring Data Collection, Continued*

Regional Interest Classifications	Primary Definitions as Related to the Plan & Region	North Coast and South County	North 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 9-2: *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.
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. With 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.

Table 9-2: *General Data Collection Efforts and Techniques, Continued*

Data Need	Data Collection Descriptions
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.
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.

Table 9-2: *General Data Collection Efforts and Techniques, Continued*

Data Need	Data Collection Descriptions
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 11 – Technical Analysis** for reference for all UWMPs completed in the region.

9.4.1 Existing San Luis Obispo Data Management System and Communication with State and Federal Database Systems

Data is currently being collected and managed by the San Luis Obispo County Flood Control and Water Conservation District (District) 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 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 9.7.3 – 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.

9.4.2 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.

9.4.2.1 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. One acoustic technique uses a probe connected to a measurement tape, which 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. Acoustic transducers offer another method for measuring water level. Mounted transducers emit pulses towards the water surface, measure the time of flight of the pulse, and calculate water level based on the speed of sound.

Dedicated Multi-Completion Monitoring

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

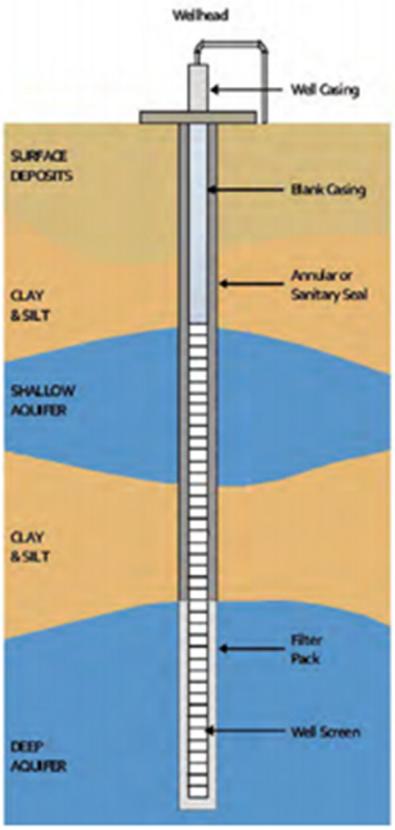
where the wells are screened). These downhole surveys would improve the understanding of the groundwater elevation measurements and groundwater movement in the area of the well.

9.4.2.2 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.

9.4.3 Geologic Data (US Geological Survey, 2018)

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.

9.4.3.1 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.

9.4.4 Stream Flow

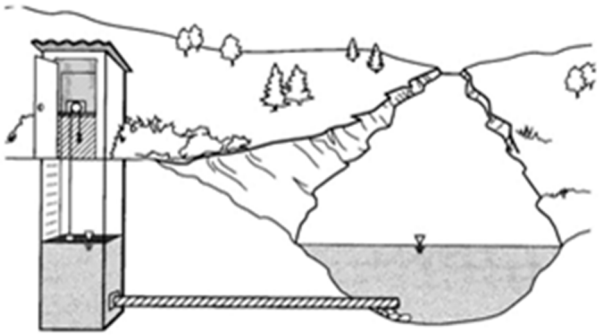
Water levels are typically collected in streams as part of a stream flow monitoring program. In addition, water levels are also collected in streams to support flood protection activities and in reservoirs to assist with daily operations.

The major streams and rivers in the region include:

Arroyo De La Cruz Creek	Estrella River*	Pismo Creek	San Simeon Creek*
Arroyo Grande Creek*	Los Osos Creek*	Salinas River*	Santa Rosa Creek*
Cayucos Creek	Morro Creek*	San Carpoforo Creek	Toro Creek
Chorro Creek*	Old Creek	San Luis Obispo Creek*	Villa Creek

* - has a current gauge station

9.4.4.1 Techniques for Measurement



Example of Real-Time Stream Gauge

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.

9.4.4.2 Participants

There are two agencies that collect stream flow information in the region: the District and the U.S. 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: <https://wr.slocountywater.org/home.php>

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)

9.4.5 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 50 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.

9.4.5.1 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.

9.4.5.2 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 is 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.

CIMIS Station

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.

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.

9.4.6 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.

Release Weir

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

9.4.6.1 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.

9.4.6.2 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.

9.4.7 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.

9.4.7.1 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, which can be accessed through the California Drinking Water Watch website.

Water Quality at Tap

Monitoring broadly encompasses several categories of 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.

9.4.7.2 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 the program's website.

9.4.8 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.).

9.4.8.1 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 Waste Discharge Requirements (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.

9.4.8.2 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 WDRs or 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

9.4.9 Estuaries and Wetlands

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.

Automated Monitoring in Estuary

9.4.9.1 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.

9.4.9.2 Participants

The US EPA's National Coastal Condition Assessment surveys the condition of the Nation's coastal resources by creating an integrated, comprehensive monitoring program among the coastal states. This assessment is part of the National Aquatic Resource Surveys (NARS) – the overarching program for collaborative monitoring of coastal water, lakes, and reservoirs across the nation. NARS has absorbed the role formerly held by the Environmental Monitoring and Assessment Program (EMAP). To answer broad-scale questions on environmental conditions, EMAP and its partners collected estuarine and coastal data from thousands of stations along the coasts of the continental United States between 1990 and 2006. This monitoring done by EMAP, and now NARS, includes five coastal stations in the SLO Region.

9.4.10 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

9.4.10.1 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

9.4.10.2 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.

9.4.11 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.

9.4.11.1 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.

9.4.11.2 Participants

The NBDC designs, develops, operates, and maintains a network of data collecting buoys and coastal stations. There are only a few stations in the region.

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

9.4.12 Groundwater Quality

USGS Groundwater Quality Sampling

Groundwater is often sampled to determine the chemistry of the groundwater so the water can be utilized 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.

9.4.12.1 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).

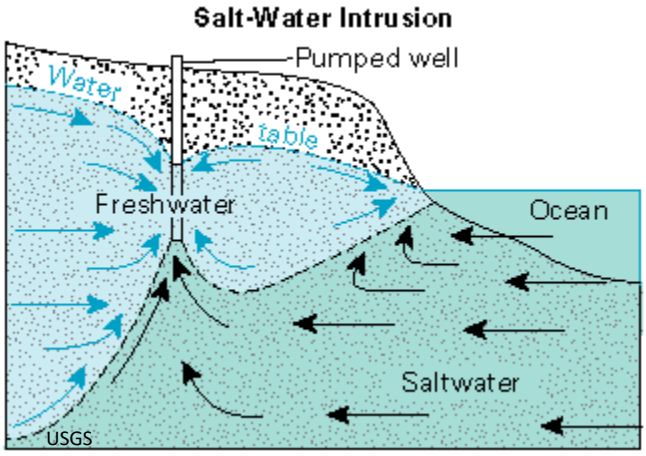
9.4.12.2 Participants

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/>

9.4.13 Sea Water Intrusion



Management areas and communities along the coast monitor for sea water 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. The Los Osos Basin Management Committee serves as another example of an agency that regularly tests water quality in coastal wells to monitor for sea water intrusion.

9.4.14 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. Basins classified as high and medium priority by DWR are required under the Sustainable Groundwater Management Act (SGMA) to form local Groundwater Sustainability Agencies (GSAs), which must adopt and implement Groundwater Sustainability Plans (GSPs)
3. A Groundwater Management Plan is voluntarily being developed
4. An entity is implementing a project with monitoring requirements
5. Individual entities or groups are developing Salt and Nutrient Management Plans in accordance with the State Water Board's Basin Plan
6. Seawater intrusion is of concern to agencies that rely on coastal groundwater basins for their water supply

7. 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.

9.4.15 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.

9.4.16 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 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.

9.4.17 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.

9.5 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 9-1)**.

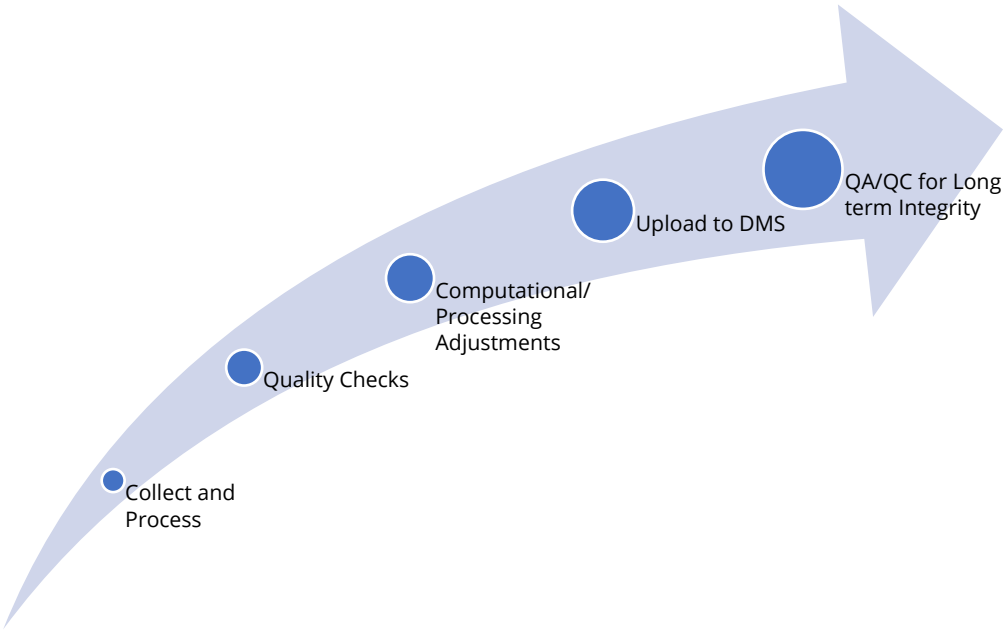


Figure 9-1: *Data Collection Process Leading to QA/QC Storage*

9.5.1 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

9.6 Anticipated Features of a Data Management System

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 9-3** 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 9-3: *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	Reporting Tools	Web-Enabled	Compatibility with State
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.

9.6.1 Preferred Features in Selected DMS

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.

9.6.2 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 9.3 - Description of Data Needs**).

9.7 Other Potential Future GIS/DMS Needs and Initial DMS Development

9.7.1 MS4 Permit/Order and TMDL DMS Needs

The Municipal Separate Storm Sewer Systems (MS4) and Total Maximum Daily Load (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

9.7.1.1 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 SWAMP protocols.

9.7.1.2 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.

9.7.1.3 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.

9.7.1.4 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.

9.7.2 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

9.7.3 Proposed Implementation of the San Luis Obispo County Data Management System (SLO-DMS)

As part of the SGMA planning in the San Luis Obispo Groundwater Basin, the first phase of the SLO-DMS will be developed. While the DMS will be specific to the SLO Basin at the beginning, it is being intentionally designed to be expandable to the entire County and the other groundwater basins. This system is being developed with funding from a 2017 Sustainable Groundwater Planning Grant (Agreement No. 4600012685). The work plan for the SLO-DMS project is described below:

This task will develop a county-wide Data Management System (DMS). The DMS design and data framework will be spatially scalable and can be expanded to include information from other basins, GSAs, districts, or agencies, and information contained within the DMS can be exported and incorporated into other data management frameworks. The DMS will be specifically designed to be useful for basin setting, groundwater conditions, water budget, and defining projects and management actions. And the DMS will be modular, allowing for future expansion and evolution. The DMS will be developed in stages as described below.

A Data Management Plan - The development of a Data Management Plan will begin with a needs assessment to determine the goals of the DMS and to provide guidance on the central tasks and approach to efficiently produce an effective DMS. Following completion of the needs assessment, the County, in coordination with the other basins and GSAs in San Luis Obispo County, will develop the Data Management Plan. The plan will serve as guidance for the collection and management of groundwater and surface water information required for GSP development and will be used as part of continued reporting during the GSP implementation phase (2022+).

DMS Tool Development - This element will develop a web-based DMS that will function as a data storage, analysis, visualization, and reporting tool for hydrogeologic and hydrologic information within the San Luis Obispo Valley Basin. The DMS Tool will store and display information from previous, ongoing, and future groundwater studies and monitoring programs. It will also support the GSP annual reporting requirements. This element will include initial DMS maintenance and operation activities for the duration of the grant.

Data Compilation and Review - This data input effort will be performed in close coordination with the GSAs and will consist of formatting, reviewing, and importing data into the DMS. The overall goal of this task is to populate the database with high quality data for use in development of the HCM, groundwater conditions, and water budget portions of the GSP and to provide a foundation for management of data needed for future GSP development efforts.

Basin Integration and Coordination - This element will provide support to the management in other basins within the County that might want to use the DMS to meet their SGMA -DMS requirements in San Luis Obispo County. Initial coordination efforts have taken place between San Luis Obispo County and the Atascadero Basin GSA and the Paso Robles Basin GSA. While the DMS will be used in the San Luis Obispo Valley Basin and the Santa Maria GWB Fringe Areas, it will be available for use by other basins in the County, including the Paso Robles Basin and the Atascadero Basin.

The DMS system will be beta-tested by both the programmers and water resources professionals prior to release of the DMS to the GSAs for further testing.

The RWMG will be monitoring the progress and implementation of this system during this plan cycle.

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10 FINANCING STRATEGIES

Research conducted as part of the Integrated Regional Water Management (IRWM) Planning process includes investigating funding opportunities for the implementation of projects. This section begins with the review of these programs providing information on available:

- Local government funding to the IRWM Plan member agencies
- Grants and loans that may be applied for by IRWM Plan stakeholders

A comprehensive list 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.

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 6 - Project Selection Process. Section 10** expands upon the two funding approach methodologies first discussed in **Section 1 - 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 6-5**) 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.

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.

10.1 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.

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 publicly supported grants issued as part of California water bond measures (Propositions 50, 84, and 1). Past grants awarded to the SLO IRWM Region are included in **Table 10-1**. Awardees also contribute to the cost of IRWM Program efforts, such as IRWM Plan updates, in accordance with the RWMG MOU.

In-kind staff time is provided by members of the RWMG. As noted in **Section 2 - Governance**, the RWMG is a volunteer group of water resources stakeholders representing water entities throughout SLO County. Members are expected to actively participate in all aspects of the SLO 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 10-1: *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	$10.4M	• "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
Proposition 84 Expedited Drought Grant	2014	$6.3M	• CSA 23-Atascadero MWC-Garden Farms Emergency Intertie • Heritage Ranch CSD Emergency Turnout • Cambria CSD Emergency Water Supply
Proposition 84 IRWM Implementation Grant (Round 2)	2015	$3.7M	• Templeton CSD Upper Salinas River Basin Conjunctive Use • San Simeon CSD Well Head Treatment • Oceano CSD Water Resource Reliability Program Planning Study
Proposition 1 IRWM Planning Grant	2016	$200K	• IRWM Plan Update • Region-wide Stormwater Resource Plan
Proposition 1 Disadvantage Community Involvement Grant	2017	$940K	• IRWM Region DAC Needs Assessment • Projects in the five recognized DACs

10.1.1 Funding Snapshot of the Implementation List

As detailed in **Section 6**, this plan includes 25 projects that RWMG members intend to implement over the next plan-cycle. A key component of any project development and implementation is the funding strategy. **Table 10-2** below summarizes each projects funding source(s), certainty of those funding sources, and how operations and maintenance will be financed.

Table 10-2: *Funding Snapshot of Implementation List*

2019 Implementation List Projects Financing Snapshot			
Project Sponsor *Project Name* (Alphabetical by Sponsor)	**Implementation Funding Mechanisms / Source**	**Certainty / Longevity of Funding, if known.**	**Source of Operation & Maintenance Funding**
Cambria CSD *WWTP Nutrient Removal and Efficiency Improvements*	PG&E Rebates, SRF Loan, Rate Payers, Local Share Funding,PG&E financing	Partially secured	Rate Payers
Cayucos Sanitary District *Cayucos Sustainable Water Project, Phase 1*	USDA Grants, Low interest loans	Secured	Rate Payers
Cayucos Sanitary District *Cayucos Sustainable Water Project, Phase 2*	TBD	Unsecured	Rate Payers
City of Pismo Beach *Central Coast Blue*	Clean Water SRF, USDA, Prop 1 GWGP	Partially secured	Rate Payers
City of San Luis Obispo *One Water SLO*	SRF Loan, FEMA Grant (secured), Rate payers	Secured	Rate Payers
City of San Luis Obispo *Mid Higuera Bypass*	TBD	Unsecured	TBD
City of San Luis Obispo *Recycled Water Distribution System Expansion*	TBD	Unsecured	Rate Payers
City of San Luis Obispo *Meadow Park Stormwater Capture and Use*	TBD	Unsecured	TBD
Coastal San Luis RCD *Remediation and BMP Implementation in the Oso Flaco Watershed*	State Parks, SWRCB	Partially secured	TBD
Coastal San Luis RCD *Livestock and Land Program*	TBD	Unsecured	Unknown
County of San Luis Obispo *Oceano 13th St. Drainage*	CalTrans, County, CDBG, FEMA, others	Secured	County of SLO
County of San Luis Obispo *Mountain Springs Road Sediment Control*	TBD	Unsecured	City of Paso Robles
Estrella-El Pomar-Creston Water District *Huer Huero Recharge Project*	TBD	Unsecured	TBD
Los Osos CSD *8th Street Well Construction*	Local funds, grants	Partially secured	Rate Payers

2019 Implementation List Projects Financing Snapshot			
Project Sponsor *Project Name* (Alphabetical by Sponsor)	**Implementation Funding Mechanisms / Source**	**Certainty / Longevity of Funding, if known.**	**Source of Operation & Maintenance Funding**
Morro Bay National Estuary Program (NEP) *Los Padres CCC Center Stormwater LID*	TBD, grants, other State funding	Unsecured	Rate Payers
Morro Bay NEP *Water Conservation Partnerships in Chorro Valley*	Local funds, TBD	Unsecured	N/A
Morro Bay NEP *Baywood Park 2nd Street Stormwater Management*	TBD	Unsecured	Rate Payers
Nipomo CSD *Supplemental Water Project, Final Phase*	Rate Payers, Grants	Partially secured	Rate Payers
Oceano CSD *Oceano LID Project*	Oceano CSD reserves, Grants	Partially secured	Rate Payers
San Miguel CSD *Wastewater Treatment Plant Expansion*	TBD	Unsecured	Unknown
San Miguelito Mutual Water Company *Lower San Luis Obispo Creek Fish Passage Improvement and Seawater Intrusion Barrier*	SMMWC Funds, Grants, TBD	Partially secured	Rate Payers
San Simeon CSD *Reservoir Expansion Project*	USDA Loan, District funds, grants	Unsecured	Rate Payers
Upper Salinas-Las Tablas RCD *Santa Rosa Creek Floodplain Feasibility Study*	TBD	Unsecured	N/A
Upper Salinas-Las Tablas RCD *Santa Rosa Creek Streamflow Enhancement*	TBD	Unsecured	N/A
Upper Salinas-Las Tablas RCD *SLO County Key Percolation Zone Study*	TBD	Unsecured	N/A

10.2 Local Government Funding

The information presented below identifies potential sources of local funding used for capital projects and management programs needed to implement the 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.

10.2.1 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 or to fund project feasibility studies, design and environmental review. Planning and permitting work often require local investments prior to obtaining state or federal grants 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, sales taxes, etc. SLO County can also generate fees pursuant to County ordinance and state law.

Joint Powers Authorities (JPAs) are often formed to coordinate shared project funding. The County of SLO and the SLO 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. This agreement creates a single public agency capable of arranging financing of the acquisition and improvements for public projects that benefit multiple agencies. This was done to avoid duplication of effort, inefficiencies in administration, and excessive costs related to the financing of these projects.

10.2.2 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 City of Arroyo Grande, City of Pismo Beach, City of Grover Beach, Oceano Community Services District, and County Service Area 12 directly and many other entities indirectly. The JPA also financed the Nacimiento Water Pipeline Project currently serving the City of Paso Robles, City of 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, so the City could issue Bond Anticipation Notes to finance preliminary costs for its share of the Nacimiento Water Pipeline Project.

10.2.3 Benefit Assessments

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, groundwater storage, and water quality protection are all project types that have been identified as high priority candidates 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 10.2.4**, below), established a strict definition of special benefits and instituted a common formation and ratification process for all benefit assessment districts.

10.2.4 Local Funding Constraints

The RWMG defines how monies are collected and decisions are made for the IRWM Program. One aspect of this role is the RWMG's responsibility to identify stable sources of funding for shared programs that are determined to provide benefits to member agencies. The RWMG provides mechanisms for ongoing and stable funding for 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 programs. 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 cost share, and the presence of a solid plan to define stable funding for construction and long-term maintenance and operations of proposed projects.

10.3 Grants and Loans (State and Federal)

Like other regions of the state, the SLO IRWM Region has a limited ability to pay for further projects. With numerous areas of the Region designated in the 2010 census as low income (in addition to state-designated DACs), there is a constrained ability to raise local revenue. Fortunately, grants and loans are available that can facilitate implementation of IRWM Plan projects.

Various international, federal, and state agencies provide technical assistance and program funding for IRWM projects. Additionally, there are often grant programs that are specific to, or prioritize, DACs. SLO RWMG member organizations have received funding for the following project types:

- 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

The number and type of grant or 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. It should be noted, the cost to prepare a grant application is typically the responsibility of the benefitting agency/agencies.

The remainder of this section includes descriptions of grant and loan programs relevant to IRWM projects. This is not a comprehensive list of financing strategies but rather a snapshot of notable grants and programs at the time of the Plan's update.

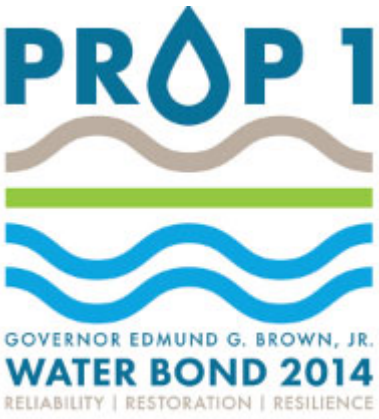
10.3.1 Proposition 68

The California Drought, Water, Parks, Climate, Coastal Protection, and Outdoor Access for All Act of 2018, or Proposition 68 (Prop 68), allocates a total of $4 billion for various projects and programs outlined in the act. While Prop 68 does not allot funds for an IRWM grant program, there are several water-related provisions that could provide funding opportunities for projects within the IRWM Plan. Here are some of the specified allocations that could be relevant to IRWM projects:

- $10 million to DWR for the Urban Streams Restoration Program
- $80 million to SWRCB for competitive grants awarded to projects preventing or reducing groundwater contamination
- $35 million for California Ocean Protection Trust Fund grants
- $20 million to State Coastal Conservancy for grants for coastal forest watersheds
- $30 million to the Department of Fish and Wildlife for the Fisheries Restoration Grant Program and related projects
- $10 to Department of Food and Agriculture for grants that promote agricultural practices supporting climate change adaptation and mitigation
- $60 million to Natural Resources Agency for competitive grants for projects promoting climate change adaptation and mitigation or support natural, cultural, historic, and Native American resources
- $250 million for projects and programs that provide safe drinking water and improve water quality
- $100 million to the Natural Resources Agency for competitive grants for multi-benefit projects that address flooding in urban areas
- $290 million for investments (some through competitive grants) in drought and groundwater projects aimed at achieving sustainability

10.3.2 Proposition 1

The Water Quality, Supply, and Infrastructure Improvement Act of 2014 – also known as Proposition 1 or Prop 1 – is a bond act authorizing $7.12 billion for California water supply infrastructure projects. Of this total, $510 million is designated for IRWM grants administered by DWR. The Prop 1 IRWM Grant Program is divided into three parts: IRWM Planning, IRWM Implementation, and Disadvantaged Community Involvement. Developed by DWR, the 2016 IRWM Grant Program Guidelines outline how the agency will allocate the Prop 1 funds. The funds are earmarked by Funding Area with a total of $43 million allotted to the Central Coast Funding Area.



10.3.2.1 IRWM Planning Grant

In 2016, DWR awarded 15 applicants with a total of $4.2 million to be used for IRWM Plan updates or for the development of new IRWM Plans. The SLO Region received $204,183 through this grant to update the IRWM Plan and develop a regional Stormwater Resource Plan (SWRP) according to the 2016 IRWM Plan Standards. In addition to the SWRP component, most of the updates to the 2016 Guidelines pertain to evaluation of and preparation for regional impacts of climate change on water resources and systems.

10.3.2.2 Disadvantaged Community Involvement Program

A minimum of $1 million is required to fund the Disadvantaged Community Involvement (DCI) Program. This program ensures that disadvantaged communities (DACs), economically disadvantaged areas (EDAs), and underrepresented communities – collectively referred to as DACs by DWR – are involved in their region's IRWM planning process. Along with increasing the involvement of DACs in IRWM planning, the DCI program aims to identify and comprehend the water management needs of DACs and promote efforts to address those needs. At least $51 million of the Implementation Grant funds must be awarded to projects directly supporting DACs.

The official DCI Request for Proposals was released on August 1, 2016. To receive funding, each IRWM Funding Area was required to submit a single proposal for the entire area. The Central Coast Funding Area Agreement, signed in February of 2018, awards the area with a total of $4.3 million. The SLO Region was allocated a total of $938,570, which was subdivided as specified in **Table 10-3**.

Table 10-3: *SLO DCI Grant Awards*

Funded Project	Project Sponsor	Award
IRWM Region DAC Needs Assessment	SLO Flood Control District	$58,353
Water Resources Reliability Program Phase 2	Oceano CSD	$177,750
Turnout Pump Station Design and Water Master Plan Update	City of Grover Beach	$177,750
Water Resource Recovery Facility Project Value Engineering at 60% Design	City of San Luis Obispo	$78,125
Reservoir Expansion Project Development & Water Master Plan Update	San Simeon CSD	$177,750
Wastewater Plant Upgrade Study and Recharge Basin Study	San Miguel CSD	$177,750
Funding Administration – Central Coast Funding Area	Central Coast Funding Area Applicant	$70,392
Funding Administration – SLO Region	SLO Flood Control District	$20,700

10.3.2.3 IRWM Implementation Grant

The IRWM Implementation Grant includes two rounds of project solicitation (planned to occur in 2018 and 2020). DWR plans to release a Proposal Solicitation Package (PSP) for Round 1 of

the IRWM Implementation Grant in Fall of 2018. To be eligible for implementation grants, a region's IRWM Plan must be updated to comply with the 2016 Guidelines. While detailed project evaluation criteria will be outlined in the PSPs, the Implementation Grant will fund projects that support the Statewide Priorities for water (described in 2016 IRWM Guidelines):

1. Make conservation a California way of life
2. Increase regional self-reliance and integrated water management across all levels of government
3. Achieve the co-equal goals for the Delta
4. Protect and restore important ecosystems
5. Manage and prepare for dry periods
6. Expand water storage capacity and improve groundwater management
7. Provide safe water for all communities
8. Increase flood protection
9. Increase operational and regulatory efficiency
10. Identify sustainable and integrated financing opportunities

Once the Round 1 PSP is released, the RWMG will develop a corresponding grant-specific project list to determine which projects will be included in the region's application for Prop 1 Implementation Grant funds.

10.3.3 Proposition 68

The California Drought, Water, Parks, Climate, Coastal Protection, and Outdoor Access For All Act of 2018 – also known as Proposition 68 or Prop 68 – is a bond act authorizing $4.1 billion for California various public parks/access, ecosystem and water projects. While there are now specific IRWM funds identified in the bond, numerous funded programs and priorities support the goals and objectives of state-wide IRWM and San Luis Obispo County. These programs include:

- Ch.7 – California River Recreation, Creek, and Waterway Improvements Program
- Ch. 9 – Ocean, Bay, and Coastal Protection
- Ch. 10 – Climate Preparedness, Habitat Resiliency, Resource Enhancement and Innovation
- Ch. 11 – Clean Drinking Water and Drought Preparedness
    - Ch. 11.1 – Groundwater Sustainability
    - Ch. 11.5 – Flood Protection and Repair
    - Ch. 11.6 – Regional Sustainability for Drought and Groundwater and water Recycling

State agencies with Prop 68 programs include the Department of Water Resources, State Water Resources Control Board, Department of Fish and Wildlife, State Coastal Conservatory, and

many more. A complete list of programs is available on the California Natural Resources Agency website.

10.3.4 Proposition 84 and Proposition 1E

The DWR IRWM Grant Program was first created under the Water Security, Clean Drinking Water, Coastal and Beach Protection Act of 2002 (Proposition 50). Continued funding for the program was 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 the Stormwater Flood Management Grant Program.

Both funding programs are administered by DWR and awarded funds to local public agencies and non-profit organizations for projects to enhance water supply reliability a

nd improve and protect water quality. DWR developed Program Guidelines that met the requirements of Proposition 84 and Proposition 1E and required awarded projects and programs to be consistent with an approved IRWM Plan. The revised Program Guidelines were adopted and released by DWR in August 2010 and updated in November 2012. The guidelines included general program requirements, eligibility specifications, proposal selection information, and the IRWM Plan standards. The guidelines established three grant programs: IRWM Planning Grant, IRWM Implementation Grant, and Stormwater Grant.

10.3.4.1 Proposition 84 Grant Funding

General obligation bonds totaling $5.388 billion were authorized with Proposition 84 (Prop 84) 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. Of the total Prop 84 funds, $823 million were awarded through the IRWM Grant Program.

The SLO Region was awarded a total of $21.427 million through Prop 84 to support IRWM projects and plans. **Figure 10-1** depicts the various projects awarded and their funding amounts. The four colors represent different Prop 84 funding rounds: green for 2012 planning grants; orange for 2011 implementation grants; blue for expedited drought grants from 2014; pink for final round implementation grants.

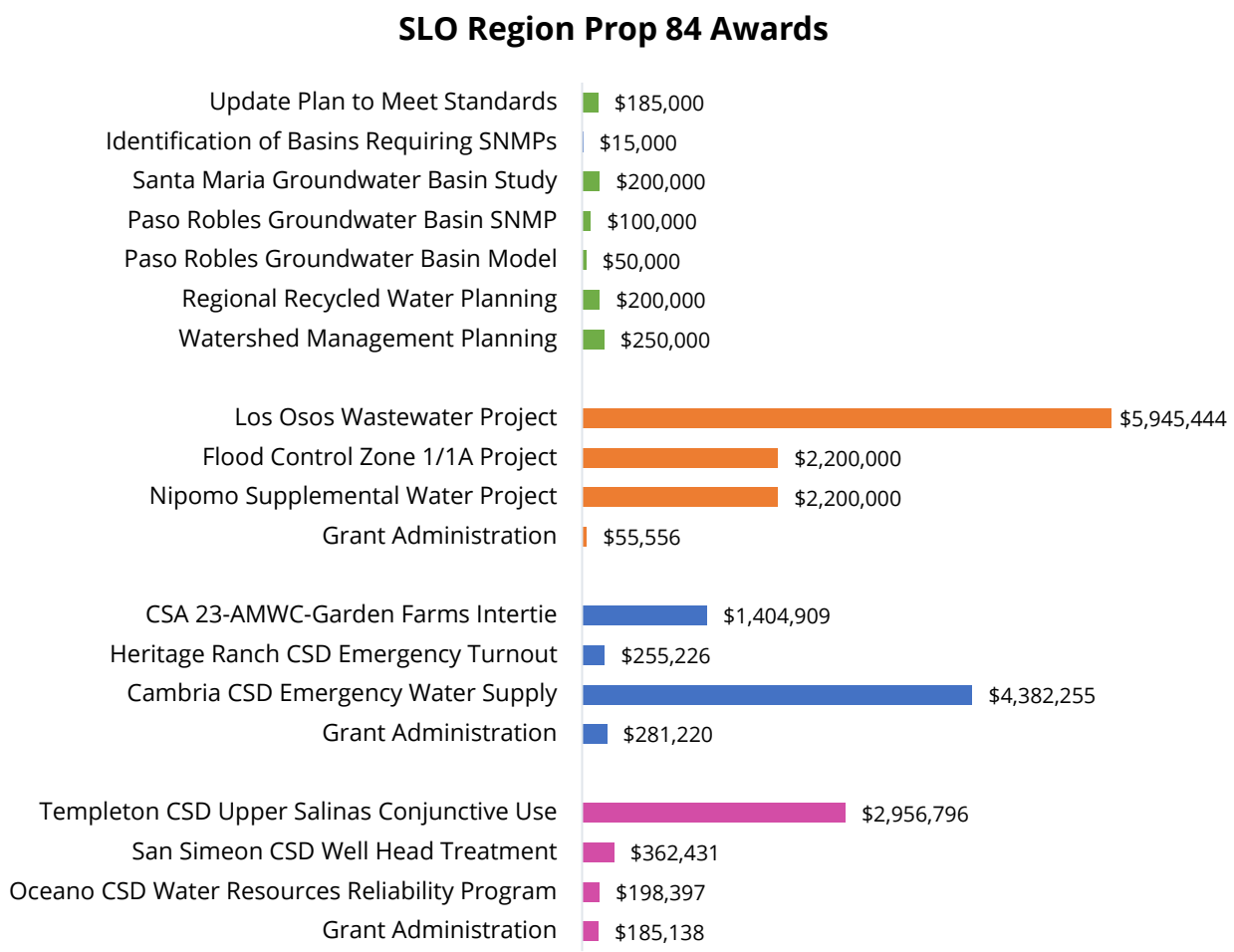


Figure 10-1: *Proposition 84 Funds Awarded to the SLO Region*

10.3.4.2 Proposition 1E Grant Funding

The California State Legislature was authorized to appropriate $300 million for grants via Proposition 1E (Prop 1E) for Stormwater Flood Management projects. To be eligible, projects had to be within an approved IRWM region, and special consideration was given to projects with multiple benefits. Prop 1E Stormwater Flood Management Grant funds were split into two rounds of funding; during Round 1, one project in the SLO Region was awarded $2.797 million.

10.3.5 State Revolving Funds

10.3.5.1 Clean Water State Revolving Fund

The Clean Water State Revolving Fund (CWSRF) program, in place since 1987, operates as a partnership between the US EPA and states. In California, the 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. Local governments and public agencies, Native American Tribal

organizations, nonprofits, and National Estuary Programs can receive low-interest financing agreements in the range of $1 million to $100 million for projects that provide clean drinking water, reduce water pollution, or protect aquatic habitats.

Applications are accepted on a continuous basis. See the CWSRF Forms and Instructions for more details.

10.3.5.2 SWRCB Small Community Grant

One of the SWRCB's financial assistance programs is the Small Community Grant (SCG) Program, which is administered as part of the CWSRF. This program provides financial assistance to small DACs for wastewater facility infrastructure projects. The Proposition 1 Water Bond included a $260 million allocation to the SCG program.

10.3.5.3 Drinking Water State Revolving Fund

The Drinking Water State Revolving Fund (DWSRF) was established in 1996 by an amendment to the Safe Drinking Water Act (SDWA). The EPA provides states with funds for the DWSRF, and states provide a 20 percent match in funding. States use this money in a revolving fund that provides low-interest loans to community water systems and nonprofit non-community water systems for drinking water infrastructure projects.

The California SWRCB oversees this program, and only considers projects included on the Board's Comprehensive List of public water systems seeking funds for drinking water infrastructure projects. This list is updated on a quarterly basis and applications can be submitted at any time. See the DWSRF Forms and Instructions webpage for more information.

10.3.6 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 ensuring assistance is technically and economically feasible. Some of the notable programs for these communities are summarized in the following subsections.

In addition to the available funding opportunities, there are many other resources and organizations targeted at small or disadvantaged water systems, such as those listed below:

- Rural Community Assistance Corporation (RCAC)
- California Rural Water Association (CRWA)
- Expense Reimbursement Grant (ERG), CPS Human Resources Services
- California State University Sacramento, Office of Water Programs (CSUS)
- American Water Works Association (AWWA), California-Nevada Section

10.3.6.1 Proposition 1 Technical Assistance

A recent effort aimed at supporting DACs is the Proposition 1 (Prop 1) Technical Assistance (TA) program overseen by the SWRCB's Office of Sustainable Water Solutions. The Prop 1 TA provides project development, legal, and other types of assistance for projects related to drinking water, wastewater, groundwater, and storm water.

10.3.6.2 USEPA Environment Justice Grants and Funding

The EPA's Environmental Justice Collaborative Problem-Solving Cooperative Agreement Program is aimed at helping local nonprofits, tribes, and tribal organizations address environmental and public health issues. The funding agreements are intended to facilitate cooperative solutions to local issues. In 2018, ten projects will be selected for a maximum award of $120,000 over two years.

The Environmental Justice Small Grants Program provides up to $30,000 to projects that address environmental or public health issues, including those improving water quality or enhancing aquatic habitats. Organizations that are eligible for these grants are nonprofits, tribal governments, and tribal organizations.

The award amounts for these programs vary from year to year depending on available funding.

10.3.6.3 HUD Community Development Block Grant Program

U.S. Department of Housing and Urban Development (HUD) has several opportunities under its Community Development Block Grants (CDBG). Grant money is given to California, which then allocates the funds to the chosen cities and communities. The CDBG programs cover an array of community development needs including grants for public facilities and infrastructure that support potable water and wastewater systems. The overall goal of the CDBG programs are to ensure low-income communities have suitable, affordable housing and access to necessary community services. HUD CDBG Programs that may be applicable to the IRWM Region include:

Entitlement Program
This program allocates annual grants to larger cities and metropolitan areas to develop housing, enhance economic opportunities, and provide community services to populations of low or moderate income.

CDBG State Program
States award grants to local governments for community development activities benefiting vulnerable communities. Annually, each state develops funding priorities and criteria for selecting projects.

Section 108 Loan Guarantee Program

This loan program offers funding for communities to spend on housing, public facilities, economic development, and other revitalization projects. These can include projects that enhance community resilience to natural disasters.

10.3.6.4 USDA Rural Development Programs

The USDA Rural Development Water and Environmental Programs (WEP) provides loans, grants, and loan guarantees for drinking water and wastewater projects in rural areas. WEPs target rural communities with 10,000 people or fewer, and public agencies, nonprofit organizations, and Federally-recognized tribes are eligible for funding. The USDA Rural Development programs are a resource for rural and disadvantaged communities in the SLO Region planning to develop their water and wastewater facilities. The USDA Rural Utilities Service can assist communities with preparing 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.

Through the Emergency Community Water Assistance Grant Program, the USDA provides funding to rural or tribal communities for projects that support preparation for or recovery from various emergencies threatening safe and reliable drinking water supplies. Possible awards include up to $150,000 for repairs or improvements to distribution systems and up to $500,000 for construction of water supply or treatment facilities. Applications are accepted on a rolling basis.

The local USDA Rural Development office is in Santa Maria and oversees the administration of local grants and agreements.

10.3.6.5 Economic Development Administration Grants

The Economic Development Administration (EDA) – a branch of the U.S. Department of Commerce – oversees Economic Development Assistance Programs that benefit economically distressed areas in the US. Through the Public Works and Economic Development program, the EDA awards grants and cooperative agreements for projects that promote economic prosperity and support job development. Public agencies, tribal organizations, higher education institutions, and nonprofit organizations are eligible to apply for these investment opportunities; applications are accepted on a rolling basis.

10.3.7 Recycled Water, Desalination, and Groundwater Funding Programs

The IRWM Plan identifies several projects for recycling of wastewater, desalination of ocean water, and groundwater ~~banking and/or storage~~recharge (see **Appendix F –Project List**) Implementing such projects will help the Region to live within current and projected water supply limits. Financial support for recycled water projects is available to the SLO Region through programs at both the state and federal level.

10.3.7.1 SWRCB Water Recycling Funding Program (WRFP)

Proposition 1, Proposition 13, and the CWSRF have all contributed funds to the SWRCB's Water Recycling Funding Program. The program awards loans and grants for both construction and planning of water recycling facilities. Local public agencies are eligible for planning grants, and local public agencies, water utilities, Federal and State Tribes, and mutual water companies can all apply for financial assistance for construction. Detailed information on the program is contained in the Water Recycling Funding Program Guidelines.

10.3.7.2 DWR Desalination Grant Funding Program

The Desalination Grant Program is designed to assist local public agencies to enhance local water supplies through the construction of brackish water and ocean water desalination projects. Funds from Proposition 1 and Proposition 50 have supported this initiative, which provides grants for planning, design, construction, and research projects. Four finite funding rounds have been executed; however, a Continuous Application Process was implemented as of March 30, 2018.

10.3.7.3 Reclamation Wastewater and Groundwater Study and Facilities Act – Title XVI

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 water recycling and reuse projects. The Title XVI act directs the Secretary of the Interior to undertake a program to research and identify opportunities for water reclamation and reuse of wastewaters and impaired ground and surface waters. The Act also allocated funds to support local agencies plan, design, and construct water reclamation projects. Overseen by the Bureau of Reclamation, funding opportunities vary in availability; more information can be found on the Title XVI – Water Reclamation and Reuse website.

10.3.7.4 Proposition 1 Groundwater Grant Program

Prop 1 included a provision of $900 million to support a Groundwater Sustainability Program. A total of $800 million in grant funds will be awarded by the SWRCB for the prevention and cleanup of groundwater contamination. These funds will be awarded to public agencies, utilities, tribes, and mutual water companies through two rounds of funding. Round 1 grant agreements will be completed in Fall of 2018, and Round 2 preliminary grant awards will be announced at the end of 2018.

10.3.8 EPA Grants

California is part of the EPA Region 9 (shown in the adjacent image). The EPA maintains a website with information on grants available to Region 9.

The EPA also has a general EPA Grants website; some of the grant programs and resources relevant to the IRWM Plan are listed below:

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.

Clean Water State Revolving Fund
The CWSRF provides attractive, low-cost funding for projects that improve water quality, renew wastewater infrastructure, and support local economies. See **Section 10.3.5.1** for more information.

Drinking Water State Revolving Fund
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. See **Section 10.3.5.3** for more information.

Fed FUNDS
Federal Funding for Water/Wastewater Utilities in National Disasters (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.

Grant Programs for Tribes
The EPA maintains a directory of grants available to Tribes, which includes a section dedicated to water-related funding opportunities.

Health Watersheds Consortium Grants (HWCG)
The U.S. Endowment for Forestry and Communities, in partnership with the EPA, oversees the HWCG. The Program funds the protection of watersheds and freshwater ecosystems through land management efforts. Nonprofits, for-profit companies, local agencies, water utilities, and states are all eligible to apply for grants.

Performance Partnership Grants (PPG)
States, some interstate agencies, and tribes can combine multiple environmental program grants into one PPG to reduce administrative costs and direct EPA grant funds to priority environmental problems or program needs.

Section 106 Water Pollution Control Grants
Section 106 of the Clean Water Act authorizes the EPA to provide federal assistance to states, interstate agencies, and tribes for water pollution control programs.

Watershed Funding
Visit this Web site to find tools, databases, and information about sources of funding to agencies and organizations that serve to protect watersheds.

Wetlands
Along with a few other opportunities, the EPA provides funding for wetland protection through the Wetlands Program Development Grants and the 5 Star Wetland and Urban Waters Restoration Programs.

10.3.9 WaterSMART Grants

Congress recognized the growing stress on water supplies and water resources throughout the nation and developed the SECURE Water Act of 2010. The Act 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 water supplies and to take action to secure water resources and the benefits they provide.

To implement the SECURE Water Act, the WaterSMART (Sustain and Manage America's Resources for Tomorrow) program was implemented in February 2010. The U.S. Bureau of Reclamation (or Reclamation), as the Department of the Interior's main water management agency, oversees the **WaterSMART program**. To implement the WaterSMART Program, the Reclamation manages grants, scientific studies, technical assistance, and scientific expertise.

Listed below are the various grant and cost-share funding programs within WaterSMART:

Applied Science Grants
Various agencies with water or power authority can submit proposals to receive funding for the development of tools and information, which will be used to improve water resources management.

Basin Studies
This program offers cost-sharing for basin studies completed by the Reclamation and non-Federal partners. The basin studies evaluate water supply and demand and are used to develop strategies to address imbalances.

Cooperative Watershed Management Program (CWMP)

The CWMP provides funds to watershed groups to improve stakeholder involvement and develop local initiatives to solve watershed management issues.

Desalination Construction Program
Through the Water Infrastructure Improvements for the Nation Act, the Reclamation is developing a program to fund the construction of desalination projects.

Drought Response Program
Water managers can receive funding through this program to increase drought resiliency through two routes: by updating or creating a drought plan, or by implementing a project that increases the community's drought resiliency.

Small-Scale Water Efficiency Projects
Water districts, states, tribes, and local agencies can receive 50/50 cost share funding for small-scale water efficiency improvement projects, such as installing flow measurement systems.

Title XVI
Title XVI is the Reclamation's water recycling and reuse program through which projects implemented in partnership with local agencies can receive funding. See **Section 10.3.7.3** for more information.

Water and Energy Efficiency Grants
Projects that improve water efficiency, generate hydropower, reduce future conflicts over water, and increase water supply reliability can receive 50/50 cost share funding through this grant program.

Water Marketing Strategy Grants
States, local governments, and tribes can receive financial support for the planning and development of water marketing strategies, which will expand water markets or marketing activities.

10.3.10 Funding Opportunity Resources

Table 10-4 below describes various websites and resources that provide information about water-related funding opportunities.

Table 10-4: *Funding Opportunity Resources*

Resource	Description
SWRCB Grants and Loans Website	The SWRCB Division of Financial Assistance lists the agency's current funding opportunities along with links to the details about each opportunity. https://www.waterboards.ca.gov/water_issues/programs/grants_loans/
DWR Grants and Loans Websites	DWR provides information on its funding opportunities organized by topic area. This webpage includes a brief overview of each opportunity and a link to more details about each program. https://water.ca.gov/Work-With-Us/Grants-And-Loans
CNRA Grants Website	The California Natural Resources Agency (CNRA) Grants webpage includes links to the Agency's current grant programs. It also includes a "Funding Opportunities" link, which directs viewers to a regularly updated spreadsheet of all the grant programs overseen by the CNRA and its Departments and details on those programs. http://resources.ca.gov/grants/
CNRA Statewide Bonds Oversight Website	This webpage includes links to program descriptions, balances, and projects for statewide bonds that have allocated funds to the CNRA. http://resources.ca.gov/bonds_and_grants/statewide_bonds_oversight/
Grants.gov	Grants.gov is an online database of federal grants that provides detailed information on the opportunities and instructions for applicants. It can be searched based on eligible applicant, funding type, topic area, or supervising agency. https://www.grants.gov/web/grants
SAM.gov	The U.S. federal government's official website for listing financial assistance opportunities. Opportunities can be queried by eligible applicant types and supervising agency. https://beta.sam.gov/

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11 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 2016 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 9 – Data Management**.

11.1 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. The Sub-Regions are described in detail by watershed in **Section 3 – Region Description** and **Section 4 – IRWM Goals and Objectives**. Throughout the IRWM Plan, there are key references to the differentiators that exist between the Sub-Regions, such as the varied climate change impacts anticipated for each Sub-Region described in **Section 14 – Climate Change**.

The organization of technical information sources includes the title of the source, the website where the source can be located (as of January 2019), the information used from each source, and where applicable, the Sub-Region benefitting from the source. The sources are separated

based on their geographical relevance (regional or sub-regional) and then listed 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 update of the IRWM Plan to maintain a current resource list with active hyperlinks.

11.1.1 Regional Sources

- ✓ 2014-2016 Biennial Resource Summary Report
  - 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
- ✓ California's Groundwater: Bulletin 118
  - 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
- ✓ Central Coast Groundwater: Seawater Intrusion and Other Issues
- ✓ GeoTracker
  - 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
- ✓ Groundwater Flow Model Conversion and Urban Area Yield Update. Cleath-Harris Geologists. (2009).
  - 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
- ✓ Identification & Prioritization of Groundwater Basins Requiring a Salt and Nutrient Management Plan (SNMP) and SNMP Development Resources
- ✓ On-line Ground Water Level Databasehttp://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
- ✓ San Luis Obispo County, Groundwater Monitoring Program Evaluation. Cleath & Associates. (2008).
  - Provides the adequacy and level of effort to develop a groundwater monitoring program for IRWM region
- ✓ San Luis Obispo County Investigation (Volumes I and II) Bulletin 18

- Provides the first estimate of San Luis Obispo groundwater basin storage and safe yield

✓ SLOC 2014 IRWM Plan
- Provides the historical reference (or baseline) for regional water management
- Forms much of the backbone of defining the needs of projects and programs

✓ SLOC Agricultural Demand Inventory

✓ SLOC Data Enhancement Plan

✓ SLOC Flood Management Plan

✓ SLOC General Plan.
- 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 Master Water Report Volume I
- 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

✓ SLOC Master Water Report Volume II
- 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~~

✓ SLOC Master Water Report Volume III
- 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

✓ SLOC Regional Permit Program

✓ SLOC Salt and Nutrient Management and Recycled Water Planning

✓ SLOC Stormwater Resource Plan
- 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 Watersheds Management Plan
- ✓ SLO Watershed Project
- ✓ SLOC Regional Recycled Water Strategic Plan
- ✓ Water Balance Study for the Northern Cities Area
  - 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
- ✓ Water Quality Conditions in the Central Coast Region Related to Agricultural Discharges
  - Provides information on nitrate contamination and groundwater basins at risk of continued contamination from farming activities and private septic disposal systems
- ✓ Water Quality Control Plan for the Central Coast Basin
  - 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
- ✓ Water Quality Data (WQX)
  - Provides raw data sets for water quality, biological, and physical data
- ✓ Water Use Estimates for Private Domestic Wells. Cleath-Harris Geologists. (2009).
  - 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
- ✓ Water Years 2001-02 and 2002-03 Hydrologic Report
  - 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

11.1.2 North Coast Sources

- ✓ 2007 Water Management Plan Update
  - Most recent master plan for the community of Cayucos identifying needed replacement and rehabilitation of aging capital facilities
- ✓ Ashurst Well Field Nitrate Study (prepared for the City of Morro Bay).
  - 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

- ✓ Cambria CSD 2017 Consumer Confidence Report
  - Provides water quality data from northernmost water districts using groundwater as primary source of drinking water supply
- ✓ Cambria CSD Urban Water Management Plan
  - 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 CSD Water Master Plan, Program Environmental Impact Report
  - 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
- ✓ Cayucos – County Service Area 10/10A Water Quality Report
  - Provides the latest information on the source and quality of the water being served to the community of Cayucos
- ✓ City of Morro Bay 2015 Urban Water Management Plan
  - 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 Groundwater Basin Salt and Nutrient Management Plan (2018)
  - With the construction of the Los Osos Wastewater Treatment Facility, this SNMP established the framework for how salt and nutrient issues and can monitored and managed.
- ✓ Los Osos Basin Management Committee Annual Monitoring Reports
  - This website is updated annually with the reports.
  - Includes discussion and analysis of aquifer levels, sea water intrusion status, recycled water injection, wastewater treatment operations, etc.
- ✓ Morro Bay 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
- ✓ North Coast Groundwater Studies. Cleath-Harris Geologists. (2009).
  - 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
- ✓ Task 3 Los Osos Upper Aquifer Water Quality Characterization
  - Study closely looks at the understanding of drinking water supply aquifers
- ✓ Updated Basin Plan for the Los Osos Groundwater Basin

- 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

11.1.3 North County

- ✓ 2015 Urban Water Management Plan for the Atascadero Mutual Water Company
  - 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 Mutual Water Company Annual Water Quality Report
  - Provides a characterization of the water quality and water conservation programs
- ✓ Bulletin 199 Basic Geology of the Santa Margarita Area, San Luis Obispo County, California
  - Provides a detailed understanding of the hydrogeology of the Santa Margarita Valley groundwater basin and Rinconada earthquake fault
- ✓ Camp Roberts Joint Land Use Study (prepared for SLOC)
  - Provides a comprehensive evaluation of water resources, environmental and climate change variables for the Camp Roberts area
- ✓ City of Atascadero Adopted Sphere of Influence Update Municipal Service Review
  - Provides comprehensive background for City of Atascadero water and wastewater resources and current and future capacity to meet water and wastewater demands
- ✓ City of Paso Robles 2015 Urban Water Management Plan
  - 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
- ✓ City of Paso Robles Annual Water Quality Report
  - 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

✓ Heritage Ranch Community Services District Website
- Provides a summary of the current conditions of the small water systems reliant on Lake Nacimiento, the only source of supply

✓ Paso Robles Groundwater Basin Management Plan
- 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

✓ Paso Robles Groundwater Basin Model Update

✓ Paso Robles Groundwater Subbasin Water Banking Feasibility Study, Final Report (prepared for SLOC Flood Control and Water Conservation District).
- 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

✓ Resource Investigation of Low- and Moderate-Temperature Areas in Paso Robles, San Luis Obispo County, California
- Describes initial scientific investigations of the Paso Robles Formation and aquifer boundaries

✓ Salt/Nutrient Management Plan for the Paso Robles Groundwater Basin

✓ San Miguel CSD 2016 Water Quality Report
- 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

✓ San Miguel Water and Wastewater Master Plan Update (2017)
- Provides water and wastewater utilities assessment for existing and planned growth
- Associates land use with increases in water resources utilities

✓ Santa Margarita Ranch Agricultural Residential Cluster Subdivision Water Supply Study San Luis Obispo County, Californiahttp://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

✓ Santa Margarita Water Master Plan
- 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
- Provides an environmental discussion of the protection of natural and cultural resources and energy conservation

✓ SunPower - California Valley Solar Ranch Website
- 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

✓ Technical Memorandum: Groundwater Resources of CSA 23 – Santa Margarita
- 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

✓ Templeton CSD 2016 Consumer Confidence Report
- Provides supply quality from a small groundwater system
- Includes a source assessment summary for each groundwater well

✓ Topaz Solar Farm (First Solar) Website
- 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

✓ Water Quality Report 2016 County Service Area 16 - Shandon
- Provides supply quality from a small groundwater system in the Paso Robles Groundwater Basin
- Includes operations and inspections of water system
- Updated reports including further solutions to reducing groundwater use not found

✓ Water Quality Report County of SLO CSA 23 - Santa Margarita
- Provides supply quality from a small groundwater system in the Santa Margarita Groundwater Basin
- Includes operations and inspections of water system

11.1.4 South County

✓ 2015 Urban Water Management Plan for the City of Arroyo Grande
- 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

- ✓ 2015 Urban Water Management Plan for the City of Pismo Beach
  - 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
- ✓ Avila Beach Community Services District 2017 Consumer Confidence Report
  - 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
- ✓ Bulletin No. 63-3 Sea-Water Intrusion: Pismo-Guadalupe Area
  - 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
- ✓ Cal Poly Master Plan Update
  - 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
- ✓ Chapter 5 – Infrastructure and Phasing, Spanish Springs Specific Plan
  - 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
- ✓ City of Arroyo Grande 2017 Water Quality Report
  - Provides water quality data for small drinking water supply system receiving local surface water (Lopez Lake) and groundwater supplies through local wells
- ✓ City of Grover Beach 2010 Urban Water Management Plan
  - 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
- ✓ City of Pismo Beach Ten-Year Capital Improvement Plan and Major Expenditures for FY

2017-18 through FY 2026-27

- Provides 10-year outlook on solutions to water resources challenges facing the City of Pismo Beach
- Includes costs of capital projects

✓ Development of a Numerical Ground-Water Flow Model and Assessment of Ground-Water Basin Yield Santa Maria Valley Ground-Water Basin. Luhdorrf & Scalmanini Consulting Engineers. (2000).

- 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

✓ Golden State Water Company Edna Road Water System Consumer Confidence Report for 2017

- Provides water quality data for small drinking water supply system receiving groundwater supplies through local wells

✓ Golden State Water Company Nipomo Water System Consumer Confidence Report for 2016

- Provides water quality data for small drinking water supply system receiving groundwater supplies through local wells

✓ Groundwater Flow Analysis, Regional Groundwater Sustainability Project, Arroyo Grande/Tri-Cities Mesa Area. Cleath-Harris Geologists

- Model analysis of a proposed injection well system into the Arroyo Grande/Tri-Cities Mesa area of the Santa Maria Groundwater Basin.

✓ Grover Beach (City of) Public Works Documentshttp://www.grover.org/index.aspx?NID=215

- A website providing various source documents on water and wastewater in the community of City of Grover

✓ Nipomo CSD 2015 Urban Water Management Plan

- 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

✓ Nipomo CSD Adopted Sphere of Influence Update Municipal Service Review

- 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 Mesa Management Area 7th Annual Report & 9th Annual Report

- Provides an annual assessment and baseline 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
- ✓ Nipomo Water Resources Reports Website
    - Provides an abundance of factual master planning and groundwater data for establishing water resource management needs in the Nipomo region
- ✓ Nipomo Waterline Intertie Project
    - 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
- ✓ Northern Cities Management Area (NCMA) 2017 Annual Report
    - 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
- ✓ Resource Capacity Study Water Supply in the Nipomo Mesa Area
    - 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
- ✓ Pismo Creek/Edna Area Watershed Management Plan
    - 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.
- ✓ San Luis-Edna Valley Groundwater Basin Study Report (2018)
    - Provides hydrogeologic description of San Luis-Edna Valley area.
- ✓ Santa Maria Groundwater Basin Characterization and Planning Activities Study
- ✓ Santa Maria Groundwater Basin Characterization Planning Study (2018)
- ✓ Sewer System Management Plan (SSMP) [prepared by Avila Beach CSD]
    - 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
- ✓ USGS Evaluation of Ground-water Quality in the Santa Maria Valley, California
    - Provides initial hydrogeologic evaluation of Santa Maria Valley

- ✓ USGS Pumpage and Ground-Water Storage Depletion in Cuyama Valley, California 1947-66
  - Provides an early study of water level declines in the Cuyama Valley groundwater basin
- ✓ Urban Water Management Plan 2015 Update Zone 3
  - 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
- ✓ Water and Sewer Master Plan Update (prepared for Nipomo CSD)
  - 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
- ✓ Water Resources of the Arroyo Grande-Nipomo Mesa Area
  - Provide information on the water resources of the Arroyo Grande-Nipomo area
  - DWR conducted this study under an agreement with SLO County
- ✓ Woodlands Mutual Water Company 2017 Consumer Confidence Report
  - Provides water quality data for small drinking water supply system receiving groundwater supplies through local wells

11.2 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).

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.

11.2.1 Relevance of Technical Sources each

Table 11-1 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.

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. 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.

Table 11-1: *Technical Source Information for Defining IRWM Management Needs*

Report Name	IRWM Goals				
	Water Supply	Ecosystem and Watershed Restoration	Groundwater Monitoring & Management	Flood Management	Water Resources Management & Communications
REGIONAL					
1. SLOC Master Water Report Volume I	2		2		1
2. SLOC Master Water Report Volume II	2	1	2	1	1
3. SLOC Master Water Report Volume III	1				2
4. SLOC Investigation (Volumes I and II) Bulletin 18			x		
5. California's Groundwater: Bulletin 118	1	1	2		1
6. SLOC, Groundwater Monitoring Program Evaluation			2		
7. Groundwater Flow Model Conversion and Urban Area Yield Update			2		
8. Water Use Estimates for Private Domestic Wells	2				

Report Name	IRWM Goals				
	Water Supply	Ecosystem and Watershed Restoration	Groundwater Monitoring & Management	Flood Management	Water Resources Management & Communications
9. 2014–2016 Biennial Resource Summary Report	2	1	2		2
10. Water Quality Conditions in the Central Coast Region Related to Agricultural Discharges	1	1	2		1
11. Water Quality Control Plan for the Central Coast Basin	1	2	1		1
12. Water Years 2001-02 and 2002-03 Hydrologic Report	1	2	1	2	1
13. SLOC 2014 IRWM Plan	2	2	1	1	1
14. SLOC General Plan	1	1	1	1	1
15. SLOC Salt and Nutrient Management and Recycled Water Planning	1	1	2		1
16. SLOC Agricultural Demand Inventory	2				
17. SLOC Data Enhancement Plan	1	1	1	1	1
18. SLOC Flood Management Plan				2	
19. SLOC Regional Permit Program		x			
20. SLOC Stormwater Resource Plan				2	1
21. GeoTracker	1		2		
22. Water Balance Study for the Northern Cities Area	2				
23. Water Quality Data (WQX)	1		2		
24. On-line Ground Water Level Database			2		
25. Identification & Prioritization of Groundwater Basins Requiring a SNMP and SNMP Development Resources			2		1
26. SLOC Regional Recycled Water Strategic Plan	2		1		
27. SLOC Watersheds Management Plan		2			1
28. Central Coast Groundwater: Seawater Intrusion and Other Issues	1		2		
29. SLO Watershed Project		2			2
NORTH COAST					
30. Morro Bay Nitrate Study	2		2		
31. Cayucos Area Water Organization, 2007 Water Management Plan Update	2		1		
32. Cambria CSD, Water Master Plan EIR	2	1	1		
33. North Coast Groundwater Studies			2		
34. Cambria CSD 2015 UWMP	2		2		2

Report Name	IRWM Goals				
	Water Supply	Ecosystem and Watershed Restoration	Groundwater Monitoring & Management	Flood Management	Water Resources Management & Communications
35. Cambria CSD 2017 Consumer Confidence Report	2				2
36. Cayucos - County Service Area 10/10A Water Quality Report	2				2
37. Los Osos Basin Salt and Nutrient Management Plan	2		2		1
38. City of Morro Bay 2015 UWMP	2		2		2
39. Updated Basin Plan for the Los Osos Groundwater Basin	1		2		1
40. Ashurst Well Field Nitrate Study	1		2		
41. Task 3 Los Osos Upper Aquifer Water Quality Characterization	1		2		
42. Los Osos Basin Management Committee Annual Report	1		2		
NORTH COUNTY					
43. Paso Robles Groundwater Basin Water Balance Review and Update			2		1
44. 2015 UWMP for the Atascadero MWC	2		2		2
45. City of Atascadero Adopted Sphere of Influence Update Municipal Service Review	2		1	1	
46. Camp Roberts Joint Land Use Study	1	1	1	1	
47. Water Quality Report 2016 County Service Area 16 - Shandon	2		1		2
48. Water Quality Report CSA 23 – Santa Margarita	2		1		1
49. Paso Robles Groundwater Subbasin Water Banking Feasibility Study, Final Report	2		2		
50. Shandon Community Plan	1	1	1	1	1
51. San Miguel CSD 2016 Water Quality Report	2		1		2
52. Templeton CSD 2016 Consumer Confidence Report	2		1		2
53. City of Paso Robles Annual Water Quality Report	2		1		2
54. City of Paso Robles 2015 UWMP	2		2		2
55. Paso Robles Groundwater Basin Management Plan	1		2		2

Report Name	IRWM Goals				
	Water Supply	Ecosystem and Watershed Restoration	Groundwater Monitoring & Management	Flood Management	Water Resources Management & Communications
56. San Miguel Water and Wastewater Master Plan Update (2017)	2		2	1	
57. Santa Margarita Water Master Plan	2		1		
58. Heritage Ranch Community Services District Website	2		2		
59. Resource Investigation of Low and Moderate-Temperature Areas in Paso Robles, San Luis Obispo County, California	x				
60. Bulletin 199 Basic Geology of the Santa Margarita Area, San Luis Obispo, California			2		
61. Atascadero Mutual Water Company Annual Water Quality Report	2		1		2
62. Santa Margarita Ranch Agricultural Residential Cluster Subdivision Water Supply Study San Luis Obispo County, California	1	1	1		
63. SunPower - California Valley Solar Ranch Website		1			1
64. Technical Memorandum: Groundwater Resources of CSA 23 – Santa Margarita	1		2		
65. Topaz Solar Farm (First Solar) Website		1			1
66. Paso Robles Groundwater Basin Model Update	1		2		
67. Salt/Nutrient Management Plan for the Paso Robles Groundwater Basin	1		2		
SOUTH COUNTY					
68. Avila Beach Community Services District 2017 Consumer Confidence Report	2		1		2
69. NCMA 2017 Annual Report	2		2		2
70. Nipomo Waterline Intertie Project	1				
71. 2015 UWMP for the City of Arroyo Grande	2		2		2
72. 2015 UWMP for the City of Pismo Beach	2		2		2
73. Nipomo CSD 2015 UWMP	2		2		2
74. City of Grover Beach Public Works Documents	2		2	2	2

Report Name	IRWM Goals				
	Water Supply	Ecosystem and Watershed Restoration	Groundwater Monitoring & Management	Flood Management	Water Resources Management & Communications
75. Chapter 5 - Infrastructure and Phasing, Spanish Springs Specific Plan	1				
76. NMMA 7th Annual Report & 9th Annual Report	2		2		2
77. Woodlands Mutual Water Company 2017 Consumer Confidence Report	2		1		2
78. City of Grover Beach 2010 UWMP	2		2		2
79. Sewer System Management Plan (SSMP) prepared for Avila Beach CSD	1				1
80. Cal Poly Master Plan Update	2		1		1
81. Nipomo CSD Adopted Sphere of Influence Update Municipal Service Review	1		1	1	1
82. Nipomo Water Resource Related Reports Website	2		2	2	2
83. Pismo Creek/Edna Area Watershed Management Plan		2	2	1	
84. Bulletin No. 63-3 Sea-Water Intrusion: Pismo-Guadalupe Area	1		2		
85. Water Resources of the Arroyo Grande-Nipomo Mesa Area	1		2		
86. Water and Sewer Master Plan Update prepared for Nipomo CSD	2		2		
87. City of Arroyo Grande 2017 Water Quality Report	2		1		2
88. City of Pismo Beach Ten-Year Capital Improvement Plan and Major Expenditures for FY 2017-18 through FY 2026-27	2				
89. San Luis-Edna Valley Groundwater Basin Study Draft Report			2		
90. Golden State Water Company Edna Road Water System Consumer Confidence Report for 2017	1		1		1
91. Golden State Water Company Nipomo Water System Consumer Confidence Report for 2016	2		1		2
92. USGS Evaluation of Ground-water Quality in the Santa Maria Valley, California	2	1	2		

Report Name	IRWM Goals				
	Water Supply	Ecosystem and Watershed Restoration	Groundwater Monitoring & Management	Flood Management	Water Resources Management & Communications
93. Development of a Numerical Ground-Water Flow Model and Assessment of Ground-Water Basin Yield Santa Maria Valley Ground-Water Basin			2		
94. Resource Capacity Study Water Supply in the Nipomo Mesa Area	2		2		
95. USGS Pumpage and Ground-Water Storage Depletion in Cuyama Valley, California 1947-66			2		
96. UWMP 2015 Update Zone 3	2		2		2
97. Groundwater Flow Analysis, Regional Groundwater Sustainability Project, Arroyo Grande/Tri-Cities Mesa Area	2		2		
98. Santa Maria Groundwater Basin Characterization and Planning Activities Study	1		2		

11.2.2 Emphasis of Source Priorities and Data Gaps

From **Table 11-1** the Water Supply and Groundwater Management Goals visually appear (see **Figure 11-1** 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.

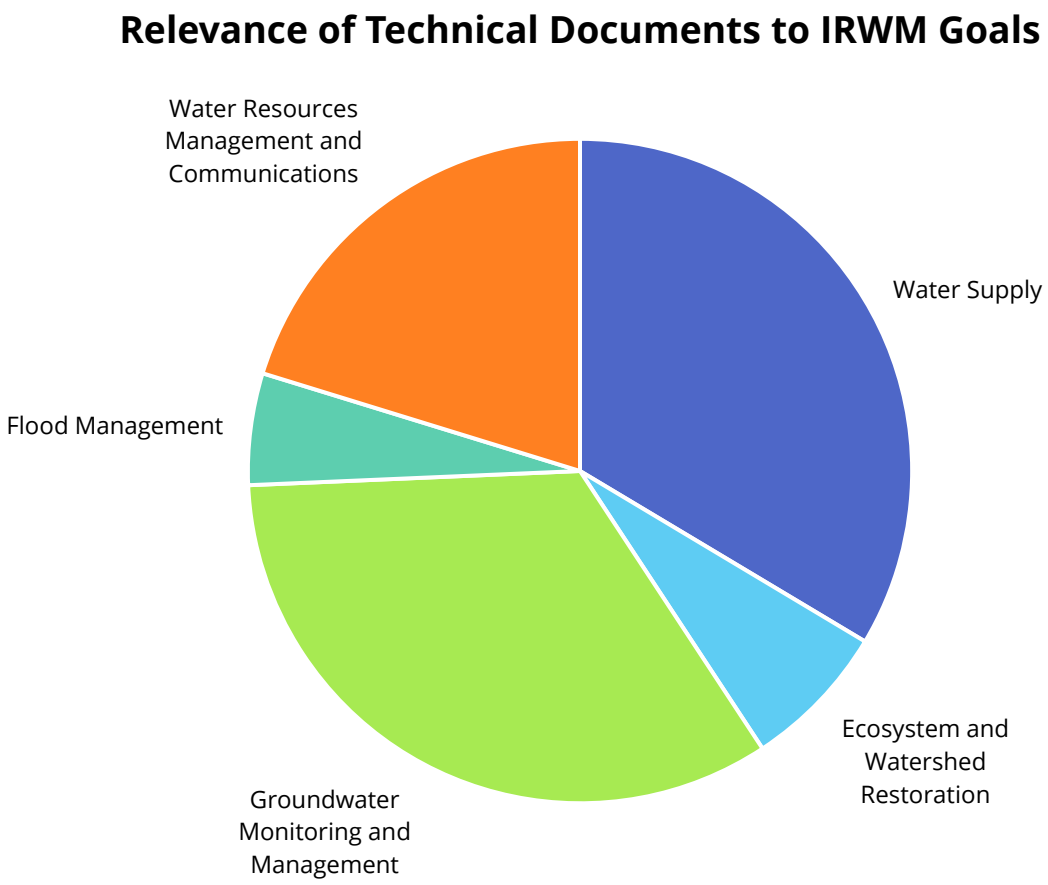

Figure 11-1: *Technical Document Breakdown by IRWM Goal*

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 8 – Plan Performance and Monitoring** and **Section 9 – Data Management** target improved monitoring of hydrology, climate change, and improvements based on implementation of Ecosystem Restoration and Flood Management projects or programs.

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12 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. 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:

12.1 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.

12.2 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.

12.3 Examples of Local Needs Incorporated in the IRWM Planning Goals – includes examples where local planning documents and policies satisfy the IRWM Planning Goals.

12.4 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.

12.5 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.

12.6 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.

12.7 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 create a more holistic approach to managing water resources in the San Luis Obispo County Region.

12.1 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. The relevance of each document to the IRWM Plan is discussed below and summarized in **Table 12-1**. Coordination and collaboration occurred through meetings, workshops, and personal communications (See **Section 2 – Governance**) 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. One of the notable considerations in this process is the review of climate change adaptation and mitigation strategies included in local planning documents, such as the UWMPs. The presence of these strategies and other relevant resource management strategies within local plans is summarized in **Table 12-2** (i.e., checked strategies imply how the document relates to the IRWM Plan and may not be fully comprehensive of the listed document).

Table 12-1: *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 General Plan Annual Report	2015	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	2014	City of Pismo Beach	
City of Paso Robles, General Plan	2003	City of Paso Robles	
City of Atascadero General Plan	2016	City of Atasca-dero	
City of Arroyo Grande General Plan	2016	City of Arroyo Grande	
City of Morro Bay General Plan and Local Coastal Plan	1988	City of Morro Bay	
City of Grover Beach General Plan, Housing Element	2010	City of Grover Beach	
County of SLO Area Plans	2014	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	2010		
County of SLO Coastal Plan Policies	2006		
County of SLO Conservation and Open Space Element	2010		
San Miguel Community Plan	2016		
Oceano Revitalization Plan	2013		
Templeton Community Plan	2014		
Urban Water Management Plans			
City of Arroyo Grande UWMP	2015	City of Arroyo Grande	Provides understanding of Arroyo Grande urban water needs, management, and planning objectives
City of Paso Robles UWMP	2015	City of Paso Robles	Provides understanding of Paso Robles urban water needs, management, and planning objectives
City of Grover Beach UWMP	2010	City of Grover Beach	Provides understanding of Grover Beach urban water needs, management, and planning objectives

Document Title/Description	Pub. Date	Agency/ Entity	Relation to IRWM Plan
City of Morro Bay UWMP	2015	City of Morro Bay	Provides understanding of Morro Bay urban water needs, management, and planning objectives
City of Pismo Beach UWMP	2015	City of Pismo Beach	Provides understanding of Pismo Beach urban water needs, management, and planning objectives
City of San Luis Obispo UWMP	2015	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	2015	County of San Luis Obispo	Provides understanding of San Luis Obispo County water needs and management strategies
Los Osos CSD UWMP	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	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	2013	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	2013	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	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	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

Document Title/Description	Pub. Date	Agency/ Entity	Relation to IRWM Plan
Atascadero Water System Master Plan Final Report	1993	Atasca-dero Mutual Water Company	Provides understanding of the water supply needs of Atascadero and an implementation plan for meeting those needs
City of Paso Robles Water Resources Plan Integration and Capital Improvement Program	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	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	2010	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.
Paso Robles Groundwater Subbasin Water Banking Feasibility Study	2008	District	Explored the feasibility of banking water in the Paso Robles Groundwater Basin for the benefit of County residents
Nipomo Mesa Resource Capacity Study	2004	Nipomo CSD	Provides understanding of Nipomo Mesa groundwater sub-basin issues and management plans for the groundwater basin
Sea Water Intrusion Assessment and Lower Aquifer Source Investigation of the Los Osos Valley Ground Water Basin	2005	Los Osos CSD	Provides understanding of Los Osos groundwater issues related to sea water intrusion in the groundwater basin

Document Title/Description	Pub. Date	Agency/ Entity	Relation to IRWM Plan
Updated Basin Plan for the Los Osos Groundwater Basin	2015	Los Osos CSD	Provides understanding of Los Osos groundwater basin
Paso Robles Groundwater Basin Management Plan	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	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.
Flood Management/Drainage Studies and Plans			
San Luis Obispo County Drainage Community Studies	2007	District	Primary website for County drainage studies (may be duplicative of below studies)
Cambria Drainage and Flood Control Study	2004	Cambria CSD	Provides understanding of the flood and drainage conditions in the Cambria area
Cayucos Drainage and Flood Control Study	2004	Cayucos CSA	Provides understanding of the flood and drainage conditions in the Cayucos area
Nipomo Drainage and Flood Control Study	2004	Nipomo CSD	Provides understanding of the flood and drainage conditions in the Nipomo area
San Miguel Drainage and Flood Control Study	2003	San Miguel CSD	Provides understanding of the flood and drainage conditions in the San Miguel area
Santa Margarita Drainage and Flood Control Study	2004	Santa Margarita CSA	Provides understanding of the flood and drainage conditions in the Santa Margarita area
Los Osos Drainage Study	1997	Los Osos CSD	Provides understanding of the flood and drainage conditions in the Los Osos area
Oceano Drainage Study	2004	Oceano CSD	Provides understanding of the flood and drainage conditions in the Oceano area
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			

Document Title/Description	Pub. Date	Agency/ Entity	Relation to IRWM Plan
County of San Luis Obispo Storm Water Management Program, National Pollutant Discharge Elimination System Phase II	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
San Luis Obispo Guide to Implementing Flood Control Projects	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	2014	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	2014	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	2017	City of Atasca-dero	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	2013	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	2013	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	2016	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			

Document Title/Description	Pub. Date	Agency/ Entity	Relation to IRWM Plan
Data Enhancement Plan	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	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 12-2: *IRWM Plan Resource 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 General Plan Annual Report	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓					✓	✓			✓			✓
City of Pismo Beach General Plan and Local Coastal Plan	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓					✓	✓			✓			

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 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			✓		✓			✓	✓		✓		✓	✓						✓			✓

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 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			✓		✓			✓	✓		✓		✓							✓	✓		

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
and Capital Improvement Program																							
City of Pismo Beach Water Master Plan			✓		✓			✓	✓		✓		✓							✓	✓		
City of Pismo Beach Wastewater Collection System Master Plan					✓				✓		✓									✓			
City of Pismo Beach Wastewater Treatment Plant Master Plan			✓		✓				✓		✓									✓			
Groundwater Studies and Plans																							
2009 North Coast Groundwater Studies			✓		✓				✓				✓										
Paso Robles 2010 Groundwater Basin Water Balance Review and Update			✓		✓				✓				✓										
Nipomo Mesa Resource Capacity Study			✓		✓				✓				✓								✓		
Sea Water Intrusion Assessment and Lower Aquifer Source Investigation of the Los Osos Valley Ground Water Basin			✓		✓				✓				✓										
Updated Review Basin Plan for the Los Osos			✓		✓				✓				✓										

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
Groundwater Basin																							
Paso Robles Groundwater Basin Management Plan			✓		✓				✓				✓										
Paso Robles Groundwater Subbasin Water Banking Feasibility Study			✓		✓				✓				✓										
Paso Robles Groundwater Subbasin Water Banking Feasibility Study			✓		✓				✓				✓										
Technical Memorandum Groundwater Resources of CSA 23 – Santa Margarita			✓		✓				✓				✓										
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				✓			✓		✓							✓	✓		✓				

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
Santa Margarita Drainage and Flood Control Study				✓			✓		✓							✓	✓		✓				
Los Osos Drainage Study				✓			✓		✓							✓	✓		✓				
City of Pismo Beach Drainage Master Plan				✓			✓		✓							✓	✓		✓				
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 Management Program, Draft							✓		✓							✓	✓		✓				
City of Arroyo Grande Storm Water							✓		✓							✓	✓		✓				

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																							
County of San Luis Obispo Storm Water Management Plan							✓		✓							✓	✓		✓				
Other Studies																							
SLOC Data Enhancement Plan	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SLOC Regional Permitting Plan	✓	✓							✓			✓				✓			✓				
SLOC Regional Watershed Planning	✓	✓	✓		✓	✓			✓			✓				✓			✓				✓
Regional Recycled Water Strategic Planning										✓	✓												
San Antonio and Nacimiento Rivers Watershed Management Plan	✓	✓			✓	✓			✓			✓				✓			✓				✓

12.2 Plan Linkages with Local Water and Land Use Planning Studies

12.2.1 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) 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 RMS tracks

the availability of water, the status of water delivery systems, and the condition of wastewater systems and availability of wastewater treatment.

12.2.2 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.

12.2.3 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.

12.2.4 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 consider 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 consider local conservation and recycled water planning and provide a greater understanding of water needs and issues faced by local water agencies and communities. Recent UWMP updates include descriptions of anticipated climate change impacts and the local adaptation and mitigation strategies being implemented in response. These discussions help inform the update to the IRWM Plan's climate change section and other related plan elements.

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.

12.3 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 12-1**. See **Section 12.4.4**, for the on-going response to SGMA in San Luis Obispo.

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 (this website describes EJ to help give context to its use in this explanation) takes place at every level of the decision-making process leading up to the IRWM Plan's adoption.

12.4 Planning Documents Addressing Data Gaps in the IRWM Plan

12.4.1 Proposition 50 Studies

The four studies listed below completed in 2008 with funding through the Proposition 50 water bond measure, specifically addressed regional data gaps 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.

12.4.2 Proposition 84 Studies

Through the Proposition 84 Round 2 Planning Grant, five studies pertaining to water resource management in the San Luis Obispo Region were funded and completed. These studies, listed below, present information critical to advancing the Plan Objectives:

- 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

12.4.3 Stormwater Resource Plan

In response to the State Water Resources Control Board's Stormwater Grant Program (SWGP), created by Proposition 1, development of Stormwater Resource Plans (SRP) began around the County. The City of San Luis Obispo and agencies within the Arroyo Grande Creek watershed individually explored creating SRPs to be eligible for SWRCB funding. The District proposed unifying these efforts to have one comprehensive countywide SRP. By taking the countywide approach, the SRP and the IRWM plan now cover the same region, as the IRWM and SRP Region's boundaries are equivalent to the political boundary of San Luis Obispo County.

Upon receiving a Prop 1 Planning Grant award from DWR, a Project Management Team (PMT) began to unify the work that had already taken place and then prepare the regional plan. This team included:

- San Luis Obispo County Flood Control and Water Conservation District (Lead Agency)
- County of San Luis Obispo
- Coastal San Luis Resource Conservation District (lead consultant for SRP development)
- Upper Salinas-Las Tablas Resource Conservation District
- City of Arroyo Grande
- City of San Luis Obispo

The Project Management Team was supported by a Technical Advisory Committee (TAC). This TAC was formed by vote of the RWMG on 12/06/2017 and met throughout 2018 to provide feedback, data, and review to the PMT and technical consultants for the development of the countywide SRP.

After a 30-day public comment period and SWRCB review, the final SRP was submitted to the SWRCB on February 28th, 2019.

Upon concurrence by the SWRCB of the SRP, the RWMG will vore to officially incorporate the SRP into the IRWM region and plan. The RWMG will form a standing Working Group to implement the SRP and develop applications for SWGP opportunities, maintain, and update the plan as necessary. The SRP will added as **Appendix I** at that time.

12.4.4 Groundwater Sustainability Plans (GSPs)

In response to the Sustainable Groundwater Management Act of 2014 (SGMA), groundwater basins and subbasins (collectively, basins) identified by the California Department of Water Resources (DWR) as high or medium priority must be sustainability managed in accordance with State requirements. Eligible agencies in DWR's high or medium priority basins formed groundwater sustainability agencies (GSAs) for the purposes of developing and implementing groundwater sustainability plan (GSPs).

Basins that are prioritized as low or very low are not subject to the requirements of SGMA. There were changes to some of the basin boundaries and prioritizations since the GSAs were initially established, and as a result, there are GSAs that continue to remain within those low or very low priority basins.

A summary of County basins with ongoing SGMA efforts is provided in **Table 12-3.**

Table 12-3: *SLO IRWM Region Basins with SGMA Efforts*

Basin Name	Basin ID	DWR Prioritization & Designation[1]	GSA(s) and/or groundwater management authorities[2]
Salinas Valley - Paso Robles Area	3-004.06	High priority basin subject to critical conditions of overdraft	There are four agencies that are individually GSAs within the basin: City of Paso Robles, San Miguel Community Services District, Shandon-San Juan Water District, and County of San Luis Obispo.
Salinas Valley - Atascadero Area	3-004.11	Very low priority basin	The Atascadero Basin GSA was formed by four agencies within the basin: City of Atascadero, City of Paso Robles, Templeton Community Services District, and County of San Luis Obispo.
Los Osos Valley - Los Osos Area	3-008.01	Very low priority basin subject to critical conditions of overdraft	The adjudicated areas of the Los Osos Basin are managed by the Los Osos Basin Management Committee, whose members include the following: Los Osos Community Services District, Golden State Water Company, S&T Mutual Water Company, and County of San Luis Obispo. The County of San Luis Obispo is the GSA for a minor fringe area outside the adjudicated area.
Los Osos Valley - Warden Creek	3-008.02	Very low priority basin	The County of San Luis Obispo is the sole GSA within the basin.

Basin Name	Basin ID	DWR Prioritization & Designation[1]	GSA(s) and/or groundwater management authorities[2]
San Luis Obispo Valley	3-009	High priority basin	There are two agencies that are individually GSAs within the basin: County of San Luis Obispo and City of San Luis Obispo.
Santa Maria River Valley - Santa Maria	3-012.01	Very low priority basin	The adjudicated areas of the Santa Maria Basin are managed by the Northern Cities Management Area, Nipomo Mesa Management Area, and Santa Maria Valley Management Area. The County of San Luis Obispo is the GSA for a minor fringe area outside the adjudicated area.
Santa Maria River Valley - Arroyo Grande	3-012.02	Very low priority basin	There are two agencies that are individually GSAs within the basin: County of San Luis Obispo and City of Arroyo Grande.
Cuyama Valley	3-013	High priority basin subject to critical conditions of overdraft	The Cuyama Basin GSA was formed by a joint powers agreement (JPA) and is an independent agency governed by a Board of Directors, whose members include the following: County of San Luis Obispo, County of Kern, County of Ventura, Santa Barbara County Water Agency, Cuyama Basin Water District, and Cuyama Community Services District.

1. Groundwater basins are identified (and as appropriate, designated as subject to critical conditions of overdraft) in DWR's Bulletin 118, Interim Update 2016 and prioritized in DWR's release of the SGMA 2019 Basin Prioritization Process and Results. https://water.ca.gov/Programs/Groundwater-Management/Basin-Prioritization
2. SGMA does not apply to the portions of adjudicated areas provided that certain requirements are met (Water Code §10720.8)

As the GSA(s) adopt and submit the GSP(s) for approval by DWR, the RWMG will need to incorporate by reference these GSPs. In addition, the Plan will need to be updated to reflect the priorities, projects, data, monitoring, etc. of each GSP. One such update will be to ensure that projects submitted to IRWM for scoring and grant funding are consistent with their GSP as applicable. The RWMG will need to consider updates to the IRWM Plan objectives and region's critical needs in response to these GSPs. Climate Change resiliency and adaptation strategies included in the GSPs as well should be incorporated into the IRWM plan as well.

As the development of GSPs is on-going, future updates to the IRWM Plan will rely on and coordinate heavily with GSAs as they move from the GSP development phase to the GSP implementation phase. For the most up-to-date information regarding SGMA planning and implementation in San Luis Obispo County, see the County's SGMA website: www.slocounty.ca.gov/sgma

12.4.5 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 Carrizo Plain Natural Area (Bureau of Land Management), and the Salinas Dam and Reservoir (U.S. Army Corps of Engineers).

12.5 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. **Map 12-1** at the end of this section details these Supervisorial Districts as well as incorporated cities and unincorporated communities.

There are seven incorporated cities and fifteen unincorporated communities in the San Luis IRWM Plan region as shown in **Table 12-4** below. **Map 12-1** at the end of this section details these Supervisorial Districts, incorporated cities and unincorporated communities. 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.

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.

Table 12-4: *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		●		●

City and Community Names	Type of Entity			
	City	Community	Supervisorial District	WRAC Participation
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		●		●
15. Morro Bay	●			●
16. Grover Beach	●			●
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			●	●

12.6 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.

12.6.1 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 4 – IRWM Goals and Objectives**. As summarized in **Table 12-1**, 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 12-1.** The cited planning documents are also listed in **Table 12-1.**

12.6.2 Issues and Relationships between Local Land Use Planning Entities and Water Management Entities in the Context of IRWMP

There are several 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.

12.6.3 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 12-5.** 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 8 – Plan Performance and Monitoring**.

Table 12-5: *List of Standardized Needs and Methods*

Needs	How Communicated	Methodologies Used
Watershed Information The 2014 IRWM Plan was the first to include data at the watershed level (See **Section 3 – Region Description**, and **Appendix H – 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 H**) 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.	Demand and Supply data is incorporated in **Appendix E – Supply and Demand.** 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.
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 4 – 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 Sustainability Plans 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 Sustainability Plan or 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 3 – Region Description** and **Appendix G – 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.

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13 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.

13.1 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
- Native American Tribal Communities
- 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. These groups have either contributed to the development of this IRWM Plan or should be included in the future 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.

13.1.1 Water Resources Management Responsibilities of Two Primary State Agencies

The 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.

13.1.2 Agricultural Organizations

Some of the key agricultural organizations in the region 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 of these organizations has a variety of roles which may include conservation and water quality efforts, data collection, special studies, policy review, and overall stakeholder review of issues.

13.1.3 Environmental Organizations

Some prominent environmental organizations in the region include Central Coast Salmon Enhancement, Sierra Club, Morro Bay National Estuary Program, Surfrider Foundation, Coast Keepers, and many others. These groups 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.

13.1.4 Native American Tribal Communities

While there are no official Tribal lands are currently present in San Luis Obispo County, there are many communities located in San Luis Obispo County. In addition, many Tribal communities in neighboring counties have members living in San Luis Obispo County. Our standard outreach, communication and project coordination involves the following entities:

- Northern Chumash Tribal Council
- Salinan Tribe of San Luis Obispo Monterey & San Benito Counties
- Salinan Tribe of San Luis Obispo, Monterey and San Benito Counties
- yak tityu tityu – Northern Chumash Tribe
- Xolon Salinan Tribe
- Santa Ynez Band of Mission Indians
- Coastal Band of the Chumash Nation
- Barbareno/Ventureno Band of Mission Indians

For specific IRWM outreach activities to Tribal communities, see **Section 2.3.4 – Native American Tribes Outreach**.

13.1.5 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.

13.1.6 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.

13.2 Activity Coordination Strategy with Central Coast Funding Area and Adjacent Regions

13.2.1 Central Coast Funding Area

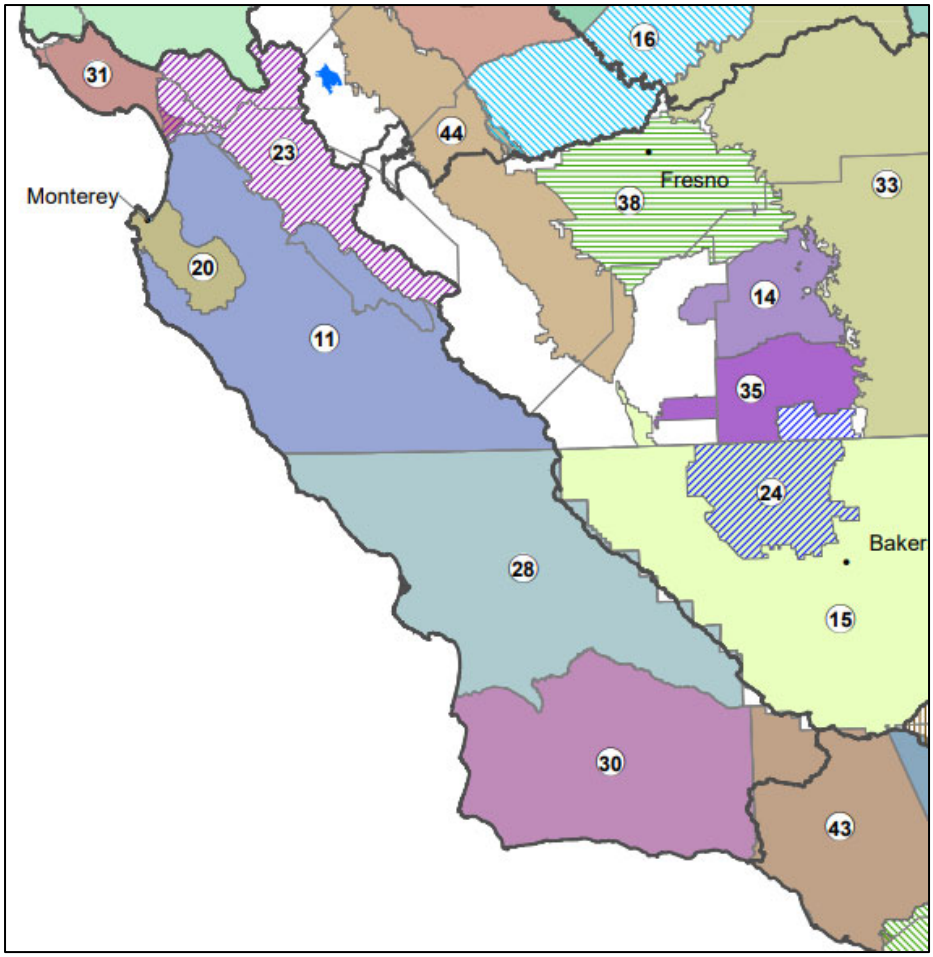
As depicted in **Map 3-1**, located at the end of **Section 3 – Region Description**, the Central Coast Funding Area consists of 6 Regions:

- Santa Cruz
- Pajaro River Watershed
- Monterey Peninsula
- Greater Monterey County
- San Luis Obispo County
- Santa Barbara County

With the passage of Proposition 1 (2014), the members of the CCFA entered into a Memorandum of Agreement, with "the primary intent of the six Parties (Regions) to this MOA is to share future Proposition 1 funding for the IRWM grant program among the six Parties in a fair and equitable manner".

Working as a Funding Area for the non-competitive DAC-Involvement program has successfully laid the groundwork for future cooperation for the implementation grant process. The DAC-Involvement program administration and information sharing regarding the region-wide needs assessments has all funding area members in consistent communication and partnership.

As shown in **Figure 13-1**, San Luis Obispo County is surrounded on three sides by active IRWM regions, including Greater Monterey County to the north, Santa Barbara County to the south, and Kern County to the east. 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.



IRWM Region Key

- **11)** Greater Monterey County
- **14)** Kaweah River Basin
- **15)** Kern County
- **20)** Monterey Penisula
- **23)** Pajaro River Watershed
- **24)** Poso Creek
- **28)** San Luis Obispo
- **30)** Santa Barbara County
- **31)** Santa Cruz County
- **35)** Tule
- **38)** Kings Basin Water Authority
- **43)** Watersheds Coalition of Ventura County
- **44)** Westside – San Joaquin

Figure 13-1: *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.

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.

13.2.2 Sub-Regional Coordination with Adjacent IRWM Regions

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, 84 and most recently, 1 (2014).

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.

13.3 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 13-1 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.

Table 13-1: *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
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

Agency	Jurisdiction/Interest	Coordination/Interaction
		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
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

Agency	Jurisdiction/Interest	Coordination/Interaction
		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

13.3.1 State and Federal Agencies Approval

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 13-2 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.

13.4 Project Coordination with Federal and State Agencies

Table 13-2 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 13-2: *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

Agency/Organization	Permit or Approval	Action Requiring Permit/Consultation
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.

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.

13.5 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, grouped by geographic region.

13.5.1 Groundwater Sustainability Agencies (GSAs)

In response to the Sustainable Groundwater Management Act (2014), Groundwater Sustainability Agencies have formed across the Region to address their groundwater basins. As Groundwater Sustainability Plans (GSPs) are developed and adopted by the GSAs, the issue of how IRWM and SGMA will, not only coexist, but work together for the benefit of the Region will be determined as SGMA moves from the planning phase to the implementation phase. **Section 12.4.4 - Groundwater Sustainability Plans** discusses this future of IRWM and GSPs and how the RWMG may flex to this new normal.

13.5.2 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.

13.5.3 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.

13.5.4 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).

13.5.5 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).

13.5.6 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.

13.5.7 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.

13.5.8 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).

13.5.9 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.

13.5.10 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:

- CSA 10A (via exchange)
- City of San Luis Obispo
- Templeton CSD, Atascadero MWC
- 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).

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14 CLIMATE CHANGE

14.1 INTRODUCTION

Consistent with California state guidelines for Integrated Regional Water Management (IRWM) planning, climate change analysis is considered a critical component in the planning and implementation of water resources management projects and programs. The IRWM Guidelines require that IRWM Plans address both adaptation to the effects of climate change and mitigation of greenhouse gas (GHG) emissions related to water systems. The IRWM Plan must also include discussion of the potential effects of climate change on the IRWM region and an assessment of the region's climate change vulnerabilities. Each IRWM Region is required develop a list of prioritized vulnerabilities and incorporate a consideration of regional climate change effects into the appropriate sections of their IRWM Plan.

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. **Summarize 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. **Describe the Climate Change Analysis results** – a summary of the Climate Change Analysis results breaking down the differences between the three Sub-Regions of the SLO IRWM Region
4. **Present the results of the vulnerability assessment for the IRWM Region** – a synopsis of the vulnerability assessment, presentation of the prioritized list of vulnerabilities, and explanation of how vulnerabilities were evaluated
5. **Discuss how the SLO RWMG plans to address climate change** – a description of the RWMG's feasibility to address vulnerabilities and summary of how climate change considerations impact the IRWM Plan as a whole

The scientific study for this section is derived from **Appendix J – Climate Change Analysis for San Luis Obispo IRWM Region** and various climate change related websites referred to in the appendix and in this section.

14.1.1 IRWM Plan Climate Change Outline

While this section includes a comprehensive depiction of how climate change is addressed by the IRWM Plan, climate change considerations are weaved into various other sections of the Plan. **Table 14-1** below lists the other sections of the Plan in which climate change is addressed and an overview of the climate change-related information contained in those sections.

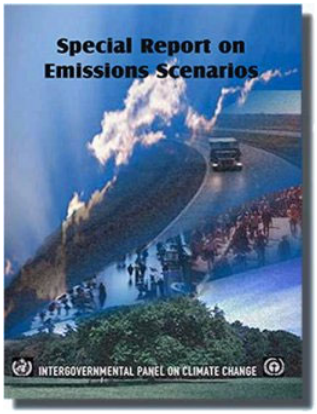
Table 14-1: *IRWM Plan Climate Change Outline*

Section	Summary
Section 3.13	An overview of the regional, anticipated climate change effects is supplemented by thorough descriptions of the climate change effects expected within each sub-region.
Section 4.3.1	This subsection describes how the Plan Objectives were reviewed to ensure they adequately reflect the region's top prioritized climate change vulnerabilities and incorporate climate change adaptation and mitigation strategies.
Section 5.2.3	A brief summary of how the Plan's RMS have been evaluated to ensure they encompass adaptation and mitigation strategies.
Section 6	The project evaluation criteria include a consideration of how proposed projects address the region's prioritized climate change vulnerability and incorporate strategies for climate change adaptation and mitigation.
Section 9.4.3	The RWMG anticipates new information and tools related to climate change to arise in the future, and this Section includes a summary of the RWMG's plan for incorporating such developments into the IRWM Plan.

14.2 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.

14.2.1 Emissions Scenarios



Emission scenarios are alternative "storylines" of how the future might unfold based on driving forces such as population growth, land use change, technology, and industry and how those forces influence future emissions of GHG. The storylines help define future concentrations of GHG in the atmosphere and how GHG impacts temperature and climate. Unfortunately, as with any forecast modeling, the possibility that any single emissions path will occur as described by the scenarios is highly uncertain, so multiple scenarios with differing characteristics have been developed.

In the early 1990s, the Intergovernmental Panel on Climate Change (IPCC) developed long-term emissions scenarios that have been widely used in the analysis of climate change and its 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 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.

The IPCC's Special Report on Emissions Scenarios (SRES) includes four primary storylines of how the world may move forward with corresponding changes in climate. The preferred storyline and scenario family utilized for this analysis is the A1 storyline. In contrast to the use of the A2 storyline by a 2010 study on future conditions in San Luis Obispo County, this decision reflects a more optimistic growth scenario for the economy and a world which brings to bear technological solutions to reduce GHG emissions starting mid-Century (2050).

Figure 14-1 is from IPCC's Third Assessment Report, and it illustrates the differences in future emissions and related conditions between six scenarios derived from the IPCC's four storylines. Plots are briefly described as follows: (a) the CO2 emissions of the six SRES scenarios; (b) projected CO2 concentrations; (c) anthropogenic SO2 emissions; (d) the projected temperature change; (e) sea-level rise projections.

Focusing on the (a) plot and following the A1B line (solid red 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 14-2**, 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.

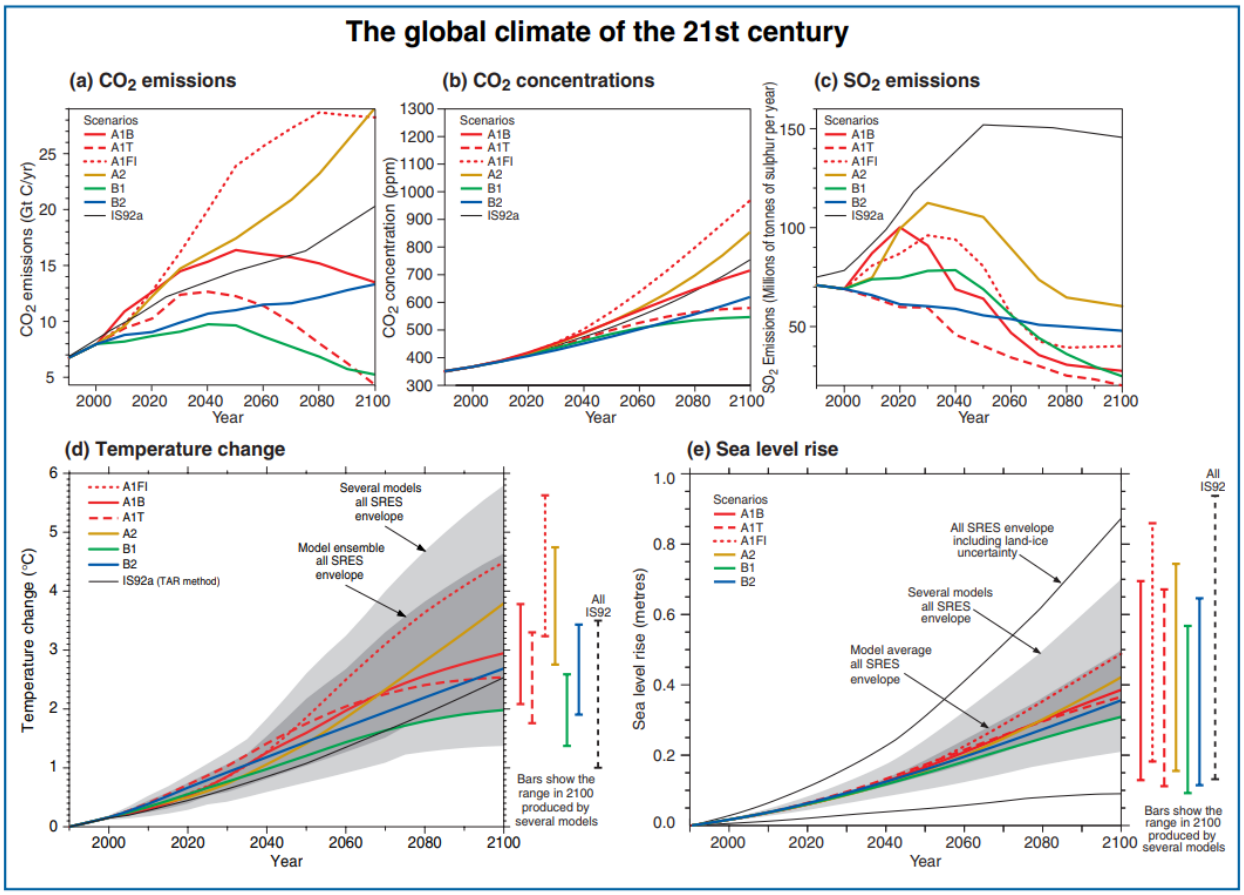


Figure 14-1: *Results of SRES Climate Change Scenarios*

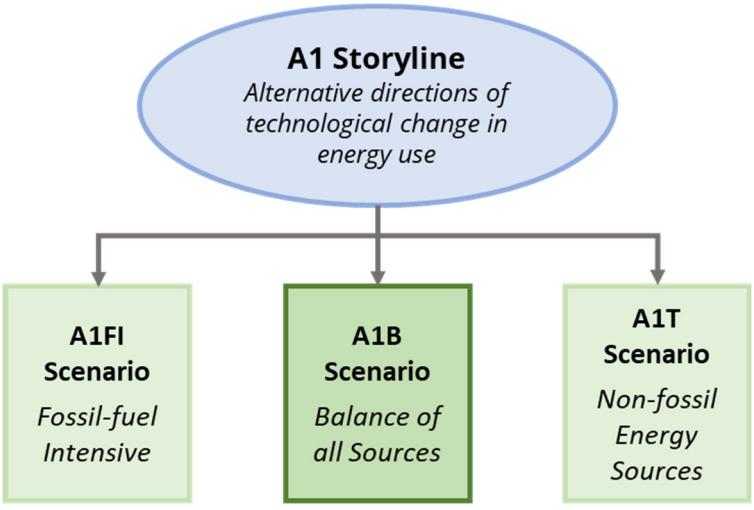


Figure 14-2: *A1 Storyline Scenarios*

14.3 Climate Change Models

Downscaling of global data is important for a study looking at the effects of climate change in a relatively small geographical area. 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.

14.3.1 Selected Model for Climate Change Analysis

Significant research and consideration was employed to select the appropriate climate change models for the SLO IRWM Climate Change Analysis. The decision to use NOAA Geophysical Fluid Dynamics Laboratory (GFDL) models for the climate change analysis 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 models and approach had been utilized in three other region-developed IRWM Plans at the time of development (Imperial Region, Gateway Region, San Joaquin Region)

14.3.2 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. The Lawrence Livermore National Labs (LLNL) hosts an archive of the results of global climate projections from the World Climate Research Program's Coupled Model Intercomparison Project (CIMP) Phase 3 effort and offers 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 above, simulations from NOAA's GFDL models run for the A1B emissions scenario were used for the 2014 IRWM Plan Update Climate Change Analysis. The data grid over which the data request was made is illustrated in **Figure 14-3** with the Sub-Region areas shaded to illustrate the resolution of coverage. By splitting the IRWM Region into its three Sub-Regions, the analysis afforded more detail than prior efforts to understand climate change impacts. This results of this analysis, summarized in subsequent sections, provided a foundation for the prioritization of regional vulnerabilities (**Section 14.8**) and future data gathering and analysis.

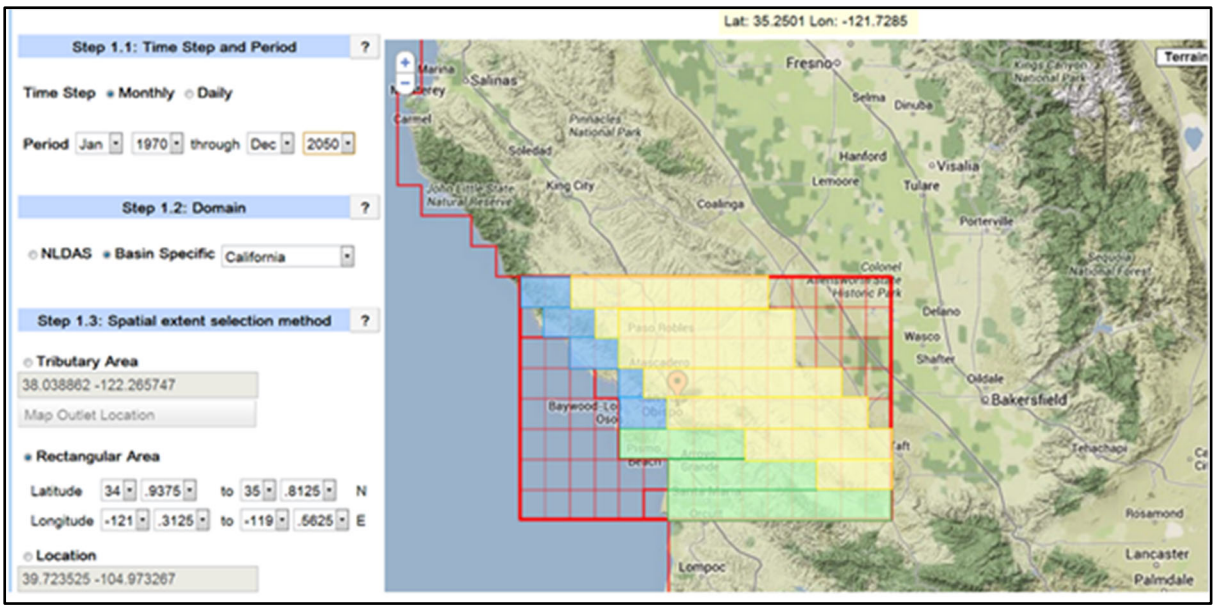


Figure 14-3: *Downscaled Region Model Grid Data Request for IRWM Region*

14.4 Approach to Climate Change Analysis for Sub-Regions

Climate Change Analysis for the three Sub-Regions in the IRWM Plan required sufficient time series data, both in resolution and in temporal span. The analysis required monthly and daily time series data to characterize climate in the recent past (prior to 2011) and at mid-century (2050), approximately 30 years into the future. The use of mid-century as a future date ensured full coverage of the 20- to 25-year IRWM Planning horizon.

14.4.1 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 were obtained by analyzing the monthly simulated data. Daily time series data was 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 changes in the climate parameters and are described below.

14.4.2 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)

14.4.3 Daily Time Series Metrics

Growing Degree Days

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.

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.

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.

14.4.4 Conceptual Model Setup and Analysis

The analysis flow diagram shown in **Figure 14-4** 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, both environmental and anthropogenic. The diagram indicates the feedback between each of the processes illustrating how with each time step a new equilibrium is reached producing a new set of climate conditions.

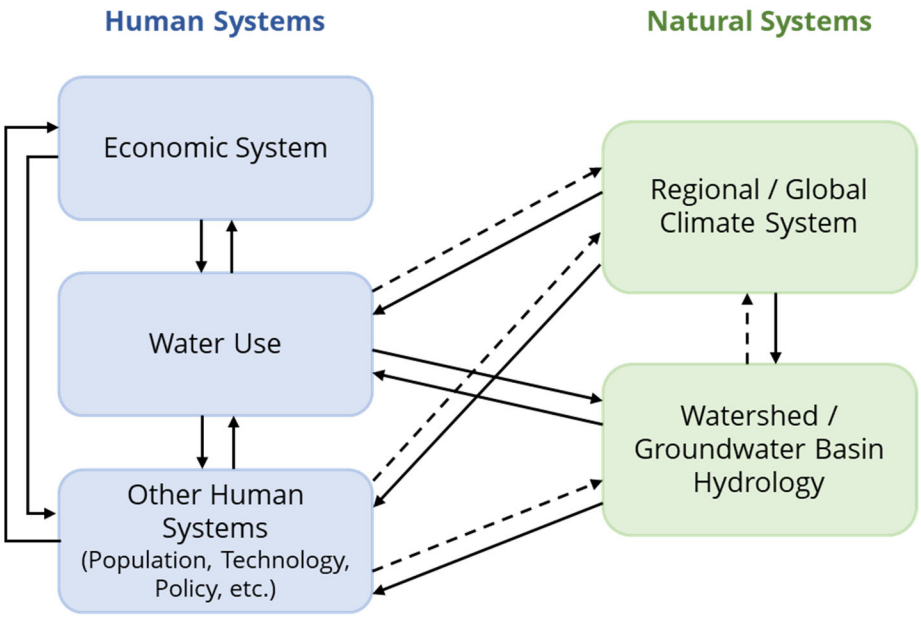


Figure 14-4: *Analysis Flow Diagram*

Since the Climate Change Analysis was performed on a sub-regional scale, it is important to recognize the socio-economic conditions and other influential elements that characterize each of the Sub-Region. A general summary of the important distinguishing factors of each Sub-Region is provided in **Table 14-2**.

Urbanized land uses in the IRWM region exist in various degrees within each of the three Sub-Regions. However, 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. Due to these similarities, the resulting impacts of climate change in urban areas are not considered to be significantly different between the three Sub-Regions and are not reflected in **Table 14-2**.

Table 14-2: *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

Table 14-2: *Socio-Economic and Water Resources Considerations by Sub-Region, Continued*

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 tourism-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

14.5 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 **Table 14-3,** and running those conditions through 40 years of monthly hydrology and 20 years of daily hydrology 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 14-3 below provides results of the Climate Change Analysis using monthly data aggregated to seasonal time periods for the mid-century point in time. The table and figures below illustrate the change in average seasonal amounts for key climate variables.

Table 14-3: *Projected Changes in Monthly Climate Metrics by Mid-Century (2050)*

Variable	Sub-Region	Change in Variables Projected for Medium Warming Scenario (A1B)				
		Winter	Spring	Summer	Fall	Annual
Precipitation	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%

In the table above, the cells with green backgrounds indicate increases of 3 percent or more change from current seasonal average; 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. Each of these key climate variables and the effects of climate change on the Sub-Regions are described below.

14.5.1 Precipitation Changes

Precipitation is a key indicator of climate change. Both when (temporal) and how much (volume) rainfall occurs have 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 percent changes shown in the table above express that in the future there will be more rainfall in the winter and less rainfall in the spring. It should be noted, 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 produces a 27 percent decrease from the current seasonal average of 1.6 inches. Whereas, a 0.5-inch increase over the same area in winter, with a current 6-inch average rainfall, produces a 6.9 percent increase.

Precipitation drives many of the interactions taking place in the **Figure 14-4** analysis flow diagram**.** It is important to quantify the shift in rainfall from month to month, as demonstrated in **Figure 14-5** below**.** The graph shows a monthly average precipitation difference comparison of the three Sub-Regions. As a whole, the graph indicates most of the change is taking place in the North Coast Sub-Region with a reduction in precipitation change as one moves inland from the ocean.

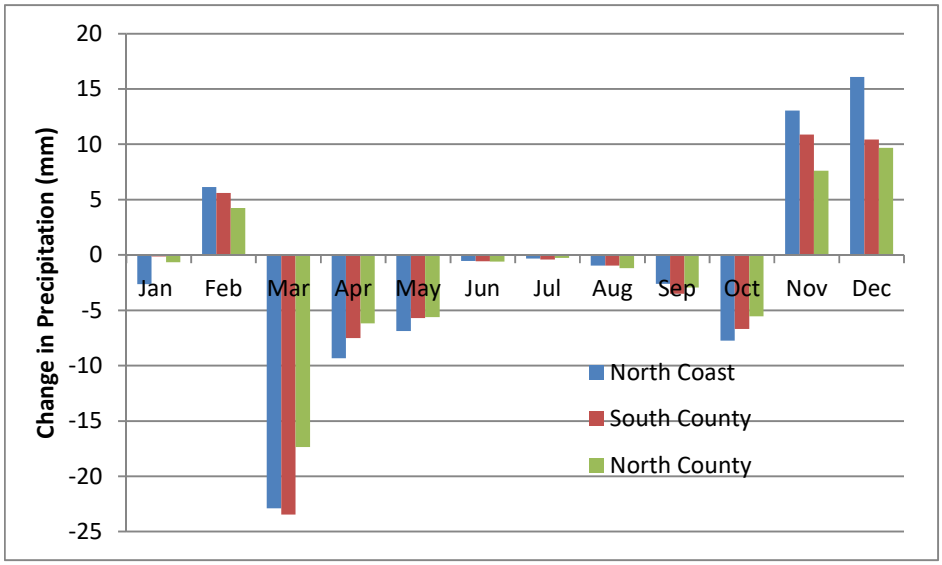


Figure 14-5: *Differences in Average Monthly Precipitation*

14.5.2 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 14-6 and **Figure 14-7** 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. The South County Sub-Region extends further inland 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.

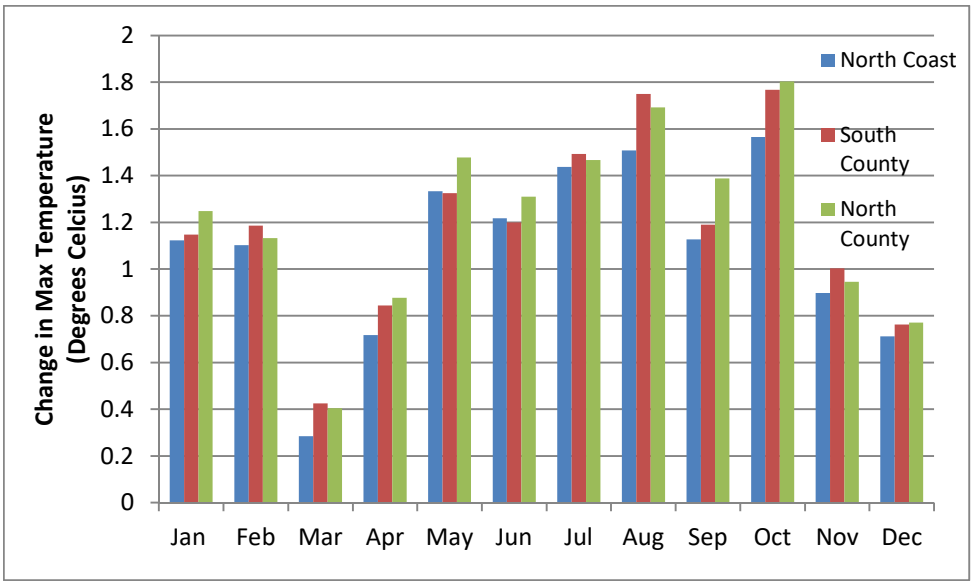


Figure 14-6: *Differences in Average Monthly Maximum Temperatures*

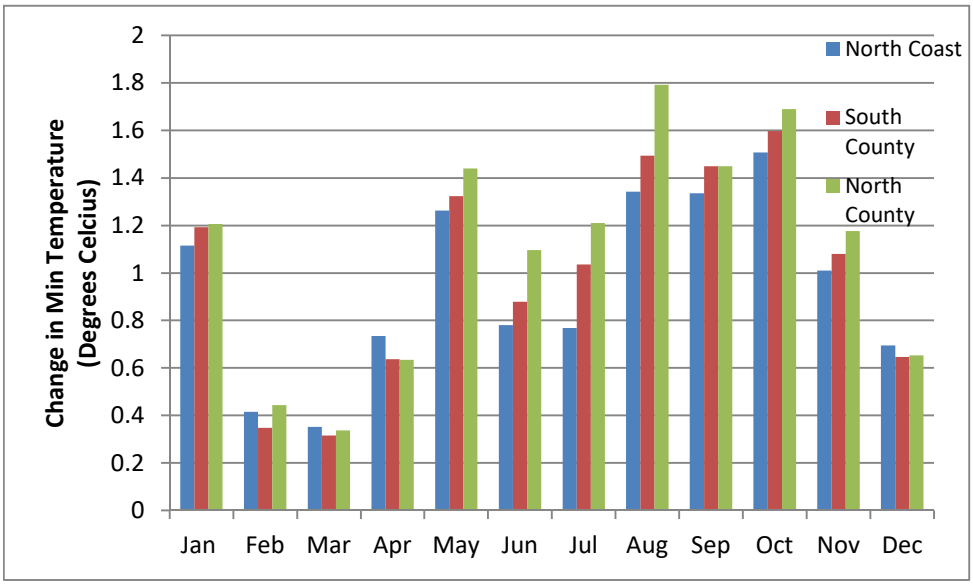


Figure 14-7: *Differences in Average Monthly Minimum Temperatures*

14.5.3 Evapotranspiration Changes

Evapotranspiration (ET) is a measure of how the Sun's radiation affects the amount of water needed by plants to sustain growth. **Figure 14-8** provides a comparison of the ET changes amongst all three Sub-Regions. The graph shows relatively little difference between the three Sub-Regions and highlights how ET is projected to significantly increase across the region during summer months. The North County Sub-Region, with its strong agricultural community, anticipates increased ET during the spring growing season. These changes will heighten agriculture water demands and add stress to several already vulnerable water supplies.

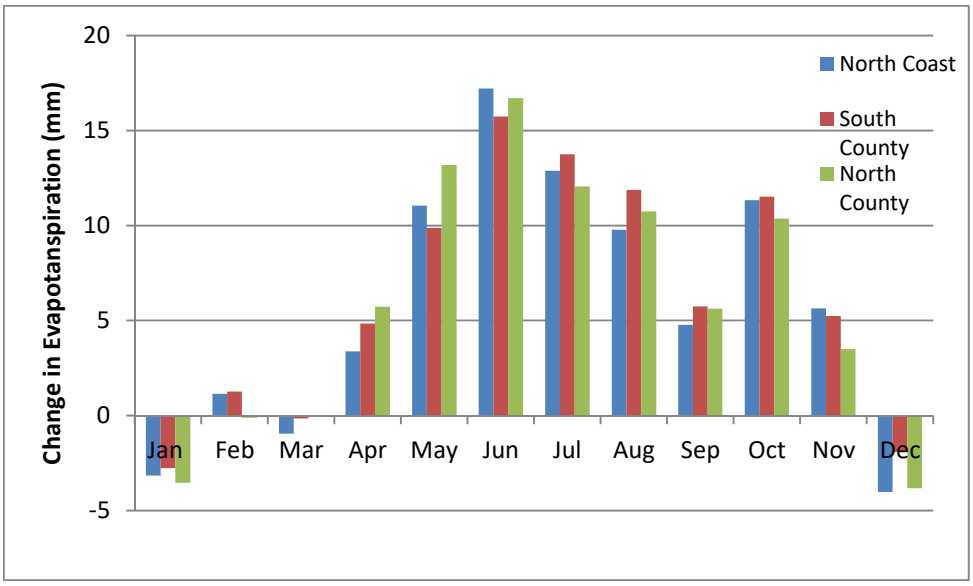


Figure 14-8: *Differences in Monthly Evapotranspiration*

14.5.4 Runoff Changes

Runoff is a measure 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 to streams, rivers, reservoirs, and the ocean. Changes in the intensity and frequency of rainfall events and resulting changes in runoff can significantly impact a reservoir's operations and lead to insufficient stored water during peak water demands. **Figure 14-9** indicates the North Coast Sub-Region will experience the highest monthly change in runoff, with reduced change toward the inland regions. This response is in part due to smaller watersheds and small capacity aquifers along the North Coast, which create shorter response times and make the area more sensitive to changes in storm event patterns.

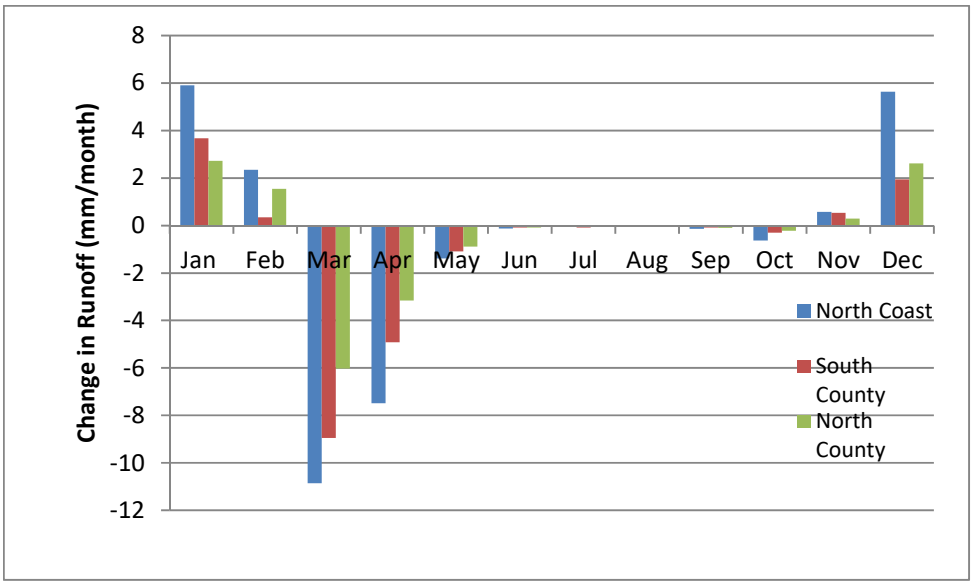


Figure 14-9: *Differences in Average Monthly Runoff*

14.5.5 Daily Climate Change Results Expressed as Degree Days and Precipitation

With daily simulation data, the resolution of change significantly increases when considering how much warmer or cooler the temperatures will be, on average, for any given day of the year. **Section 14.4.3** defines the concept of degree days, a metric of change that relates to the use of water and energy to its impact on the economy. **Table 14-4** below summarizes the projected changes in the climate's daily metrics by mid-century with increases shown in green background and decreases shown in red backgrounds. Cells with white backgrounds indicate no significant change.

Table 14-4: *Projected Changes in Daily Climate Metrics by Mid-Century (2050)*

Variable	Sub-Region	Change in Variables Projected for 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

14.5.6 Changes in Growing Degree Days

The change in GDDs occurring in the North County Sub-Region is a good illustration of the utility of GDDs as a metric. Using vineyards 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 a lower number of GDDs currently along the coast than in the North County Sub-Region.

Figure 14-10 shows plots of both the projected and past average daily temperatures and has been used to illustrate the shift in GDDs. The graph shows 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). Since these 33 days will all have an average temperature greater than the minimum temperature needed for plant growth (8 °C) and no days will have an average temperature exceeding the maximum temperature for plant growth (32 °C), the total number of growing days increases for the year.

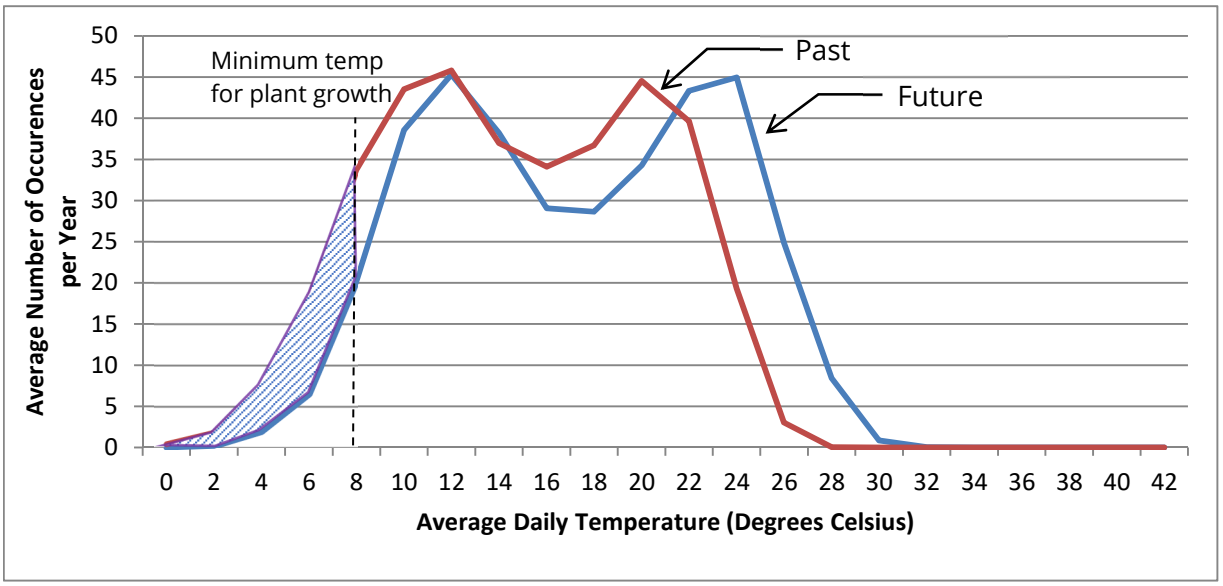


Figure 14-10: *Plot of Average Daily Temperatures*

14.5.7 Overall Sub-Region Findings for Climate Change Analysis

Table 14-5 provides additional details and general findings substantiating the results presented above for each Sub-Region.

Table 14-5: *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	Significant decreases in heating requirements (heating degree days) through all the seasons due to higher	Significant decreases in heating requirements (heating degree days) through all the seasons due to higher

Climate Variables	North Coast Sub-Region	North County Sub-Region	South County Sub-Region
	temperatures and minor increases in cooling requirements (cooling degree days) in summer and fall indicate higher energy costs in cooling building	temperatures and minor increases in cooling requirements (cooling degree days) in spring, summer and fall indicate higher energy costs in cooling buildings	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

14.6 Sea-level Rise

Changes in sea level can occur due to many factors including changes in the amount of water stored on land in the form of ice sheets and glaciers; shoreline subsidence or movement; and thermal expansion of water caused by increasing temperatures. According to an article by NOAA, the average rate of sea level rise (SLR) is currently about one-eighth of an inch per year, but this rate is projected to increase in the future. Being adjacent to the Pacific Ocean with approximately 100 miles of coastline, the SLO IRWM Region is vulnerable to SLR and has an interest in quantifying the changes in sea level that may occur in the coming years. The forecasting of SLR in the modeling community estimates the rise at different geographic scales, but there is no industry-accepted model currently in use.

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 14-6**. 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 could result in concerning on-shore impacts in the coming years.

Table 14-6 below shows SLR estimates based on the IPCC A1B scenario and several other emissions scenarios. A prevalent concern with SLR is the impact to coastal low-lying urban areas at risk of flooding during periods of coincident high tide or as a result of increased 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 14-6: *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

Scale	Emissions Scenario	Projected Rise (m)	Projected Rise (ft)	Period	Climate Model	Data Source
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

14.7 Flooding due to Climate Change and Extreme Precipitation Events

Though global climate models present uncertainty in projected changes in flooding, 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 14.5** 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 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 14-11** is used solely as a source for where to find the FEMA floodplain maps as they may change over time with climate change monitoring.

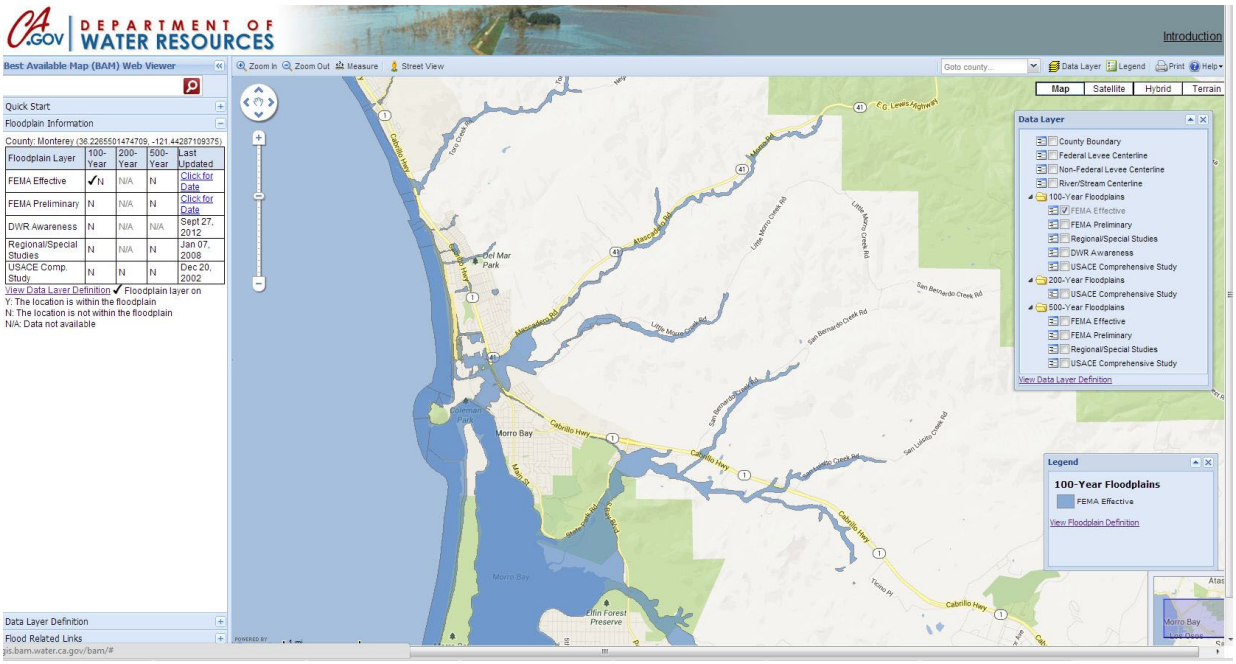


Figure 14-11: *Current FEMA 100-Year Floodplain in the Morro Bay Region*

14.8 Overview of Regional Climate Change Impacts

During the 2018 IRWMP Update, a literature review was completed in December 2017 by Water Systems Consulting, Inc. (WSC) evaluating current research on the Region's anticipated climate change effects and the corresponding water resources-related impacts. Based on the County's previous Climate Change Analysis, described above, and recent climate change literature, a list of some but not all of the notable climate change impacts relevant to water resources management is included below. The anticipated impacts are separated into seven vulnerability categories recommended in the Climate Change Handbook for Regional Water Planning. The complete literature review can be found in **Appendix J**.

Water Demand:

- Increased agricultural water demands due to reduced surface flows, reduced soil moisture, increased evapotranspiration rates, and longer growing seasons
- Increased seasonal water demand due to increased drought frequency and increased air temperatures
- Increased cooling and process water demand due to increased air and water temperatures and increased energy demands
- Decreased crop yields due to changes in growing seasons and heat patterns
- Increased difficulty meeting water curtailments due to increased drought frequency and increased water demand

Water Supply:

- Decreased groundwater recharge due to decreased precipitation and increased storm severity
- Increased water supply shortages due to decreased precipitation and increased water demands
- Increased seawater intrusion of coastal aquifers due to sea level rise
- Increased drought frequency and severity
- Decreased reliability of imported water supplies due to decreased snowmelt and increased water demands
- Increased difficulty meeting instream flow requirements due to decreased groundwater levels and precipitation

Water Quality:

- Increased eutrophication and harmful algal blooms due to increased air and water temperatures
- Decreased assimilative capacity due to declining low flows
- Increased turbidity and other contamination concerns due to increased storm severity
- Increased risk of contamination due to increased wildfire frequency
- Increased sedimentation and erosion
- Increased saltwater intrusion due to sea level rise and declining low flows

Sea Level Rise:

- Increased seawater intrusion of coastal aquifers
- Increased coastal erosion
- Increased stress on protective coastal structures
- Increased coastal flooding and storm severity

Flooding:

- Increased flooding due to increased storm severity
- Increased risk of flooding due to increased wildfire frequency
- Increased erosion and disruption of facilities due to flooding

Ecosystem and Habitats:

- Increased sedimentation and erosion causing disruption of ecosystems
- Increased saltwater intrusion of aquatic habitats
- Disruption of marine ecosystems by ocean acidification
- Increased stress on climate-sensitive species
- Increased changes in species distribution
- Increased spread of invasive species

Hydropower:

- Changes in hydropower generation due to changes in precipitation patterns
- Increased energy demand due to increased air and water temperatures

14.9 VULNERABILITY ASSESSMENT

In accordance with the 2016 IRWM Guidelines, SLO County completed a thorough climate change vulnerability assessment following the Climate Change Handbook. Using the indicator questions form Section 4.3 of the Handbook, the County identified and described the regional water resources-related vulnerabilities. RWMG members and other IRWM stakeholders provided input on the vulnerability descriptions through an online survey and the IRWM Climate Change Workshop (held January 31, 2018). See **Appendix J** for the complete Final Vulnerability Assessment approved by the RWMG in February of 2018.

The purpose of the assessment is to inform the development of a working list of prioritized vulnerabilities, which is used to inform the Plan Objectives, Resource Management Strategies, and Project Review Process. The major categories of water resources-related vulnerabilities are:

1) Water Demand
2) Water Supply
3) Water Quality
4) Sea Level Rise
5) Flooding
6) Ecosystems and Habitats
7) Hydropower

A total of 35 vulnerabilities were identified for the Region, and the complete list of prioritized vulnerabilities is in **Table 14-7**. Included below are summaries of the identified vulnerabilities separated by category. Detailed descriptions of the anticipated climate change impacts in each Sub-region are included in **Section 3**, and detailed responses to the Climate Change Handbook vulnerability indicator questions are in **Appendix J**.

14.9.1 Water Demand

The impacts of climate change on water demand will be a serious concern for San Luis Obispo County in the future. As temperatures increase and precipitation decreases, water demand is expected to increase for many of the region's most prominent industries including wineries, breweries, hospitals, energy production, hotels, education, and agriculture. Similarly, seasonal water demands are expected to increase as agriculture and tourism – two of the Region's largest industries – contribute to increased water usage over warmer, summer months for many of the Region's communities. Increases in water demand will result in growing levels of stress on water supplies, especially when water usage corresponds with periods of reduced groundwater levels. These adverse impacts have already been observed for several groundwater basins in the County that have been unable to keep up with water demand during recent drought conditions. As drought frequency and temperatures increase, meeting the water demand for critical domestic and industrial uses could become a mounting difficulty. As such, water curtailment efforts that have been previously effective could become increasingly difficult to meet and cause immense stress for communities.

14.9.2 Water Supply

Groundwater basins, surface water bodies, reservoirs, and the State Water Project are some of the major water supplies for San Luis Obispo County. These critical water supplies will not only be exposed to several harmful climate change effects, but many are also highly sensitive to anticipated effects. For example, coastal aquifers – an important water supply source for several communities in the region – are at risk of increased drought frequency leaving them increasingly sensitive to seawater intrusion, a mounting risk due to sea level rise. Across the Region, the limited storage capabilities for carryover supply surpluses will make the anticipated fluctuations in water supply increasingly stressful. Past drought conditions have already revealed vulnerabilities in regional water supplies as several communities have been forced to find additional or alternate water supplies. As drought frequency increases, precipitation decreases, and water demand increases, the impacts to the County's water supply sources will be increasingly disruptive.

14.9.3 Water Quality

Existing and previous water contamination issues in water bodies throughout the County serve as indicators of how climate change effects will make water quality a growing concern. For instance, previous heavy rain events have resulted in increased water contaminant levels in reservoirs and surface water supplies forcing communities to change their water treatment methods. As storm severity increases in the future, this water quality concern will only worsen. Some of the threats to water quality that will be exacerbated by climate change include increased sedimentation and erosion, increased eutrophication, more concentrated instances of runoff, and decreased assimilative capacity. This threaten not only consumptive water uses but also the health of aquatic ecosystems and species and economies and recreation reliant on water bodies.

14.9.4 Sea Level Rise

Tidal gauges along the County's coastline with historic and current data indicate that sea levels are rising in this area. This poses a series of threats to vital coastal communities, infrastructure, and ecosystems. Coastal erosion has already forced some communities to add coastline armoring, and as sea levels rise erosion is expected to worsen. Due to sea level rise, increased flooding and storm severity are also anticipated and will threaten low-lying habitats and communities. Many areas including Oceano, Pismo Beach, and Los Osos already experience flooding during high tides and storms events indicating the severity of this growing threat. Finally, sea level rise will increase the threat of seawater intrusion for critical coastal aquifers, which could compromise the water supply for coastal communities.

14.9.5 Flooding

San Luis Obispo County is at a high risk of increased flooding in the future. Changes in precipitation patterns, sea level rise, and increased wildfire risk all contribute to growing flood concerns for the Region. As a result, flood protection and control infrastructure will be critical moving forward. However, much of the critical flood protection infrastructure, such as the Arroyo Grande Creek Channel Levee and the City of San Luis Obispo's creek corridors, are aging and in need of updates or repairs. This makes communities increasingly vulnerable to flood risks. Similarly, communities across the County currently have insufficient flood control facilities highlighting the hazard of increased flooding for the Region.

14.9.6 Ecosystems and Habitats

A myriad of anticipated climate change effects threatens the wellbeing of species and aquatic habitats in the County. Many of the Region's species and ecosystems are sensitive to even small changes in habitat conditions, and anticipated climate change effects including increased air and water temperature, decreased precipitation, increased sedimentation, and decreased fog could all have serious detrimental impacts. Home to numerous threatened and endangered species and recognized Critical Habitat Areas, San Luis Obispo County is highly reliant on its natural biodiversity and aquatic ecosystems for economic and recreational uses. This leaves the Region vulnerable to disruptions of these natural systems, which could be devastating to important industries like tourism, fishing, and oyster harvesting as well as customs and lifestyles of local communities.

14.9.7 Hydropower

Currently, San Luis Obispo County does not obtain energy from hydropower sources. As such, the impacts of anticipated climate change effects on hydropower generation are not a concern for the Region. However, the City of San Luis Obispo is exploring future options for conduit hydropower generation.

14.9.8 Housing and Development

During the Region's Climate Change workshop on January 31st, 2018, RWMG members and Interested Stakeholders discussed the possible inclusion of a "Housing and Development" vulnerability to the assessment. Ultimately, the decision at the workshop, and later confirmed by the RWMG at their regular meeting on February 7th, 2018, was to include a narrative discussion of how housing and development is affected by the prioritized vulnerabilities throughout the Region.

The RWMG identified 5 vulnerabilities that directly relate to Housing and Development:

- Water Demand 1: Water-dependent Industries

- Water Demand 4: Drought-sensitive groundwater basins
- Water Demand 5: Communities with water curtailment efforts
- Water Supply 2: Water supply from coastal aquifers
- Water Supply 3: Inability to store carryover supply surpluses

Climate change, as documented in this section, can dramatically affect the ability of incorporated and unincorporated communities to realize projected growth, even if growth is recognized and accounted for in a general plan. The most recent drought (2012-2017) brought many restrictions to water use Region-wide. Water curtailment requirements (vulnerability WD-5) were enacted at both the State and local government level. State Water Project allocations were reduced thereby increasing local dependence on groundwater. This increased reliance on groundwater caused areas of the Region to experience a moratorium on well drilling permits (WD-4). Additionally, coastal communities severely restricted landscape use (WS-2) and purveyors across the Region stopped issuing permits for construction water (WD-1).

Looking ahead, the San Luis Obispo Counsel of Governments (SLOCOG) is projecting a population growth between 10% (low estimate) and 33% (high estimate) for the Region by the year 2050. To realize this, the Region will need to continue to address these Water Supply and Water Demand vulnerabilities related to climate change. For more information, see the SLOCOG's Regional Growth Forecast.

14.10 Vulnerability Prioritization

RWMG members and other IRWM stakeholders were able to participate in the prioritization of the 35 regional vulnerabilities by completing an online survey or attending the IRWM Climate Change Workshop (held January 31, 2018). Based on stakeholder input, the vulnerabilities were separated into four priority categories: very high, high, medium, and low. These prioritizations were determined using three characteristics evaluated in the online survey and discussed at the Workshop.

The characteristics used to inform the vulnerability prioritization are:

1) **Exposure** – the extent to which a resource, asset, or system could be subject to the effects of climate change
2) **Sensitivity** – the degree to which a resource, asset, or system would be impacted by the effects of climate change
3) **Likelihood** – the probability that a resource, asset, or system would be impacted by the effects of climate change *due to* lack of adaptive capacity

Results from the online survey and workshop worksheets as well as detailed information on how the priorities were determined are included in **Appendix J**. The RWMG's final list of prioritized vulnerabilities is shown in **Table 14-7**below.

Table 14-7: *Climate Change Vulnerability Prioritization*

Vulnerability	Priority
Water Demand	
Drought-sensitive groundwater basins	Very High
Insufficient instream flows	Very High
Water-dependent industries	High
Climate-sensitive crops	Medium
Communities with water curtailment efforts	Medium
Seasonal water demand	Medium
Water Supply	
Drought-sensitive water systems	Very High
Water supply from coastal aquifers	Very High
Inability to store carryover supply surpluses	High
Invasive species management issues	Medium
Water supply from snowmelt	Low
Water Quality	
Declining seasonal low flows	Very High
Water bodies impacted by eutrophication	High
Water bodies in areas at risk of wildfires	High
Water quality impacted by rain events	High
Water bodies with restricted beneficial uses	Medium
Sea Level Rise	
Coastal erosion	Medium
Coastal infrastructure in low-lying areas	Medium
Flooding due to high tides and storm surges	Medium
Low-lying coastal habitats	Medium
Rising sea levels	Medium
Coastal land subsidence	Low
Coastal structures	Low
Flooding	
Increased flood risk due to wildfires	Very High
Aging flood protection infrastructure	High
Insufficient flood control facilities	High
Ecosystem and Habitat	
Changes in species distributions	High
Environmental flow requirements	High
Estuarine habitats dependent on freshwater flow patterns	High
Aquatic habitats at risk of erosion and sedimentation	Medium
Climate-sensitive fauna and flora	Medium
Fragmented aquatic habitats	Medium
Aquatic habitats used for economic activities & recreation	Low
Exposed coastal ecosystems	Low
Hydropower	
Future hydropower plans	Low

14.10.1 RWMG Feasibility

Once the prioritized list of vulnerabilities was confirmed, **Table 14-8** was constructed to evaluate the feasibility of the SLO RWMG to address its very high and high priority vulnerabilities.

Table 14-8: *RWMG Feasibility to Address Climate Change Vulnerabilities*

Vulnerability	Priority	Limitations of RWMG
Aging flood protection infrastructure	High	Addressing this vulnerability will require overcoming large financial and permitting barriers, which is possible for the RWMG and its members but will not be easy.
Changes in species distributions	High	Limitations in available knowledge and uncertainty of climate change impacts will impede the feasibility of the RWMG to appropriately manage changes in species distribution. Regulatory alignment will also be a challenging aspect of addressing this vulnerability.
Declining seasonal low flows	Very High	The RWMG's lack of regulatory power and limited ability to influence human behavior both create barriers to combating the declining seasonal low flows threatening waterways and ecosystems in the area.
Drought-sensitive groundwater basins	Very High	The RWMG's lack of regulatory power could be a significant barrier to addressing the region's vulnerability to drought-sensitive basins. Another challenge will be getting various agencies and communities that depend on the same basin to collaborate and coordinate efforts.
Drought-sensitive water systems	Very High	The RWMG has little ability to change domestic water usage beyond the ability of certain member agencies to implement water usage restrictions within their jurisdictions. Further, securing additional water supplies requires the availability of such supplies as well as the financial resources and regulatory permission to obtain those supplies.
Environmental flow requirements	High	The RWMG's lack of regulatory power and limited ability to influence human behavior both create barriers to ensuring environmental water demands are met. Access to tools and information needed for accurate modeling could also become issues.
Estuarine habitats dependent on freshwater flow patterns	High	Lack of regulatory power and limitations in data and information availability will restrict the RWMG's feasibility to properly manage estuarine habitats in the face of climate change impacts.

Vulnerability	Priority	Limitations of RWMG
Inability to store carryover supply surpluses	High	Regulatory alignment and cooperation between agencies will be critical for increasing the region's ability to store carryover supply surpluses; however, the RWMG is limited in its ability to ensure either.
Increased flood risk due to wildfires	Very High	Lack of control over regulations and environmental conditions greatly limits the RWMG's ability to prevent wildfires. Instead, the RWMG's major tools to address this vulnerability are educating the community on the risks of flooding related to wildfires and promoting emergency response procedures are established.
Insufficient flood control facilities	High	Addressing this vulnerability will require overcoming large financial and permitting barriers, which is possible for the RWMG and its members but will not be easy.
Insufficient instream flows	Very High	Combating the regional vulnerability to insufficient instream flows will be inhibited by the RWMG's lack of regulatory power. Maintaining sufficient streamflows will require interagency collaboration and regulatory alignment.
Water bodies impacted by eutrophication	High	Lack of regulatory power will inhibit the RWMG's feasibility to reduce eutrophication, but they can promote public education on the contributing factors.
Water bodies in areas at risk of wildfires	High	Lack of control over regulations and environmental conditions greatly limits the RWMG's ability to prevent wildfires. Instead, the primary way in which the RWMG can address this vulnerability is by ensuring emergency response procedures and resources are in place to react swiftly to minimize spread and damage.
Water quality impacted by rain events	High	Limitations on the RWMG's regulatory power reduce the group's capacity to address this vulnerability. Although, improved stormwater resource management will be promoted by through the regional Stormwater Resource Plan.
Water supply from coastal aquifers	Very High	The ability to reduce dependence on coastal aquifers through the acquisition of additional water supplies is limited by the availability of such supplies as well as the financial and political requirements of obtaining those supplies. The RWMG's limited political power and access to grant funding will pose challenges to addressing this issue.
Water-dependent industries	High	Technological limitations could impede the region's ability to address the vulnerability of water-dependent industries to the effects of climate change. Human perception and understanding of the risks posed by climate change could also prove to be barriers to adaptation, which the RWMG can only combat to a certain extent.

14.11 Adaptation and Mitigation Strategies

Incorporating climate change vulnerabilities into the IRWM Plan Objectives, Resource Management Strategies, and Performance Metrics provides the necessary assurances to address adaption strategies and methods of mitigating climate change. The SLO RWMG decided the Plan Objectives should be reviewed to ensure all six "very high" priority climate change vulnerabilities were addressed. An evaluation completed by WSC determined that the existing Plan Objectives sufficiently captured the need to address the region's "very high" priority vulnerabilities; see **Appendix J** for the full memorandum from WSC. **Table 14-9** shows the matrix demonstrating the relationship between the Plan Objectives and six vulnerabilities. **Table 14-10**, evaluates how the Plan Objectives address five requirements related to climate change as specified in the 2016 IRWM Grant Program Guidelines. Specifically, this review ensured the Plan Objectives addressed the region's need to adapt to changes in runoff and recharge as well as sea level rise.

Similar to the Plan Objectives, a matrix was constructed to verify that the Plan's Resource Management Strategies include appropriate adaptation strategies. The relationship between the seven categories of vulnerabilities and the CWP RMS is shown in **Table 14-11** below. This table reveals how the RMS incorporate adaptation strategies relevant to the San Luis Obispo Region. A second table, **Table 14-12**, demonstrates the relationship between the RMS and three primary climate change mitigation methods. Together these tables illustrate the variety of methods, which can be exercised to address water-related climate change vulnerabilities.

Additionally, the Project Review Process includes consideration of both climate change mitigation and adaptation. This is discussed in **Section 14.13** below.

Table 14-9: *Plan Objectives Related to Very High Vulnerabilities*

IRWM Plan Objectives	Very High Priority Vulnerabilities	Drought-sensitive groundwater basins	Insufficient instream flows	Water supply from coastal aquifers	Drought-sensitive water systems	Declining seasonal low flows	Increased flood risk due to wildfires
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	●	●	●	●	●	
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	●	●	●	●	●	●

***Table 14-10**: Plan Objectives Related to Climate Change Requirements*

IRWM Plan Objectives	Adaptations & Mitigation Requirements	Adapting to changes in runoff and recharge	Consider the effects of sea level rise on water supply conditions	Reduce energy consumption	Strategies of CARB Scoping Plan	Options for carbon sequestration and renewable energy
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	●	●			
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	●		●	●	

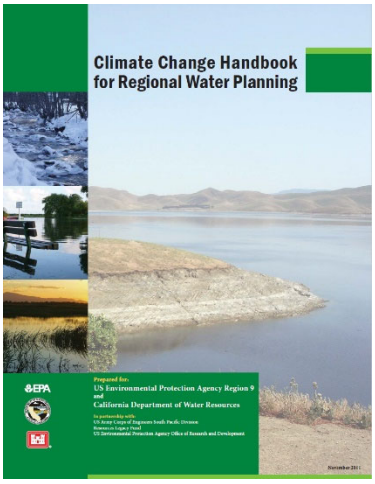
Table 14-11: *Resource Management Strategies Related to Climate Change Vulnerabilities*

Resource Management Strategies	Water Demand	Water Supply	Water Quality	Sea Level Rise	Flooding	Ecosys-tem and Habitat	Hydro-power
California Water Plan 2009 RMS							
Agricultural lands stewardship	●		●		●	●	
Agricultural water use efficiency	●	●				●	
Conjunctive management and groundwater storage	●	●	●	●			
Conveyance – Delta		●					
Conveyance – Regional/Local	●	●					
Crop idling for water transfers	●	●	●				
Desalination		●		●			
Drinking water treatment and distribution	●	●	●	●		●	
Economic incentives	●	●				●	
Ecosystem restoration			●	●	●	●	
Forest management		●	●		●	●	
Groundwater remediation/aquifer remediation		●	●	●			
Improve flood management				●	●	●	
Irrigated land retirement		●	●				
Land use planning and management	●		●	●	●	●	
Matching water quality to use			●	●	●	●	
Pollution prevention		●	●		●	●	
Precipitation enhancement		●					
Recharge area protection		●	●		●		
Recycle municipal water		●					
Salt and salinity management			●	●		●	
Surface storage – CALFED/State	●	●					
Surface storage – Regional/Local	●	●					
System reoperation	●	●	●	●	●	●	●
Urban stormwater runoff management		●	●		●	●	
Urban water use efficiency	●	●				●	
Water transfers		●					
~~Water transfers~~		●					
Water-dependent recreation		●	●		●	●	
Watershed management	●	●	●	●	●	●	
California Water Plan 2013 Update RMS							
Outreach and engagement	●		●			●	●
Sediment management		●	●	●	●	●	
Water and culture	●		●			●	

Table 14-12: *Resource Management Strategies Related to Mitigation Strategies*

Resource Management Strategies	Energy Efficiency	Emissions Reduction	Carbon Sequestration
California Water Plan 2009 RMS			
Agricultural lands stewardship	●	●	●
Agricultural water use efficiency	●	●	
Conjunctive management and groundwater storage			
Conveyance – Delta	●	●	
Conveyance – Regional/Local	●	●	
Crop idling for water transfers		●	
Desalination			
Drinking water treatment and distribution	●	●	●
Drinking water treatment and distribution	●	●	●
Economic incentives	●	●	●
Ecosystem restoration			●
Forest management			●
Groundwater remediation/aquifer remediation			
Improve flood management			●
Irrigated land retirement			
Land use planning and management	●	●	●
Matching water quality to use	●		●
Pollution prevention		●	●
Precipitation enhancement		●	
Recharge area protection			●
Recycle municipal water	●	●	
Salt and salinity management		●	
Surface storage – CALFED/State		●	
Surface storage – Regional/Local		●	
System reoperation	●	●	
Urban stormwater runoff management	●	●	
Urban water use efficiency	●	●	
Water transfers	●	●	
~~Water transfers~~			
Water-dependent recreation		●	
Watershed management	●	●	●
California Water Plan 2013 Update RMS			
Outreach and engagement		●	
Sediment management		●	●
Water and culture	●	●	●

14.12 Future Data Gathering and Analysis



Chapter 5 of the State Climate Change Handbook, "Measuring Regional Impacts", DWR provides a methodology for data gathering and analysis to monitor climate change and assess its impacts through the IRWM Planning process. Quantifying climate change variables is critical for quantifying performance metrics and preventing undesirable climate change impacts. This section is a very brief summary highlighting 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. This process of making projections and constant monitoring will continue in perpetuity. Modeling and monitoring work hand-in-hand to continuously define better models that determine 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

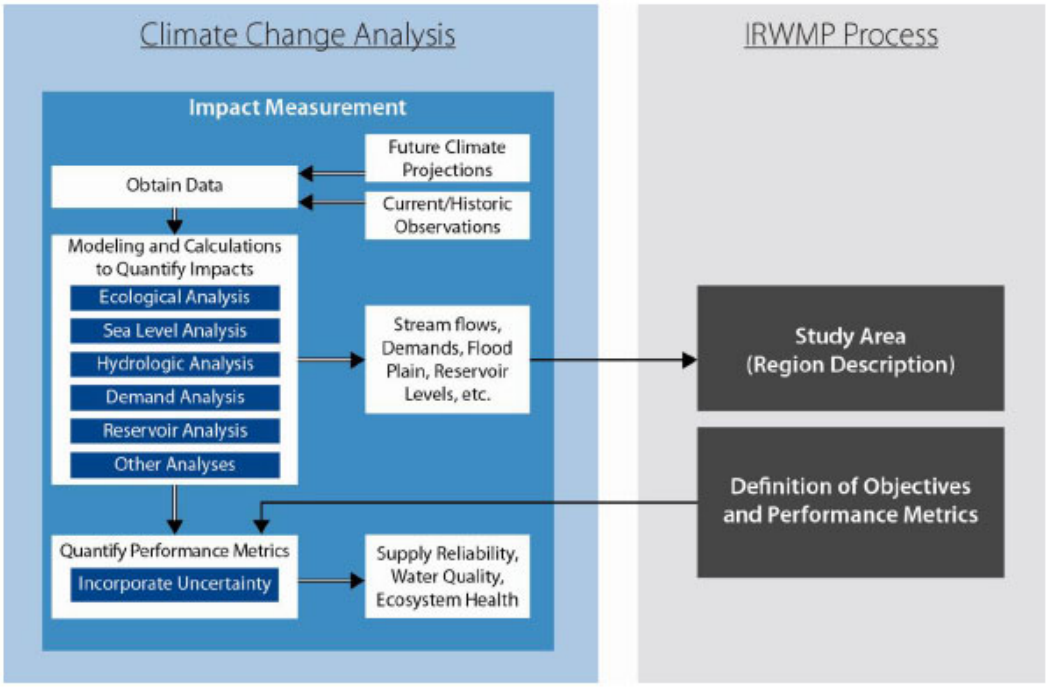


Figure 14-12: *Climate Change Data and IRWM*

14.12.1 Water Demands

Obtaining data for water demands (or demand analysis) is shown in **Figure 14-12** 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 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 9 – 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 14.5**. 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.

14.12.2 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 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.

14.12.3 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*." 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.

14.12.4 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 **Section 14.12.3**. 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.

14.12.5 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.

14.12.6 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") 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.

14.12.7 Annual Climate Change Update

The SLO RWMG plans to hold an annual climate change meeting to review new information and tools pertinent to the region's efforts aimed at addressing climate change vulnerabilities. During this meeting, relevant data gathering efforts will be discussed and the IRWM's priority vulnerabilities will be reviewed considering current efforts and information. This measure will ensure the RWMG's efforts related to climate change remain well-informed and appropriate for the region.

14.13 Project Ratings based on Climate Change

The projects listed in **Table 6-3** of **Section 6 – Project Review Process** were individually evaluated and rated based on 14 evaluation criteria. Listed below are the two evaluation criteria used to assess how the projects address climate change:

1) Potential of adaptation to the anticipated effects of climate change in the region
2) Potential of mitigating undesirable climate change impacts by reducing net greenhouse gas emissions

14.13.1 Adaptation Analysis

The potential for each project to contribute to climate change adaptation was evaluated based on its ability to address the region's prioritized vulnerabilities. See the prioritized vulnerabilities listed in **Table 14-8:** RWMG Feasibility to Address Climate Change Vulnerabilities**.** For the implementation project list scoring, each project could receive up to six points for climate change adaptation. The number of vulnerabilities addressed or alleviated by the project as well as the priority of those vulnerabilities determined the point value assigned to the project for the climate change adaptation criterion. In addition to addressing the 35 vulnerabilities, projects can also receive points for addressing changes in runoff and recharge and for addressing the impacts of sea level rise. Please see **Section 6 – Project Review Process** for more details on project scoring.

14.13.2 Mitigation Analysis

Projects scored for the implementation project list could receive a total of three points for climate change mitigation. Three considerations, each worth one point, were used to assess a project's mitigation potential:

1) Does the selected project reduce GHG emissions compared to other project alternatives?
2) Does the project qualitatively reduce energy consumption, especially energy embedded in water?
3) When evaluating the project-related GHG emissions on a 20-year planning horizon, does the project reduce GHG emissions?

A detailed description of the scoring process can be found in **Section 6.**

14.14 References

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