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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 Database](http://water.usgs.gov/ogw/data.html)<http://water.usgs.gov/ogw/data.html>
 - Provides raw data sets for groundwater levels, aquifers, water use, groundwater quality, local groundwater data, and other sources of water
- ✓ 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
- ✓ [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 can be 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, California](#)<http://www.slocounty.ca.gov/Assets/PL/Draft+EIR+Notice+of+Availability/2008/Santa+Margarita+Ranch+-+Comments+due+03-28-08.pdf>
 - Provides a characterization of an Ag-Res development project and describes environmental considerations
 - Report is an update to an initial EIR and address water and wastewater impacts from the Ag-Res private septic and well systems
 - Includes vineyards and associated water demands as part of the development plan
- ✓ [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](#). Luhdorff & 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 Documents](#)<http://www.grover.org/index.aspx?NID=215>
 - A website providing various source documents on water and wastewater in the community of City of Grover
- ✓ [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 7 th Annual Report & 9 th 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.

Relevance of Technical Documents to IRWM Goals

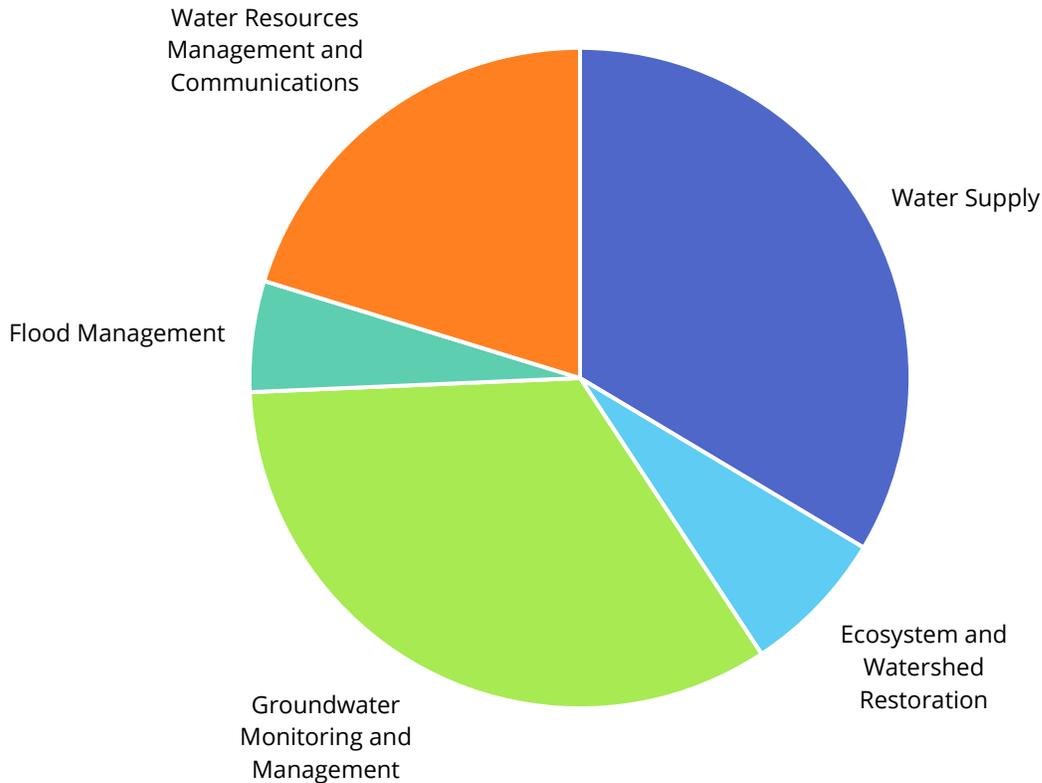


Figure 11-1: Technical Document Breakdown by IRWM Goal

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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