APPENDIX 3-1: PAJARO RIVER WATERSHED INTEGRATED REGIONAL WATER MANAGEMENT PLAN

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Pajaro River Watershed Integrated Regional Water Management Plan

August 2014

PAJARO RIVER
watershed
Integrated Regional Water Management

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1 Governance

This chapter meets the following IRWMP Standard from the 2012 Integrated Regional Water Management Grant Program Guidelines (DWR, 2012).

> The IRWM Plan must document a governance structure that ensures the IRWM Plan will be updated and implemented beyond existing State grant Programs. The IRWM Plan must include:
>
> - The name [and description] of the RWMG responsible for development and implementation of the Plan…and how the makeup of the RWMG meets CWC §10539 and is sufficient of membership and participation to develop and implement the IRWM Plan.
> - The RWMG and individual project proponents who adopted the Plan
> - A description of the IRWM governance structure
> - A description of how the chosen form of governance addresses and ensures [outreach and involvement, decision making, access to the IRWM process, communication, Plan implementation, coordination with neighboring IRWM efforts and State and federal agencies, collaborative processes, how changes to the IRWM Plan will be performed, and updating or amending the IRWM Plan].

1.1 Background

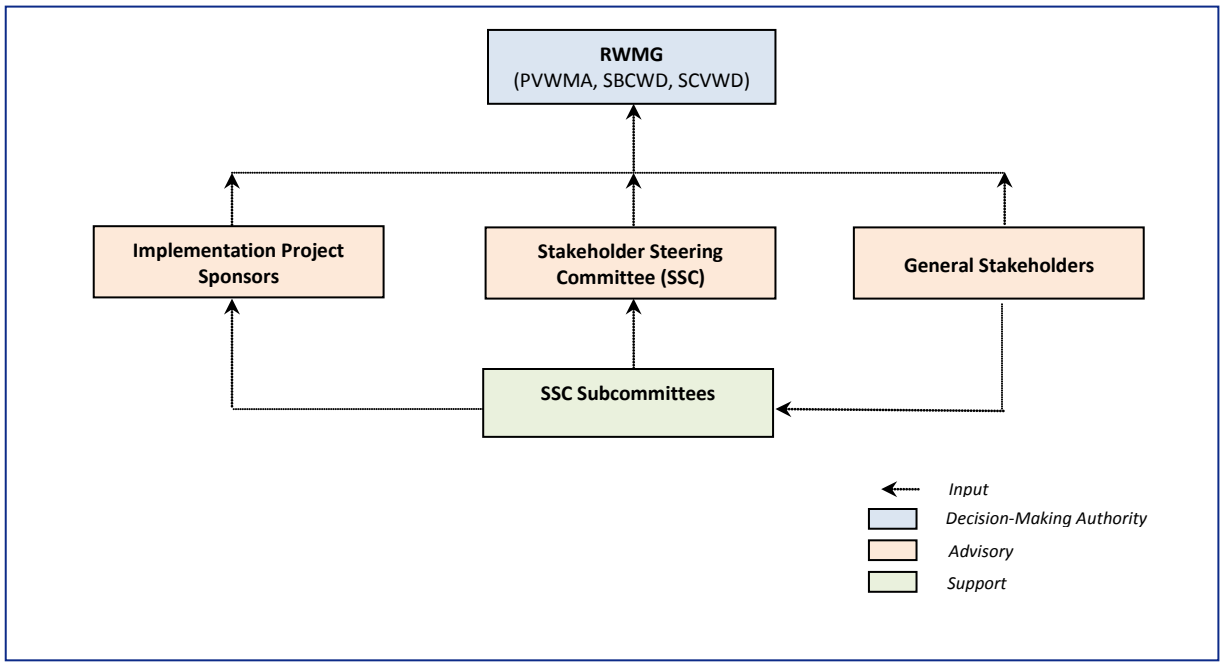
In October 2004, Pajaro Valley Water Management Agency (PVWMA), San Benito County Water District (SBCWD), and Santa Clara Valley Water District (SCVWD) entered into a Memorandum of Understanding (MOU) for the purpose of coordinating water resources planning and implementation activities watershed-wide (see Appendix A). The three agencies, collectively known as the Pajaro River Watershed Collaborative (Collaborative), led the development and implementation of the 2007 Pajaro River Watershed Integrated Regional Water Management (IRWM) Plan. The Collaborative was recognized as the Regional Water Management Group (RWMG) for the Pajaro River Watershed IRWM effort during the California Department of Water Resources' (DWR's) Plan Review Process in 2009. As part of their RWMG role, the Collaborative has met and will continue to meet regularly in order to formulate and carry out the mission, goals, objectives, and strategies of the IRWM Plan and to solicit and encourage participation from other agencies and stakeholders in the watershed. The on-going nature of the IRWM process and stakeholder collaboration will facilitate conflict identification and resolution of issues within the watershed. The collaborative approach will also provide a forum for identifying and evaluating water supply, water quality, groundwater and surface water management, ecosystem restoration, flood management, and other watershed issues.

1.2 Governance Structure

This chapter describes the Regional Water Management Group, Stakeholder Steering Committee, Implementation Project Sponsors, and Pajaro River Watershed stakeholders, which together provide sufficient breadth of membership and participation to develop and implement the Pajaro River Watershed IRWM Plan.

The Pajaro River Watershed IRWM Program decision-making authority consists of the RWMG, which solicits input from 3 advisory entities - a Stakeholder Steering Committee (SSC) and its associated subcommittees, the Implementation Project Sponsors, and general stakeholders. The governance structure is illustrated in Figure 1-1. Specific roles and responsibilities are described in subsequent sections.

Figure 1-1: Organizational Structure



1.2.1 Regional Water Management Group

The Pajaro River Watershed RWMG consists of PVWMA, SBCWD, and SCVWD. The RWMG relies on input and participation from a broad range of stakeholders in IRWM Plan development and implementation. Through this collaborative approach with stakeholders, especially collaboration with the SSC on planning matters and with implementation project sponsors on implementation matters, the RWMG is able to lead an IRWM program that has addressed many of the critical issues in the watershed. The RWMG responsibilities include:

1. Providing information on the State IRWM program requirements and opportunities.
    a. Participating in State led workshops regarding IRWM planning standards and requirements;
    b. Participating in the IRWM Roundtable of Regions regarding IRWM planning approaches and recommendations; and
    c. Conveying the information from these coordination efforts to the SSC for their consideration and use when supporting the Pajaro River Watershed IRWM planning.
2. Updating the IRWM Plan.
    a. Managing the IRWM planning grant;
    b. Securing and managing the IRWM consultant agreement;
    c. Leading the development and distribution of plan chapters for SSC and public review; and
    d. Leading the development and supporting the adoption of the IRWM Plan Update by SSC and other agencies and organizations.

3. Conducting public workshops and other outreach activities related to the IRWM program.
    a. Scheduling and publicizing public workshops and other outreach activities as needed to solicit public participation in the IRWM program;
    b. Preparing public workshop and outreach materials to support public participation in the IRWM program; and
    c. Coordinating outreach activities and workshops with the SSC.
4. Coordinating with other IRWM regions in the Central Coast Funding Area.
    a. Participating in Central Coast Funding Area coordination activities;
    b. Soliciting support from the SSC members that also participate in other IRWM regions, when appropriate; and
    c. Conveying the information from these coordination efforts to the SSC for their consideration and use when supporting the Pajaro River Watershed IRWM planning.
5. Leading the IRWM Plan implementation in collaboration with other agencies and organizations.
    a. Collaborating with the SSC to monitor regional conditions and project implementation to identify potential IRWM plan modification or update needs;
    b. Facilitating the coordination of agencies and organizations when integrated or regional project opportunities exist;
    c. Coordinating and submitting grant applications; and communicating with SSC and other stakeholders regarding funding opportunities for plan implementation.

The RWMG uses a consensus-based approach to make all IRWM decisions. The RWMG incorporates the SSC, Project Sponsor, and general stakeholder advice and recommendations into the IRWM program to the maximum extent possible. If the RWMG is unable to incorporate SSC and other stakeholders' advice and recommendations, the RWMG provides an explanation to the SCC and the RWMG's policy-makers.

The RWMG supports the SSC in helping to identify a SSC chairperson, identifying facilitation needs, developing the SSC decision-making process, establishing ground rules, determining the SSC meeting frequency, and maintaining meeting records.

Legal actions such as contracting and submitting grant funding applications are carried out by individual RWMG members on behalf of the RWMG, and cost sharing agreements are developed on a case-by-case basis as necessary. Costs associated with administrative functions of the RWMG, IRWM Plan development, and Plan implementation are covered in a variety of ways, including grants, multi-agency contributions, funds from individual project proponents, and in-kind contributions of staff time from the participating entities.

The RWMG members and their responsibilities for water resources management are described below.

1.2.1.1 Pajaro Valley Water Management Agency

PVWMA is a state-chartered special purpose district formed under State Law pursuant to the Pajaro Valley Water Management Agency Act. PVWMA was formed to efficiently and economically manage existing and supplemental water supplies in order to prevent further increase in, and to accomplish continuing reduction of, long-term overdraft and to provide and ensure sufficient water supplies for present and anticipated needs within its boundaries. PVWMA has the authority to adopt ordinances for

the purpose of conserving local groundwater supplies that all public and private water purveyors within the Agency's boundaries must adhere to. The PVWMA service area is comprised of portions of three counties, which are Santa Cruz, Monterey, and San Benito Counties. PVWMA is a Central Valley Project (CVP) contractor and has assigned delivery capacity from the San Felipe Division facilities, though PVWMA plans to connect to the San Felipe Division have been postponed indefinitely.

1.2.1.2 San Benito County Water District

SBCWD is a special purpose district formed under State Law pursuant to the San Benito County Water District Act. As a water conservation and flood control district, the SBCWD mission is to preserve the economic and environmental health and well-being of San Benito County through the control, management and conservation of waters and the provision of water services in a practical, cost-effective and responsible manner. The SBCWD is a CVP contractor and receives water from the San Felipe Division facilities through the Pacheco and Hollister Conduits. SBCWD is also a member of the Pajaro River Flood Prevention Authority.

1.2.1.3 Santa Clara Valley Water District

SCVWD is a special purpose district formed under State Law pursuant to the Santa Clara Valley Water District Act. SCVWD provides wholesale water supply, stream and watershed stewardship, and flood protection for Santa Clara County. In addition, SCVWD manages the County's groundwater subbasins. The mission of the SCVWD is a healthy, safe, and enhanced quality of living in Santa Clara County through watershed stewardship and comprehensive management of water resources in a practical, cost-effective, and environmentally-sensitive manner. SCVWD is a CVP and State Water Project (SWP) contractor and receives water from the San Felipe Division facilities through the Pacheco and Santa Clara Conduits. SCVWD is also a member of the Pajaro River Flood Prevention Authority.

1.2.2 Stakeholder Steering Committee

Since formally launching the Pajaro River Watershed IRWM Plan effort in early 2005, the RWMG has been proactive and focused on ensuring stakeholders are aware of, informed about, and participating in IRWM planning and implementation. This included formation of a Stakeholder Steering Committee (SSC) in 2005. This committee provided a forum for on-going discussion and stakeholder input, and provided review and stakeholder oversight throughout the initial IRWM Plan development process.

The SSC has historically been responsive and reactive to changing regional needs, requirements and conditions, which demonstrates the active adaptive management of the Plan. In 2009, for example, the SSC was convened to address continued IRWM planning and implementation tasks including:

- Review stakeholder engagement plan,
- Review approach and schedule for responding to new Proposition 84 IRWM guidelines,
- Provide input on the level of interest in applying for implementation grants,
- Provide input on the planning grant application, and
- Continue soliciting implementation projects.

In 2011, the Pajaro River Watershed IRWM Region was awarded a planning grant. The planning grant work plan included a task to formalize the SSC. Therefore, the RWMG went through a planning process to formalize communications and develop better and more strategic approach to identify and enjoin stakeholders in the IRWM process. As a result, a new SSC was established.

The new SSC represents the interests necessary to address the objectives and resource management strategies of the Pajaro River Watershed IRWM Plan in both the upper and lower watershed. Furthermore, consistent with California Water Code Section 10541(g), the SSC is designed to provide a balance of water management interests and geography. The RWMG invited interested watershed stakeholders to participate in the SSC and reviewed the list of interested participants to ensure adequate representation and identify potential gaps in coverage, either in resource area or geography. As gaps were identified, additional participants were solicited to ensure balanced representation in the SSC. The SSC membership list is in Table 1-1.

Table 1-1: Stakeholder Steering Committee

Committee Member	Organization	Upper Watershed	Lower Watershed
Lynn Overtree Stewardship Manager	Land Trust of Santa Cruz County		●
Matt Freeman Assistance General Manager	Santa Clara County Open Space Authority	●	
Jennifer Scheer Executive Director	Santa Clara County Farm Bureau	●	
Chris CoburnExecutive Director	Resource Conservation District of Santa Cruz County		●
Susan Meyer Executive Director	Loma Prieta Resource Conservation District	●	
Don Ridenhour General Manager	Sunnyslope County Water District	●	
Ray Creech General Manager	Tres Pinos Water District	●	
Vicki Morris General Manager	Aromas Water District	●	●
Bruce Laclergue Flood Control Program Manager	County of Santa Cruz		●
John Ricker Water Resources Division Director	County of Santa Cruz		●
Robert Ketley Senior Utilities Engineer	City of Watsonville		●
Matt Keeling	Central Coast Regional Water Quality Control Board	●	●
Jim Keller	Amah Mutsun Tribal Band	●	●
Kenn Reiller	Sierra Club, Ventana Chapter	●	●
Marlene Freeland	Bolado Park Golf Course	●	

The SSC, as described above, provides advice from diverse perspectives to the RWMG. The purpose of the SSC is to reflect the concerns and issues of various stakeholders and the general public, serve as a link to the community, serve as a "sounding board" for the Partners, and comment on IRWMP documents. The Partners will work with the SSC to ensure that SSC and public concerns and ideas are understood and considered in Partner decisions.

The SSC comprises 15 members, designed to provide a balance of water management interests and geography. The ability of the SSC to be effectual relies on the roles, responsibilities and communication among the SSC and with the RWMG. The role of the SSC is to serve as an advisory body in reviewing and providing recommendations on work items completed by RWMG staff and consultants as well as to:

1. Assist with ongoing Public Participation in the IRWM Program.
    a. Assist in receiving public input;
    b. Coordinate with other entities for areas of represented expertise;
    c. Encourage outreach/educational activities to promote the IRWM program within agencies and constituencies (i.e., website recognition, events); and
    d. Assist in outreach to disadvantaged communities (DACs) within agencies and constituencies.
2. Provide input on the project prioritization process and criteria.
    a. Provide input on the planning goals and objectives;
    b. Provide input on project screening criteria to measure a project's benefit in meeting the planning goals and objectives; and
    c. Provide input on the weighting of the criteria that emphasizes the region's priorities.
3. Assist in Preparation and Submittal of Final IRWM Plan Update (2014).
    a. Provide recommendations on chapters of Draft IRWM Plan;
    b. Assist in the development of Resolutions of Support; and
    c. Provide SSC recommendation to RWMG policymakers on IRWM Plan adoption.
4. Review and Provide Recommendations on Proposition 84 Grant Applications.
    a. Assist in coordinating and consolidating implementation projects;
    b. Provide input on criteria for selecting recommended implementation projects based on the Proposal Solicitation Package funding priorities; and
    c. Provide SSC recommendation to RWMG policymakers on grant applications.
5. Coordinate with Adjacent Planning Regions.
    a. Assist in coordinating with adjacent planning regions; and
    b. Review and recommend on a process for selecting cross-regional projects with adjacent planning regions.

SSC membership expectations include:

- Attending SSC meetings regularly;
- Articulating their interests, concerns and perspectives on the issues being addressed;
- Maintaining an open mind regarding other views;
- Focusing on the "big picture" of the IRWM Plan; and
- Constructively managing conflict between SSC members.

The SSC may also form subcommittees to address major programs in the Pajaro IRWM Plan, such as water supply, salt management, agricultural water quality, and Pajaro River flood protection. The role of the subcommittees is to further evaluate the projects within their respective programs, make program recommendations and lead implementation efforts for the projects included in their recommendations. The potential responsibilities of the subcommittees include:

- Outline program implementation schedule
- Develop program financing plan
- Lead project implementation efforts
- Develop project evaluation processes including degree of benefit assessment
- Enhance project definitions in terms of regional program objectives
- Define the subcommittee's stakeholder involvement process (including disadvantaged communities) and actively engage their stakeholders, as the subcommittees serve as the primary means of stakeholder participation

The SSC members will also help provide a link with other major stakeholder engagement efforts in the region, including flood protection on the Pajaro River, groundwater charges in the Pajaro Valley, water supply reliability, and water quality management throughout the region. The RWMG will monitor SSC participation and, if needed, recommend changes to the membership to ensure the committee continues to represent the interests necessary to address the objectives and resource management strategies of the Pajaro River Watershed IRWM Plan and effort.

1.2.3 Implementation Project Sponsors

Implementation Project Sponsors are those agencies and organizations that are implementing plans or projects in the IRWM Plan and have usually received planning or implementation funding for those projects through grants. The current list of Implementation Project Sponsors includes the following agencies:

- Pajaro Valley Water Management Agency
- City of Watsonville
- Santa Cruz County
- Monterey County Water Resources Agency
- Pajaro River Watershed Flood Prevention Authority
- The Nature Conservancy

- Resource Conservation District of Santa Cruz County
- San Benito County Water District
- Santa Clara Valley Water District
- Pajaro Sunny Mesa Community Services District

The Implementation Project Sponsors will be responsible for stakeholder outreach and engagement on their specific projects, providing the RWMG with information on their implementation efforts, and participating in appropriate SSC Subcommittees.

1.2.4 General Stakeholders

From the information gathered through the outreach efforts, a list of stakeholders was generated, as seen in Table 1-2. The stakeholder list includes organizations dealing with all aspects of water resource management, including water supply, water quality, flood protection and environmental protection and enhancement. The stakeholder list is expected to evolve over time; therefore, additional stakeholders are expected to be identified and contacted for their on-going participation in IRWM planning and project generation. Individuals may request to be added to the stakeholder list by e-mailing the RWMG representatives at the following addresses:

RWMG Representative	Agency	E-Mail Address
Tracy Hemmeter	SCVWD	themmeter@valleywater.org
Mary Bannister	PVWMA	bannister@pvwma.dst.ca.us
Jeff Cattaneo	SBCWD	jcattaneo@sbcwd.com

Stakeholders and the general public who are interested in the development and implementation of IRWMP but are unable to participate at a more significant level (such as being a member of the SSC or a subcommittee), would be able to provide their comments through multiple outreach activities conducted by the RWMG, SSC, and Implementation Project Sponsors and shape the development and implementation of the IRWMP.

Table 1-2: Stakeholders in the Pajaro River Watershed IRWM Plan

Stakeholder	Description of Authority/Interests
Aromas Water District	Aromas Water District is located on the westerly edge of the PVWMA service area. This special district provides water treatment and supply service for approximately 750 customers.
Association of Monterey Bay Area Governments (AMBAG)	AMBAG was organized for the permanent establishment of a forum for planning, discussion and study of regional problems of mutual interest and concern to the counties and cities in Monterey, San Benito, and Santa Cruz Counties; and for the development of studies, plans, policies and action recommendations.

Stakeholder	Description of Authority/Interests
California Coastal Conservancy	The California Coastal Conservancy works with other groups to protect, conserve, restore, and enhance environmental and human-based resources of the California coast and ocean for environmentally sustainable and prudent use by current and future generations.
Central Coast Agricultural Water Quality Coalition	This coalition is a partnership of Central Coast growers organized through their respective county Farm Bureaus. Established by the California Farm Bureau, six Central Coast counties receive grant monies to fund research and monitoring of agricultural water quality effects. The Coalition is working to identify local water quality threats and learn about economically viable water quality protection practices. The various county Farm Bureau program coordinators assist watershed groups to implement these practices.
Central Coast Regional Water Quality Control Board (RWQCB) – Region 3	The Central Coast RWQCB is a regulatory extension of the State Water Resources Control Board. The Central Coast RWQCB coordinates and controls the quality of water in its region through the protection of beneficial uses, the development of water quality objectives to protect the beneficial uses, and implementation planning to accommodate the water quality objectives. This entity was established by the Porter-Cologne Water Quality Control Act (1969), which became Division Seven ("Water Quality") of the State Water Code. The State Water Code establishes the responsibilities and authorities of the nine RWQCBs (previously called Water Pollution Control Boards) and the State Water Resources Control Board (SWRCB). The federal Clean Water Act (Public Law 92-500, as amended) provides for the delegation of certain responsibilities in water quality control and water quality planning to the states. Where the Environmental Protection Agency (EPA) and the SWRCB have agreed to such delegation, the Regional Boards implement portions of the Clean Water Act, such as the National Pollutant Discharge Elimination System (NPDES) program and toxic substance control programs
Central Coast Resource Conservation & Development Council	The Central Coast Resource Conservation & Development Council serves South Santa Clara, San Benito, Santa Cruz, Monterey, San Luis Obispo, and Santa Barbara Counties. The council's activities focus on agritourism, steelhead habitat enhancement, water quality education, coordinated resource management and planning (CRMP) coordination and permit streamlining.
City of Gilroy	Located in South Santa Clara County, the City of Gilroy provides water service to residences and businesses. Gilroy is a South County Regional Wastewater Authority (SCRWA) Partner which provides wastewater service for the Cities of Gilroy and Morgan Hill.

Stakeholder	Description of Authority/Interests
City of Hollister	The City of Hollister is a major urban service area in San Benito County. The City of Hollister provides various municipal and industrial (M&I) services include wastewater collection and treatment and water supply service.
City of Morgan Hill	Located in South Santa Clara County, the City of Morgan Hill provides water service to residences and businesses. Morgan Hill is a SCRWA Partner that provides wastewater service for the Cities of Morgan Hill and Gilroy.
City of San Juan Bautista	Located in San Benito County, the City of San Juan Bautista provides wastewater and water services. San Juan Bautista is a member of the Water Resource Association of San Benito County.
City of Watsonville	The City of Watsonville is a major urban service area within PVWMA. The City provides various M&I services including wastewater collection and treatment and water supply service.
County of Monterey	The County of Monterey is a government agency with land use jurisdiction within its boundaries. The County also manages water and sanitation systems in unincorporated County Service Areas. The southern portion of the PVWMA service area is in Monterey County.
County of San Benito	The County of San Benito is a government agency with land use jurisdiction within its boundaries. A significant portion of the upper Pajaro River watershed (including the San Benito River) is within San Benito County.
County of Santa Clara	The County of Santa Clara is a government agency with land use jurisdiction within its boundaries. A portion of the upper Pajaro River watershed is within Santa Clara County.
County of Santa Cruz	The County of Santa Cruz is a government agency with land use jurisdiction within its boundaries. The County of Santa Cruz also has jurisdiction over stormwater, drainage, watershed management, water resources management and water quality protection for the unincorporated areas of Santa Cruz County. The northern portion of the PVWMA service area is in Santa Cruz County.
Farm Bureaus (Monterey County, San Benito County, Santa Clara County, and Santa Cruz County)	Farm Bureaus are organized on a county, state, and national level with the county Farm Bureaus serving as the core of the organization. Santa Cruz, Monterey, San Benito and Santa Clara Counties each have their own Farm Bureau. The Farm Bureau is a voluntary, nongovernmental, nonpartisan organization of farm and ranch families seeking solutions to the problems that affect their lives, both socially and economically. The Central Coast Agricultural Water Quality Coalition is the local Farm Bureau partnership that works with growers within the Pajaro River watershed.

Stakeholder	Description of Authority/Interests
Land Trust of Santa Cruz County	The land trust is a community-based nonprofit organization that works cooperatively with land owners, government entities, and other organizations to protect and manage lands of significant value. Their primary focuses are protecting prime agricultural lands, protecting lands with significant habitat value, and providing effective stewardship of lands already protected.
Monterey Bay National Marine Sanctuary (MBNMS)	The MBNMS mission is to understand and protect the coastal ecosystem of Central California. The MBNMS is an extension of the National Oceanic and Atmospheric Administration (NOAA) National Marine Sanctuary Program (NMSP). The NMSP mission is to serve as the trustee for the nation's system of marine protected areas, to conserve, protect, and enhance their biodiversity, ecological integrity and cultural legacy. Its goals are appropriate to the unique diversity contained within individual sites. They may include restoring and rebuilding marine habitats or ecosystems to their natural condition or monitoring and maintaining already healthy areas.
Monterey County Water Resources Agency (MCWRA)	MCWRA is a special district formed to manage, protect, and enhance the quantity and quality of water and provide specified flood control services for Monterey County, and to be a leader in efficient, innovative, and equitable water resources management for the County. As a County water agency and stakeholder, MCWRA has an interest in flood prevention and water supply management of the lower Pajaro River that falls within its jurisdiction.
Pajaro River Watershed Flood Prevention Authority (PRWFPA)	PRWFPA was established in 2000 by the State of California Assembly Bill 807 to identify, evaluate, fund, and implement flood prevention and control strategies in the Pajaro River watershed, on an intergovernmental basis. Since the Pajaro River watershed covers an area within four counties (Santa Clara, San Benito, Santa Cruz, and Monterey) and four water districts (Santa Clara Valley Water District; San Benito County Water District; Santa Cruz County Flood Control and Water Conservation District, Zone 7; and Monterey County Water Resources Agency), the PRWFPA is comprised of one representative from each of the eight interested agencies. The PRWFPA is a governing body through which each member organization can participate and contribute to finding a method to provide flood protection in the watershed and promote general watershed interests. A further goal is to identify and prioritize strategies and projects that will provide multiple benefits, such as water supply, groundwater recharge, or environmental restoration and protection benefits.
Pajaro/Sunny Mesa Community Services District	Pajaro/Sunny Mesa Community Services District is a water supplier for smaller communities in the Pajaro Valley and has consolidated water delivery service for a number of mutual water companies in northern Monterey County.

Stakeholder	Description of Authority/Interests
Pajaro Valley Chamber of Commerce	The Pajaro Valley Chamber of Commerce promotes Watsonville and surrounding community areas and is dedicated to advancing the business success of its members.
Planning and Conservation League Foundation	The Planning and Conservation League Foundation mission is to ensure that California continues to be an attractive, livable, and equitable state by engaging in cutting-edge environmental public policy research, and educating and empowering local communities to understand and participate in local and state environmental decision making processes. The Planning and Conservation League Foundation also produces publications that educate the public about environmental challenges in the areas of planning, natural resource conservation, environmental protection, clean air, clean water, sustainable energy policies, and environmental justice.
Resource Conservation Districts (RCDs)	California RCDs are special districts organized under the state Public Resources Code, Division 9. The RCDs in the Pajaro Watershed are the RCD of Santa Cruz County, Monterey County RCD, San Benito RCD and Loma Prieta RCD. Each district has a locally elected or appointed volunteer board of directors made up of landowners in that district. Interests of the RCDs which relate to water management include water quality, wildlife habitat restoration, soil erosion control, and conservation education. RCDs are a source of technical assistance and can provide a critical link between the goals and objectives of the IRWM Plan and the land owners and managers that are integral to implementing actions.
San Benito County Agricultural Land Trust	This land trust is devoted to providing financial options to landowners in order to protect the agricultural heritage of San Benito County. The land trust can protect land permanently and directly by accepting donations of conservation easements designed to meet the individual needs of landowners. As a non-profit, tax-exempt organization, the Trust is funded through membership, donations and grants.
San Benito County Chamber of Commerce	The San Benito County Chamber of Commerce is organized for the purpose of creating, promoting, and celebrating economic vitality within San Benito County by providing resources to businesses and individuals.
San Martin Neighborhood Alliance	This community alliance encompasses local topics and issues.

Stakeholder	Description of Authority/Interests
Santa Clara County Open Space Authority	The immediate high priorities of the Open Space Authority are preservation of open spaces and creation of greenbelts between communities, lands on the valley floor, hillsides, viewsheds and watersheds, baylands and riparian corridors. The Open Space Authority promotes land preservation to maintain the quality of life in the County and to encourage outdoor recreation and continuing agricultural activities. It promotes development and implementation of land management policies that provide proper care of open space lands and allow public access appropriate to the nature of the land for recreation.
Santa Cruz County Flood Control and Water Conservation District, Zone 7 (SCCFC&WCD)	This district is governed by the Santa Cruz County Board of Supervisors, City of Watsonville, and PVWMA. It provides flood control services to Santa Cruz County except the cities of Santa Cruz, Scotts Valley and Capitola. As a County agency and stakeholder, SCCFC&WCD has an interest in flood prevention of the lower Pajaro River that falls within its jurisdiction.
Sierra Club, Loma Prieta Chapter	This local chapter of the Sierra Club is committed to participating in the South Santa Clara County Habitat Conservation Plan/Natural Communities Conservation Plan. The planning area includes the Uvas-Llagas watershed, which is a tributary to the Pajaro River.
Sierra Club, Ventana Chapter	This local chapter of the Sierra Club is interested in preserving the Pajaro River and its watershed through environmental activism.
Silicon Valley Land Conservancy	The Silicon Valley Land Conservancy is a nonprofit entity formed to preserve and protect the remaining open space in Silicon Valley.
Soquel Creek Water District	This government agency provides water resource management for communities in mid-Santa Cruz County.
South County Regional Wastewater Authority	South County Regional Wastewater Authority is the regional wastewater authority for South Santa Clara County, primarily serving the Cities of Gilroy and Morgan Hill. SCRWA has partnered with the Santa Clara Valley Water District to expand water recycling in southern Santa Clara County.
South Valley Streams for Tomorrow	This organization is concerned with streams in South Santa Clara County and tributaries of the Pajaro River in Santa Clara and San Benito Counties.
Sunnyslope County Water District	Sunnyslope County Water District is a water and wastewater management district for a portion of the City of Hollister and the Ridgemark Development in San Benito County.

Stakeholder	Description of Authority/Interests
The Nature Conservancy (TNC)	TNC is a leading international, nonprofit organization dedicated to preserving the diversity of life on Earth. Their mission is to preserve the plants, animals and natural communities that represent the diversity of life on Earth by protecting the lands and waters they need to survive. TNC is currently working on projects within the Pajaro River watershed that promotes private lands conservation and other conservation practices. They work with landowners, communities, cooperatives and businesses to establish local groups that can protect land.
U.S. Army Corps of Engineers (Corps)	The Corps provides engineering and environmental services throughout the nation. The Corps is currently conducting a flood risk management study on the lower Pajaro River and tributaries.
Water Resources Association of San Benito County	The Water Resource Association is comprised of the SBCWD, San Benito County Government, Sunnyslope County Water District, City of Hollister, and City of San Juan Bautista.
Watsonville Wetlands Watch	The Watsonville Wetlands Watch is a nonprofit community based organization dedicated to the protection, restoration and appreciation of the wetlands of the Pajaro Valley.
Wildlands, Inc.	Wildlands, Inc. is a habitat development and land management company with projects throughout California and the western United States. Wildlands is one of the nation's first private organizations to establish mitigation banks and conservation banks that protect wildlife habitat in perpetuity.

1.3 Benefits of IRWM Governance Structure

The following sections describe how the governance structure addresses and ensures public outreach and involvement processes, effective decision making, balanced access and opportunity for participation in the IRWM process, effective communication within and outside the IRWM region, long-term implementation of the IRWM Plan, coordination with neighboring IRWM efforts and State and federal agencies, and collaborative processes to establish plan objectives.

1.3.1 Public Outreach and Involvement Processes

A broad stakeholder outreach process is crucial to ensure that the IRWM Plan identifies local issues, reflects local needs, promotes the formation of partnerships, and encourages coordination with state and federal agencies. One of the benefits of a regional planning process is that it brings together a broad array of groups into a forum to discuss and better understand shared needs and opportunities.

The IRWM Plan process invites active public participation of all interested stakeholders. The main forums for IRWM planning and implementation are the SSC, the SSC subcommittees, and general stakeholder meetings. In addition to SSC and SSC subcommittee meetings, the RWMG conducts general stakeholder meetings or updates around major milestones such as updates to the IRWM Plan goals and objectives, project solicitation and review, and project selection for grant applications. All opportunities for input to key decisions related to the IRWM development and implementation, as well as those decisions, are communicated to stakeholders via email.

The public involvement process is built upon the success of the collaborative efforts within the region and with the surrounding IRWMP regions. Stakeholders were identified through their involvement or interest in water, environment, and similar projects in the past. These entities were contacted and invited to participate in the IRWM effort. By this process, a varied and broad group was encouraged to become stakeholder participants, including entities that were not necessarily involved with any past efforts.

1.3.2 Balanced Access and Opportunity for IRWM Process Participation

The primary method for participation in the IRWM process is through the SSC. As noted above, the RWMG ensured that the SSC includes a broad and balanced representation of community sectors and environmental and water resources interests. Other opportunities for participation in the IRWM process include being a Project Sponsor, signing up for the general stakeholder list, and participating in SSC subcommittees. No one is denied the opportunity to participate in the IRWM process; rather, the RWMG encourages interested parties to participate in the SSC and/or other stakeholder groups.

1.3.3 Effective Communication

The RWMG's communication plan establishes how communication flows and is managed throughout IRWM planning and implementation and provides a framework for continued engagement and communication flow. The purpose of the plan is to build a solid, inclusive and representative agency, stakeholder and DAC base that is supportive of the aims of the IRWM Plan.

This Communication Plan identifies the procedures used to manage communication. The plan focuses on formal communication elements. Other communication channels exist on informal levels and enhance those discussed within this Plan. This Plan is not intended to limit, but to enhance communication. Open, ongoing communication actively engaging stakeholders is critical to the success of the Plan and projects, ultimately the Region. The outreach strategy engages a balance of the interest groups in the IRWM process regardless of their ability to contribute financially to the IRWM Plan's development or implementation. Stakeholders are necessary to address the objectives and resource management strategies of the IRWM Plan. Furthermore, a robust and broad stakeholder and public outreach lays a solid foundation for regional (and sub-regional) involvement as well as build overall regional (and sub-regional) capacity. It sets forth a framework to provide guidance for implementing projects and carrying on the goals of IRWM effort throughout future years. The Communication Plan outlines a process to knit together a core group of active and engaged regional and sub-regional representatives who are motivated and equipped to meet the formidable challenges involved in planning for increased water quality, groundwater protection, stormwater management, water reliability, flood management, water quality, water supply, and equitable environmental benefits. In summary, the objectives of the communication effort are to:

- Marshal many points of view
- Understand the interests and needs of the watershed
- Develop constructive relationships
- Create an understanding among collaborators about the benefits and purposes of the IRWM program and individual IRWM projects
- Maintain credibility with regulators and funding agencies
- Demonstrate responsiveness to stakeholder issues or concerns

1.3.3.1 Community Outreach Approach

As part of the Communication Plan, the RWMG, Implementation Project Sponsors, and the Stakeholder Steering Committee conduct three tiers of focused outreach activities to provide different venues for the stakeholders and the general public to voice their comments and concerns throughout the IRWM planning and implementation process. The community outreach activities are summarized in Table 1-3, and described in the subsequent sections.

Table 1-3: Community Outreach Approach

	Tier One	Tier Two	Tier Three
Goals:	**Planning-Level Outreach**	**Project-Specific Outreach**	**IRWMP General Outreach**
Organizers:	Stakeholder Steering Committee (SSC) and Subcommittee	Implementation Project Sponsors	RWMG
Objectives:	Identify needs of the watershed, develop recommendations on project priorities/rankings	Coordinate and collaborate on project implementation, solicit community input and concerns regarding the implementation of projects	Provide oversight. Report on progress, updates, and decisions related to the IRWMP
Target Audience:	All interested parties, including stakeholders, other watershed stakeholders, other IRWM regional stakeholders	Project-specific stakeholders, residents, project beneficiaries, and agencies	Stakeholders and agencies, and all interested parties
Outreach Venues:	Stakeholder workshops/meetings, conferences, board meetings, subcommittee meetings	Workshops/meetings	Public workshops/ meetings SSC meetings
Minimum Frequency:	Quarterly or as-needed, at locations throughout the region	As-needed, at locations near the projects	Quarterly or as-needed, at locations throughout the region

1.3.3.2 Planning-Level Outreach (Tier One)

The Stakeholder Steering Committee provides forum for coordinating input from the subcommittees and making recommendations to the RWMG. The outreach activities provides the general stakeholders a forum to:

- Share their ideas and concerns regarding the IRWMP
- Identify the needs of the watershed, and potential projects that align with the goals and objectives of the respective regional water management programs

- Identify, discuss, and resolve regional conflicts associated with potential projects
- Work with other stakeholders and the general public to make recommendations on project prioritization and rankings, transfer the information to the Partners to make decisions.
- Coordinate with other activities in the Pajaro river watershed and coordinate with other IRWM regional stakeholders

1.3.3.3 Project-Specific Outreach (Tier Two)

Each of the Implementation Project Sponsors conducts project-specific outreach to interested parties related to their respective project. The outreach activities provides the general stakeholders a forum:

- To provide information to the community regarding specific projects that are being implemented. Identify, discuss, and resolve concerns from stakeholders and the general public who might be impacted by the project
- For stakeholders and general public to communicate throughout the implementation period to resolve potential conflicts

1.3.3.4 IRWMP General Outreach (Tier Three)

The RWMG conducts general IRWMP outreach to all interested parties to report on the progress, updates, and decisions made related to the IRWMP. The outreach activates provided the stakeholders and the general public a forum to:

- Discuss IRWMP progress, review key deliverables, provide comments, and gain consensus
- Continue stakeholder process allowing for IRWMP updates to reflect changes in local water management needs and priorities. Changes were also necessary to respond to updates to City and County General Plans, or other newly completed local planning documents.

1.3.3.5 Outreach Venues and Strategies

It is the intent of the RWMG is to continue to hold outreach workshops/meetings to ensure that all interested stakeholders have an opportunity to participate in the IRWM program through the life of the Plan. Meetings would be held at different locations throughout the watershed so that stakeholders from different regions would be able to attend and held at times that facilitate the best attendance.

Notification occurs at least two weeks prior to workshops/meetings via a variety of methods, including print media, letters, emails, and, potentially, agency websites. The purpose of the meetings is to inform stakeholders of IRWM efforts, solicit feedback on key IRWM deliverables, and solicit projects to be considered in the IRWMP as well as to update the project list and be responsive to solicitations and/or other topics and issues related to IRWM. Following each workshop, the Partners prepare and distribute a brief summary of stakeholder input and how the Partners plan to address the input.

The Partners will also continue to engage the community through related workshops, board meetings, and other venues that include audiences with potential interest in the Pajaro River Watershed IRWM effort. These venues have previously included the Pajaro River Watershed Council, South County Regional Wastewater Authority TAC, Water Resources Association of San Benito County Board, Santa Clara Valley Water District Board Advisory Committees, and Santa Cruz County Board of Supervisors. The Partners will also continue to conduct outreach with their own Boards.

1.3.4 Coordination with Neighboring IRWM Efforts and Agencies

The Pajaro River Watershed is one of six regions in the Central Coast Hydrologic Region and one of four regions that drain to Monterey Bay. As stated above in Section 1.2.1, the RWMG is responsible for coordinating with other IRWM regions in the Central Coast. Most coordination occurs through periodic Central Coast Coordination conference calls. Other coordination efforts have included development of joint letters to DWR, including transmittal of the Monterey Bay National Marine Sanctuary document entitled "Comparison of the Six Central Coast Integrated Regional Water Management Plans and Recommendations for Collaborative Programs" in June 2008 and comments on DWR's Draft 2014 Drought Solicitation Proposal Solicitation Package in May 2014.

The Pajaro River Watershed IRWM region and the Santa Cruz County IRWM region share an overlap area in the Watsonville Sloughs. Within this area, the Pajaro River Watershed IRWM effort addresses water supply; water quality related to groundwater, drinking water, and recycled water; and flood management. The Santa Cruz County IRWM effort addresses surface water quality and environmental enhancement.

The Pajaro River Watershed region also shares a boundary with the San Francisco Bay Area IRWM region. Coordination with the Bay Area region occurs through SCVWD, which is a member of both RWMGs.

State and Federal agencies are involved in region's governance structure through a variety of mechanisms. These include:

- DWR participation in SSC and general stakeholder meetings,
- Central Coast Regional Water Quality Control Board membership on the SSC,
- Monterey Bay National Marine Sanctuary participation in Central Coast Coordination activities,
- U.S. Army Corp of Engineers participation in flood management projects, and
- Natural Resources Conservation Service participation in water quality and environmental projects.

1.3.5 Effective Decision Making

All the RWMG's decisions are made by consensus. The decisions are informed by input from the SSC, Project Sponsors, general stakeholders, and the RWMG's Boards' policies. By incorporating all the sources of input, the RWMG's decisions reflect the interests and priorities of the entire Pajaro River Watershed. Making decisions on a consensus basis ensures all decisions are completely supported by the RWMG.

1.3.6 Long-Term Implementation of the IRWM Plan

The Pajaro River Watershed IRWM governance structure ensures long-term implementation of the IRWM Plan. The RWMG Partners have a long history of working together on water resources issues, dating back to the 1960s when the San Felipe Committee was formed to negotiate contracts for Central Valley Project supplies. SCVWD and SBCWD share a groundwater basin and the Pajaro Valley Groundwater Basin is influenced by actions in the upper watershed. The Partners also share interests in water quality and have worked together on salinity and nutrient management issues. The 2004 MOU formalized the Partners' commitment to continue working together on water resource management issues. The RWMG is an established and cohesive group to lead the IRWM effort. The RWMG will continue to be responsible for IRWM planning and implement and will meet on a regular basis to:

- Review the IRWM Plan and ensure DWR standards are met
- Receive updates on regional efforts relevant to IRWM Plan implementation
- Oversee the evaluation and prioritization of projects for future grant rounds
- Communicate with others including DWR, other IRWM Regions, DACs and tribes, other water resource management programs of interest (e.g., US EPA and other federal and state programs)

The SSC also contributes to long-term implementation of the IRWM Plan. Unlike the RWMG, membership in the SSC can vary over time as organizations' interests change and issues in the watershed evolve. Periodically reviewing and updating SSC membership in response to conditions in the watershed ensure the SSC will be able to provide the RWMG with timely and pertinent input on IRWM Plan implementation and needs for updates over the long-term.

At a minimum, the RWMG and all grant funded project sponsors intend to adopt the plan consistent with IRWM guidelines and requirements. Following adoption, the Plan will be implemented through execution of projects by the Project Sponsors. The RWMG will periodically review progress toward attaining the regional goals and objectives and additional work will be completed on the IRWM P as needed through an adaptive management framework.

1.4 IRWM Plan Adoption and Maintenance

Upon the completion of the IRWM Plan, the RWMG will publish a notice of intention to adopt the Plan in accordance with §6066 of the Government Code and shall adopt the Plan at a public meeting of the RWMG. The governing bodies of each agency that is part of the RWMG will formally adopt the IRWM Plan. Additionally, each Project Sponsor will also adopt the IRWMP.

The planning horizon for the IRWM Plan is 20 years. Formal plan review will occur at least every five years. Significant changes to the governance structure, region description, IRWM goals and objectives, and resource management strategies will require re-adoption of the Plan by the RWMG and Project Sponsors. Formal IRWM Plan updates could occur more frequently based on:

- Significant changes in conditions as defined by the RWMG with input from the stakeholders
- Achievement of an objective which necessitates setting a revised or replacement regional objective
- The need, as determined by the RWMG with input from the stakeholders, to set new regional objectives
- Availability of new information, which may be particularly relevant with respect to the Climate Change Chapter.

Informal changes to IRWM Plan include adding information on the results of special studies such as salt and nutrient management plans, updating the project list, utilization of improved data management tools and techniques, additional financing options, and changes to the SSC membership list. These information changes will be approved by the RWMG without formal adoption.

1.5 Collaborative Process Used to Establish Plan Objectives

A consensus-based approach was used to develop the Pajaro River Watershed IRWM goals and objectives for the 2007 IRWM Plan. During the development of the 2007 goals and objectives, the RWMG considered both the needs and issues identified for the region and the statewide priorities. The

goals and objectives were presented to stakeholders and then refined based on stakeholder input and consensus. The same process was used to update the goals and objectives for the 2014 IRWM Plan, with the addition of consideration of Basin Plan Objectives, 20x2020 water efficiency goals, and requirements of California Water Code §10540(c). Specifically, the RWMG reviewed the goals and objectives, presented proposed revised goals and objectives to the SSC, met with the SSC to obtain input on the goals and objectives, reviewed SSC input, and incorporated all the SSC input into the goals and objectives in Chapter 2.

2 Region Description

This chapter meets the following IRWMP Standard from the Propositions 84 & 1E IRWM Program Guidelines (DWR, 2012).

> **Region Description** – An IRWM Plan must include a description of the region being managed by the RWMG. This description should include a comprehensive inclusion of the watersheds and the water systems, internal boundaries, water supplies and demands, social and cultural makeup, major water related objectives and conflicts, the IRWM regional boundary, and identification of the neighboring and/or overlapping IRWM efforts.

The Pajaro River Watershed IRWM regional boundary is the Pajaro River Watershed boundary, as illustrated in Figure 2-1. The Watershed is an appropriate area for integrated regional water management because of the mutual needs and shared resources that link the region. The Pajaro River is the largest coastal stream between San Francisco Bay and the Salinas River Watershed in the County of Monterey. The watershed is approximately 1,300 square miles and it includes portions of Santa Cruz, Santa Clara, San Benito, and Monterey Counties. Its large size contributes to the number of diverse environments, physical features, and land uses within the watershed. Tributaries to the Pajaro River, the largest of which is the San Benito River, serve as the major routes for surface flow and drainage throughout the watershed.

The Pajaro River coastal area has been identified by the California Coastal Commission as a Critical Coastal Area (CCA). Additionally, the Pajaro River is tributary to Monterey Bay, a federally protected National Marine Sanctuary administered by the National Oceanic and Atmospheric Administration (NOAA). Therefore, the Pajaro River's water quality is critical to the protection and sustainability of this offshore environment.

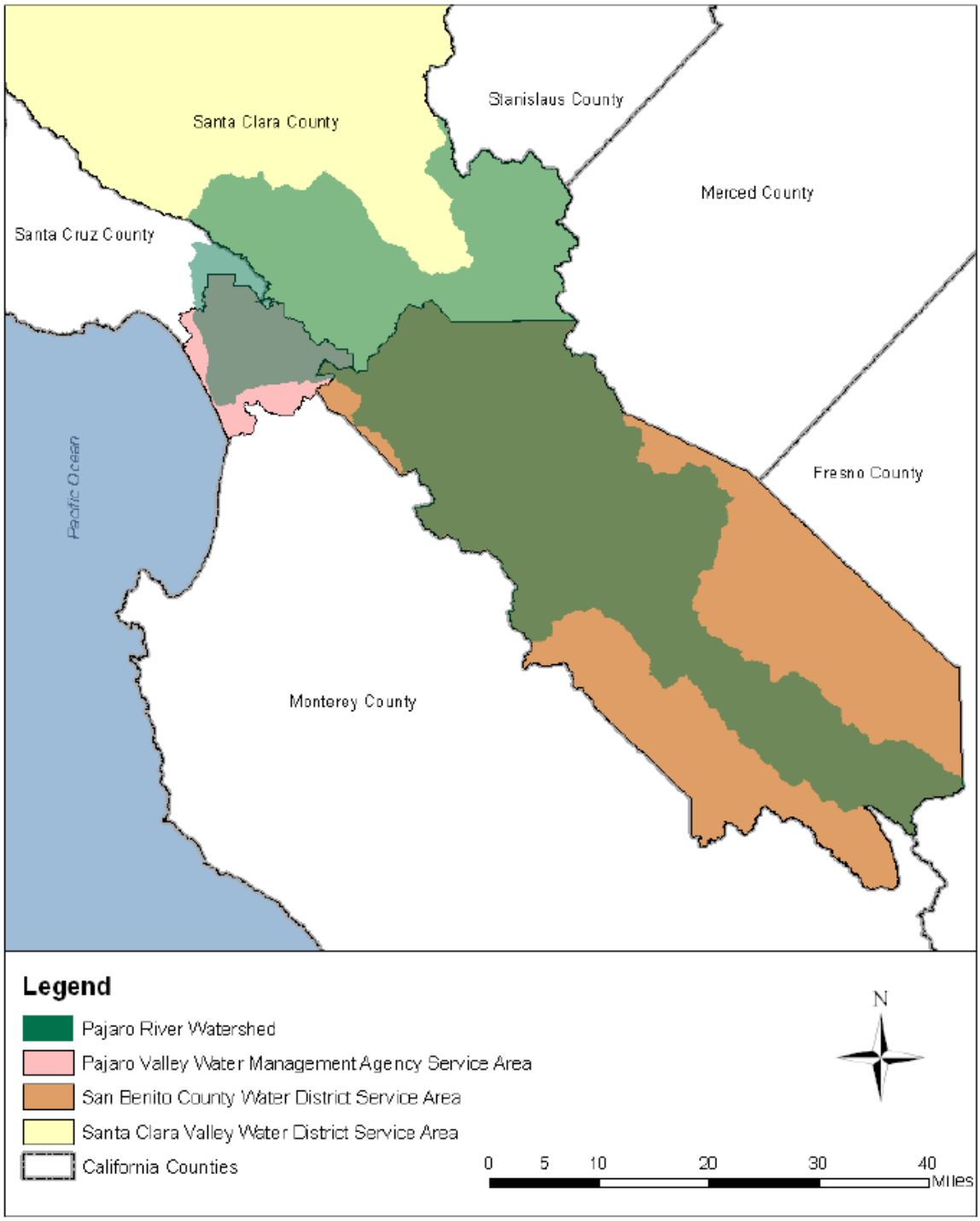
This chapter summarizes the Pajaro River watershed setting and describes issues and concerns in the watershed.

2.1 Pajaro River Watershed Relevance as an IRWMP

The Pajaro River Watershed is an appropriate area for integrated regional water management because of the mutual needs and shared resources that link the region. Many of the water supply, water quality, flood management, and environmental enhancement challenges within the watershed are best addressed through cooperation of the agencies and stakeholders found within its boundaries. The Region provides the setting for maximizing opportunities for integration of water management activities through coordination on shared resource issues by the diverse group of IRWM planning participants. The RWMG includes the three major water resource agencies within the Pajaro River Watershed IRWM effort – PVWMA, SBCWD and SCVWD. Figure 2-2 illustrates the agencies' jurisdictions in relation to the Pajaro River watershed. SBCWD and SCVWD service areas encompass the major tributaries to the Pajaro River and form the upper portion of the watershed. The PVWMA service area, which lies at the mouth of the watershed, forms the lower portion of the watershed.

The major water related objectives and conflicts within the region are discussed below.

Figure 2-1: Pajaro River Watershed IRWM Regional Boundary



2.1.1 Water Supply

Ensuring an adequate water supply is a critical need for the watershed. The ability to meet future demands is impacted by the heavy reliance on groundwater throughout the watershed, which has led to overdraft in some areas, as well as by the varying reliability of imported Central Valley Project (CVP) water. Successfully meeting future water supply challenges will require the coordination of the agencies within

the watershed that share these issues and that can work together to develop solutions that could not be implemented on an individual agency basis.

The primary impetus for initiating the Pajaro River Watershed IRWMP was to determine how to better manage the shared water resources within the watershed. The most notable water supply connection among the three partner agencies is that PVWMA, SBCWD and SCVWD are each entitled to CVP deliveries through the San Felipe Division of the CVP system. Because of their common connection to the San Felipe Division, the Partners share an interest in improving the system reliability, efficiencies and operational flexibility.

Natural linkages exist where surface waters and groundwater bodies cross agency boundaries. As an example, in the upper watershed, SCVWD and SBCWD share a connection to the Gilroy-Hollister Groundwater Basin. This groundwater basin connection is a linkage between the two agencies in regards to groundwater management activities. The Pajaro Valley Groundwater Basin, which PVWMA relies upon, is bound by the San Andreas Fault to the east, separating PVWMA from the SCVWD and SBCWD. However, the Pajaro Valley Groundwater Basin is influenced by the Pajaro River, which drains South SCVWD and SBCWD service areas. Therefore, drainage activities within the SCVWD and SBCWD service areas influence groundwater in the PVWMA service area. The Santa Cruz Purisima Formation Highlands Groundwater Basin, which underlies the Corralitos Creek watershed, also drains to the Pajaro Valley Groundwater Basin.

In the Partners' MOU for coordination of water resources planning, they identified water conservation, water recycling, desalination, groundwater basin management, water banking, conjunctive use, transfer agreements and storage development as common issues that could be addressed through joint long-term water supply planning.

2.1.2 Water Quality

Water quality needs within the watershed are influenced strongly by the highly agricultural nature of the area. The most significant surface water quality pollutants are sediment and nutrients which are generated through agricultural and urban activities near rivers and creeks that run through the watershed. These pollutants are eventually carried downstream and cause water quality degradation throughout the watershed drainage area. Improving surface water quality requires the cooperation of stakeholders and agencies in all parts of the watershed.

Additionally, the quality of groundwater is an issue throughout the region. Common challenges throughout the watershed with respect to groundwater quality include salinity and nitrate management. Because the entire region relies heavily upon its groundwater resources, the various agencies have a common interest in protecting and improving the quality of the groundwater basins.

2.1.3 Flood Management

Although flooding is of the highest concern in the lower portion of the Pajaro River, effective flood management solutions must consider the entire river and its drainage area, as there are opportunities to influence downstream outcomes through upstream modifications. Because of this, the watershed is a natural boundary for flood protection efforts. This is evident upon examining the composition of the Pajaro River Flood Prevention Authority (PRWFPA), which is a joint powers authority active in the watershed that includes representatives from the following agencies:

- Monterey County Water Resources Agency (MCWRA)
- SBCWD

- SCVWD
- Santa Cruz County Flood Control and Water Conservation District, Zone 7
- Monterey County
- San Benito County
- Santa Clara County
- Santa Cruz County

All of these agencies are working together towards solving flood management issues in conjunction with providing other watershed benefits including water supply, groundwater recharge, water quality and wildlife and riparian habitat. The Corps is a federal agency which is also involved in flood risk management for the region.

2.1.4 Environmental Enhancement

There are significant opportunities for working to address riparian habitat, open space and recreation needs in the process of meeting the other water management needs of the watershed. Stakeholders have voiced the desire to make proactive lasting policies and decisions that will sensitize and educate the public about the importance of the Pajaro River watershed and enhance the public's role as custodians of the riparian environment.

Water management policies and decisions can incorporate elements that provide for the protection, preservation and restoration of native plants, wetlands, open space, terrestrial and aquatic wildlife habitat, and riparian forest. This will require agencies involved in water supply, water quality and flood management issues in the watershed to take proactive steps to work with environmentally-focused agencies and municipalities to incorporate environmental benefits to the maximum extent possible when implementing water management projects.

2.1.5 Relationship of Other IRWMP Efforts

SCVWD is also participating in the San Francisco Bay Area IRWM effort. The SCVWD service area can be divided into two regions – South County and North County, which drain to Monterey Bay and San Francisco Bay, respectively. In addition to falling within different watersheds, South County and North County have fairly distinct land uses and social, cultural and economic compositions. Because South County is more aligned with the make-up of PVWMA and SBCWD and is in the same watershed, SCVWD determined that coordination with these agencies provided the best opportunity to address water management issues within its South County region, while the Bay Area IRWM effort could best address issues within the Santa Clara North County region.

Additionally, the Pajaro River Watershed IRWM Plan is one of four detailed IRWM planning efforts in the greater Monterey Bay region. All IRWM efforts originate within four Monterey Bay regions, which can generally be described as (1) the Santa Cruz County Region which includes northern Santa Cruz County through and including Aptos Creek, San Andreas and the Watsonville Sloughs watershed, (2) the Pajaro River Watershed which includes parts of Santa Clara, San Benito, Santa Cruz, and Monterey Counties, (3) the Greater Monterey County Region which includes the majority of Monterey County, and (4) Monterey Peninsula, Carmel Bay, and South Monterey Bay Region which includes the Carmel River watershed and Seaside groundwater basin in Monterey County. Collaborative efforts have been undertaken with representatives from each of the other three IRWM regional groups to ensure overlapping areas and projects are understood and coordinated. All other Monterey Bay area IRWM efforts considered their delineations to be appropriate.

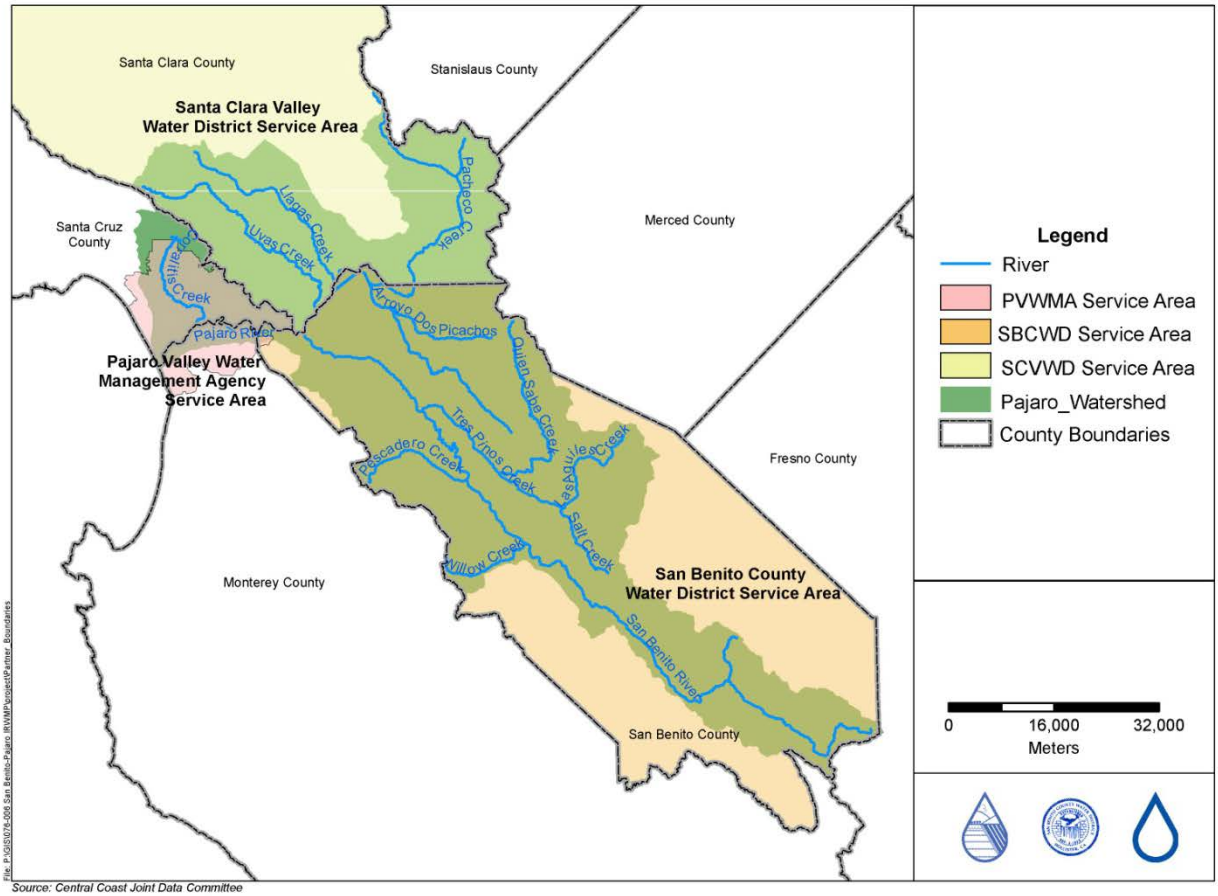
The Pajaro River Watershed IRWM region and the Santa Cruz County IRWM region share an overlap area in the Watsonville Sloughs. Within this area, the Pajaro River Watershed IRWM effort addresses water supply; water quality related to groundwater, drinking water, and recycled water; and flood management. The Santa Cruz County IRWM effort addresses surface water quality and environmental enhancement.

In February 2007, in response to the State's definition of the Central Coast as a funding area for future IRWM grant programs, all six IRWM planning regions within the Central Coast began discussions regarding regional cooperation within the framework of the IRWM process pursuant to Propositions 50 and 84. The six IRWM efforts within the Central Coast are the four Monterey Bay IRWM efforts, the San Luis Obispo County IRWMP and the Santa Barbara County IRWMP. Some of these IRWM planning regions have common, overlapping water interests, but most water issues are more effectively managed within the six individual regions. Water management interests 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 and drought protection. An additional area of coordination among the regions will be to address the geographic areas within the Central Coast region that are not currently covered by an IRWMP.

2.2 Internal Boundaries

The Pajaro River Watershed IRWM Region contains numerous internal boundaries that are associated with counties, cities and special districts. The various boundaries delineate jurisdiction and responsibility for land use planning, various municipal services and water resource management. This section summarizes the major internal boundaries within the watershed, shown in Figure 2-2.

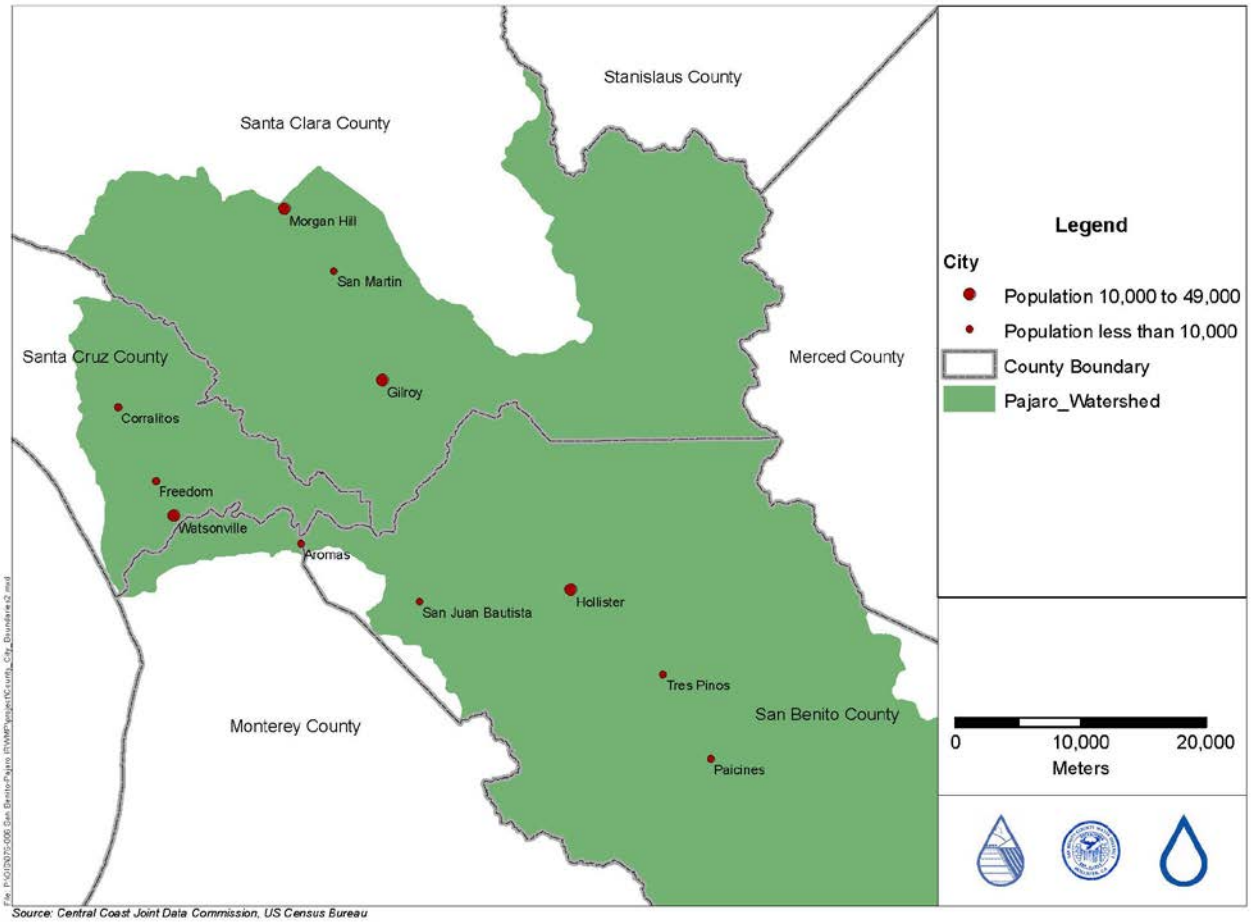
Figure 2-2: Watershed Setting



2.2.1 Counties

The Pajaro River watershed includes areas within the counties of Santa Clara, Santa Cruz, Monterey, and San Benito. County jurisdiction generally includes land use planning, development, tax assessment, elections, health and well being, and other services. Counties can also be responsible for water and wastewater service in unincorporated areas (outside city boundaries). County boundaries in relation to the watershed are shown in Figure 2-3.

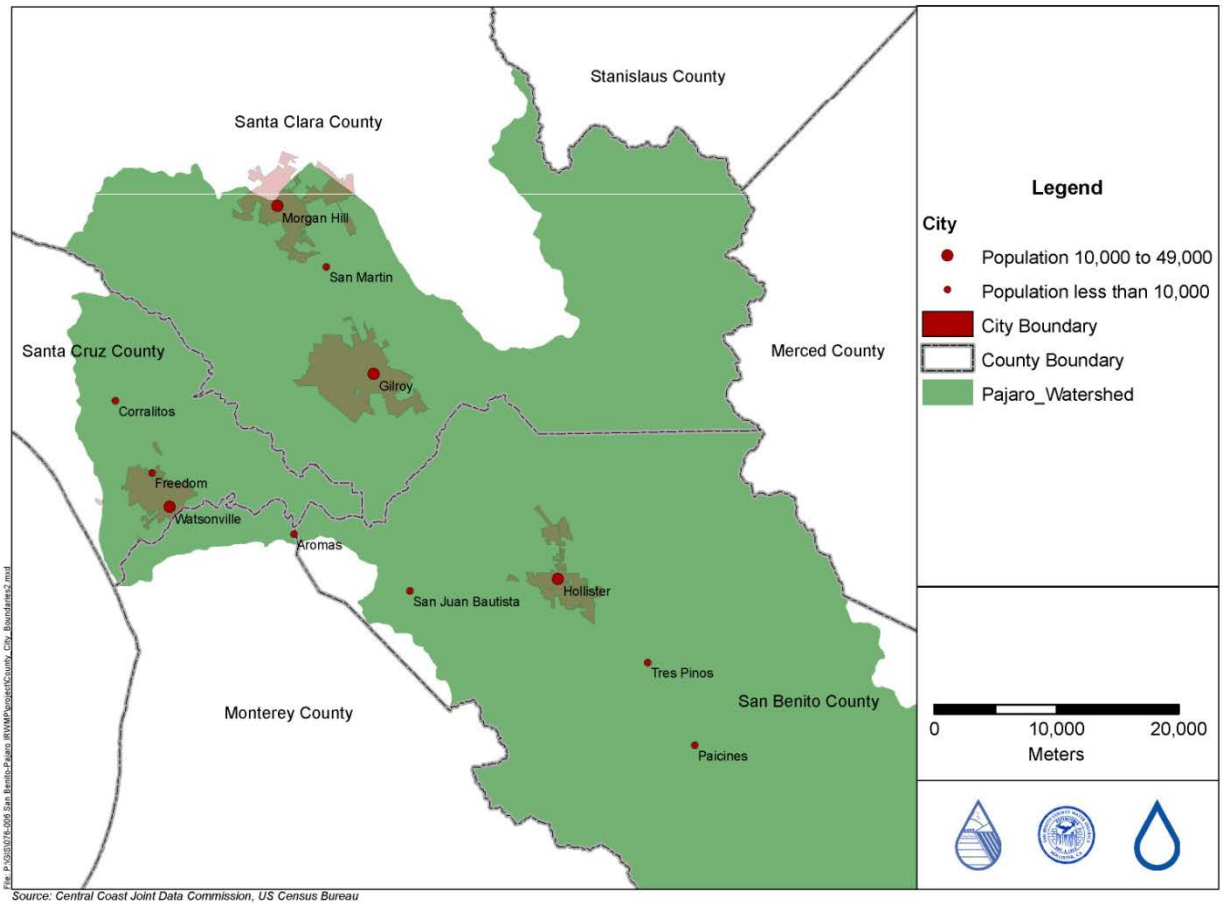
Figure 2-3: County Boundaries within the Pajaro Watershed



2.2.2 Cities

The major cities in the watershed are Watsonville, Hollister, Gilroy, and Morgan Hill. Figure 2-4 shows boundaries for these major cities and shows locations for other small cities throughout the watershed. Cities are typically responsible for municipal services including water and wastewater service, street and traffic maintenance, and land use planning within their service area. In some cases, special districts have been formed to provide some of these municipal services. Municipal services can also extend beyond the City boundary to serve a designated urban service boundary or other areas.

Figure 2-4: Major City Boundaries within the Pajaro River Watershed



2.2.3 Special Districts

Special districts are local agencies that provide specific public services, such as water supply or flood management, within defined boundaries. Numerous special districts exist within the Pajaro River watershed. The ones with connections to water management are discussed here.

Special districts may provide water or wastewater services rather than County- or City-provided municipal services. The Sunnyslope County Water District (SSCWD), Tres Pinos County Water District, Pachecho Pass Water District, San Martin County Water District, Aromas Water District (AWD), and Pajaro/Sunny Mesa Community Services District are six such districts within the watershed. The SSCWD is a municipal water supplier and wastewater management agency for portions of the Hollister area, serving roughly 5,000 water customers and 1,000 wastewater customers. Tres Pinos County Water District provides water and wastewater services to customers in Tres Pinos. Pacheco Pass Water District is responsible for operating Pacheco Reservoir, mainly to promote groundwater recharge within the District's service area. San Martin County Water District is a community water district that serves the unincorporated area of San Martin in Santa Clara County. The AWD is a multi-county special district which provides municipal water service to over 900 connections in Monterey County and San Benito County. Pajaro/Sunny Mesa Community Services District provides water service to nearly 700 residential and commercial users and provides wastewater collection services for the community of Pajaro.

Resource Conservation Districts (RCDs) are another type of special district with interests in water resource management. In California, RCDs are designated as special districts under the state Public Resources Code. Each RCD is comprised of a locally elected or appointed Board of Directors, whose members are also landowners within that RCD, and typically serve as liaisons between landowners and government agencies. They are involved with the conservation of many natural resources including water, air, soil and wildlife habitat, and they play a very important educational role within watersheds. The Pajaro River Watershed encompasses four different RCDs –RCD of Santa Cruz County, San Benito RCD, Loma Prieta RCD and Monterey County RCD. RCDs are a source of technical assistance and can provide a critical link between the goals and objectives of the IRWM Plan and the land owners and managers that are integral to implementing actions. The RCD of Santa Cruz County has been an especially active participant in the Pajaro IRWM effort since its inception through participation in the Stakeholder Steering Committee and through project implementation.

The Santa Clara County Open Space Authority is a special district concerned with land preservation, including areas of wetlands, baylands, riparian corridors and other unique habitats in Santa Clara County.

In addition to these entities, special districts of importance include those agencies that have authority to manage water supplies within the watershed. For the Pajaro River watershed these agencies are PVWMA, SBCWD, SCVWD and MCWRA. PVWMA, SBCWD and SCVWD were previously described in Chapter 1. MCWRA was formed under State Law pursuant to the Monterey County Water Resources Agency Act as a flood control and water agency. MCWRA authority extends throughout Monterey County, which encompasses the southern portion of the lower Pajaro River watershed. In discussions among the sponsors of the four IRWMP efforts in the Monterey Bay region, it was agreed that the water management issues faced by MCWRA were best addressed through the Greater Monterey County IRWMP (formerly the Salinas Valley IRWMP). Although MCWRA is not participating in the Pajaro River Watershed IRWMP as a Collaborative partner, MCWRA is interested in this IRWMP and has and will continue to participate as an active stakeholder.

Similar to MCWRA, the Santa Cruz County Flood Control and Water Conservation District Zone 7 (SCCFC&WCD) is a special district whose jurisdiction overlaps two of the IRWMP efforts ongoing in the Monterey Bay region. Because of its interest in flood management issues with the Santa Cruz County portion of the Pajaro River Watershed region, the SSCFC&WCD has participated and will continue to participate as an active stakeholder in the Pajaro River Watershed Region in addition to the Santa Cruz County IRWMP.

SBCWD, SCVWD, MCWRA, and SCCFC&WCD all have the responsibility of addressing flood control and drainage issues in their respective jurisdictions. Such responsibilities may include flood prevention, flood control project planning, drainage services, and maintenance and operations of existing flood control and drainage infrastructure. The Pajaro River Watershed Flood Prevention Authority (PRWFPA), introduced earlier, is a special district formed by the State of California to identify, evaluate, fund, and implement flood prevention and control strategies in the Pajaro River watershed, on an intergovernmental basis. PRWFPA is completing a watershed study through a phased approach that has identified a recommended flood program that is in the process of being implemented. Phase 1 of the Study included modeling of hydrologic and sediment regimes of the watershed. Phase 2 identified flood protection projects for the watershed, and Phase 3 consists of project selection and associated CEQA analysis. Phase 4 is flood protection implementation.

2.3 Land Use

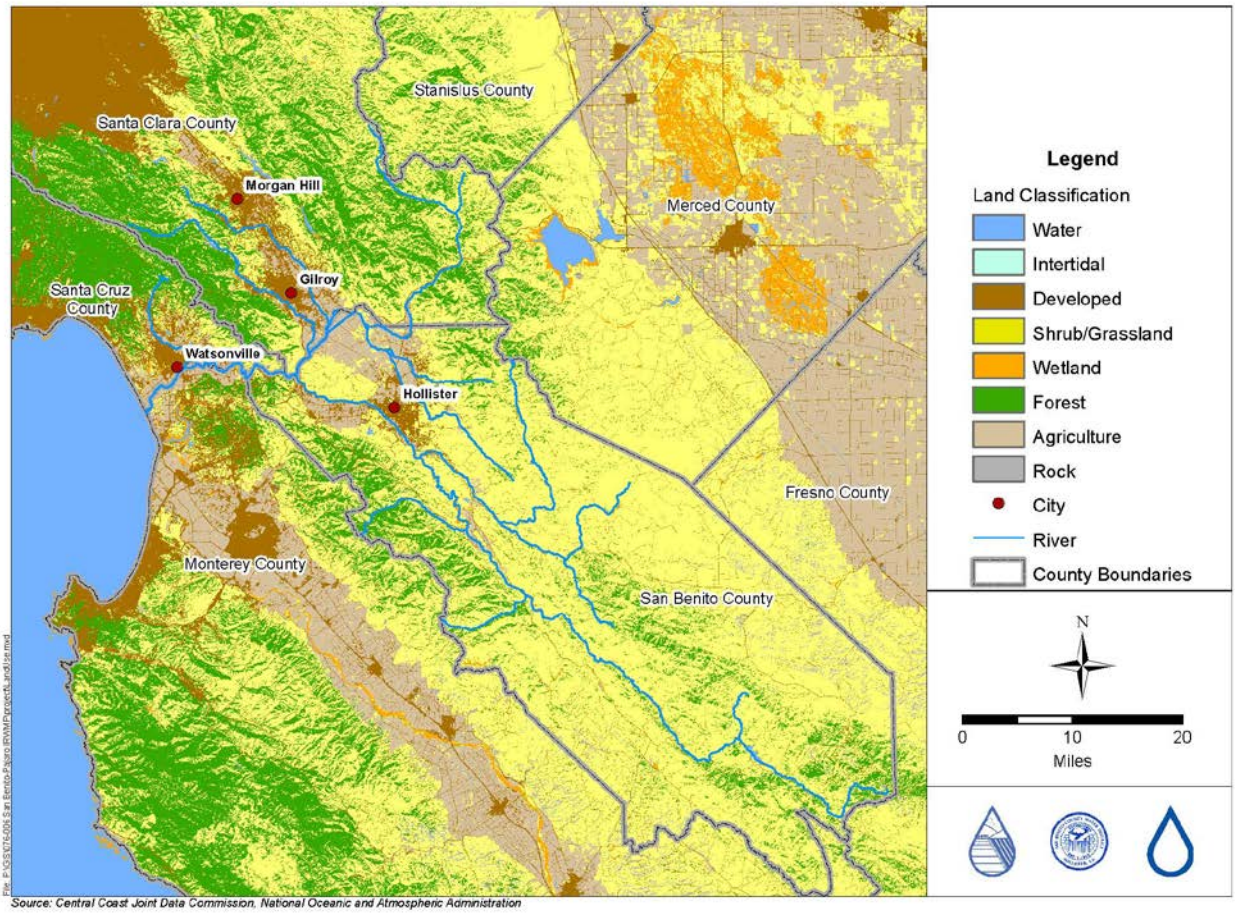
Land use data are critical for identifying and evaluating a multitude of water resources management characteristics including water use, wastewater production, storm water runoff, environmental habitats, and other natural resources.

Land use data are available from DWR, USGS, and local government agencies. Figure 2-5 illustrates the major land use divisions for the watershed. Development within the watershed, both urban and rural, is clustered around the major cities. Agriculture and grazing are the dominant rural land uses in these areas but represent a small portion of the total watershed land use, which consists of primarily forest, shrub, and grassland. Other industries outside of the urban setting include mining and timber harvesting.

General land use trends in the watershed include significant development of rural and agricultural areas associated with increases in population in the four major cities of the watershed, those being Watsonville, Hollister, Gilroy, and Morgan Hill. A second land use trend is a shift in the types of crop grown in the watershed. The shift is generally towards higher value crops. Both of these trends need to be addressed through regional water management planning.

More specific regional land use data for PVWMA, San Benito County and the SCVWD South County is included in the following sections.

Figure 2-5: Major Land Use Divisions

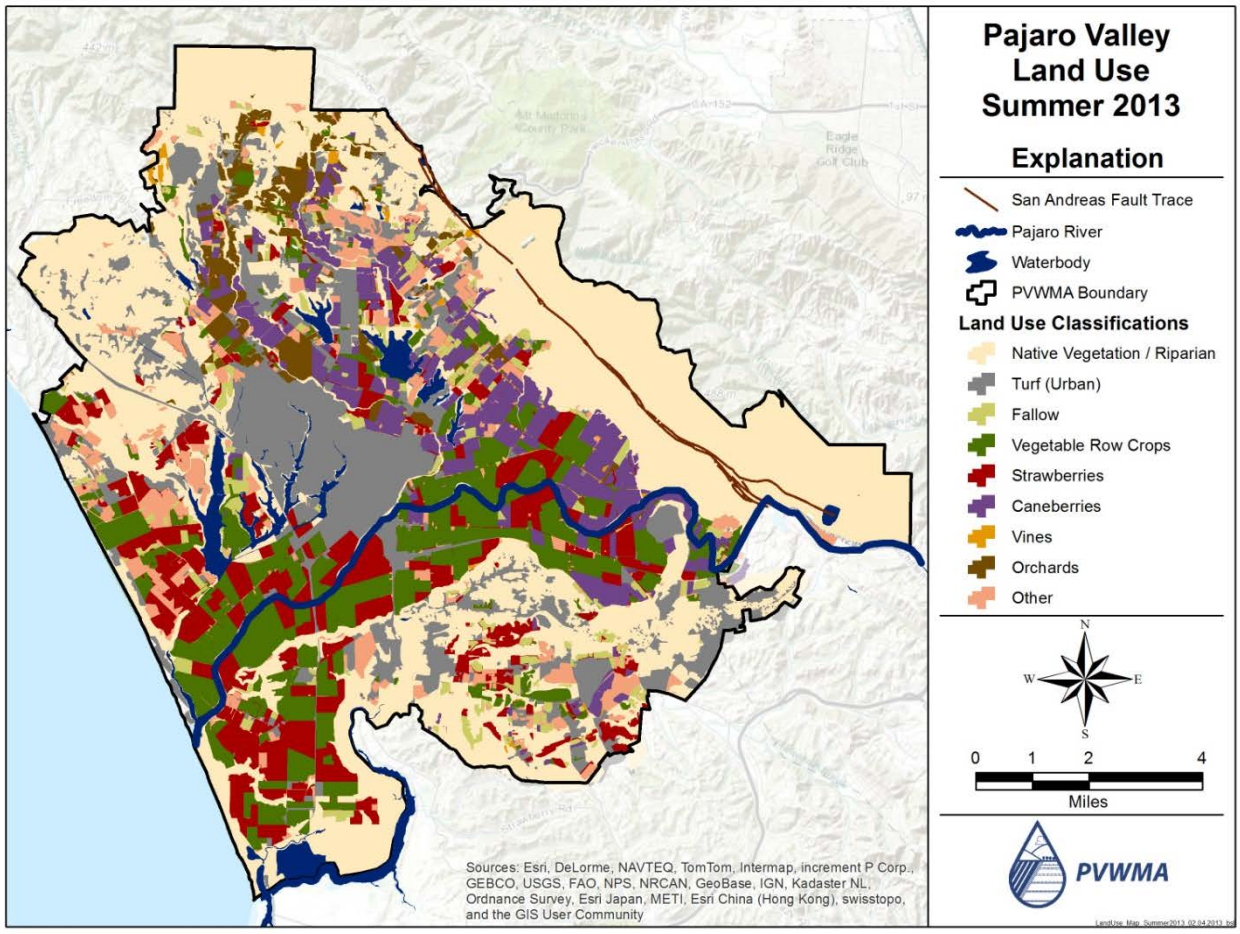


2.3.1 PVWMA Land Use

The primary land uses within the lower Pajaro River watershed are agricultural, native vegetation, native riparian and urban land uses such as commercial, industrial, and residential. About one-half of all land within PVWMA boundaries is in some type of irrigated agriculture. Native vegetation and agricultural land are the major designations throughout the Pajaro Valley, while urban use is primarily located within or adjacent to the City of Watsonville.

DWR land use surveys were collected for Monterey and Santa Cruz Counties for 1966, 1975, 1982, 1989, and 1997. Urban land use increases have generally resulted from the conversion of native vegetation land, not agricultural land. Urban land use has increased consistently from only 4,800 acres in 1966 to nearly 12,900 acres in 1997. This increase reflects general population growth trends throughout the State of California over the last several decades. The total agricultural land area has remained relatively constant from 1989 onward. Between 28,000-30,000 acres of irrigated agricultural land are within the PVWMA service area. Figure 2-6 shows the 2013 breakdown for the land uses within the PVWMA service area.

Figure 2-6: Land Use in the PVWMA Service Area



For the purposes of land use projections, it is assumed that agricultural land use will remain constant. However, there have been significant shifts in the types of crops grown in the valley. Most apparent are the increases in nursery, strawberry, and vine crops. Detailed economic and marketing surveys have not been conducted and therefore it is not certain whether the shift to high water use crops will continue.

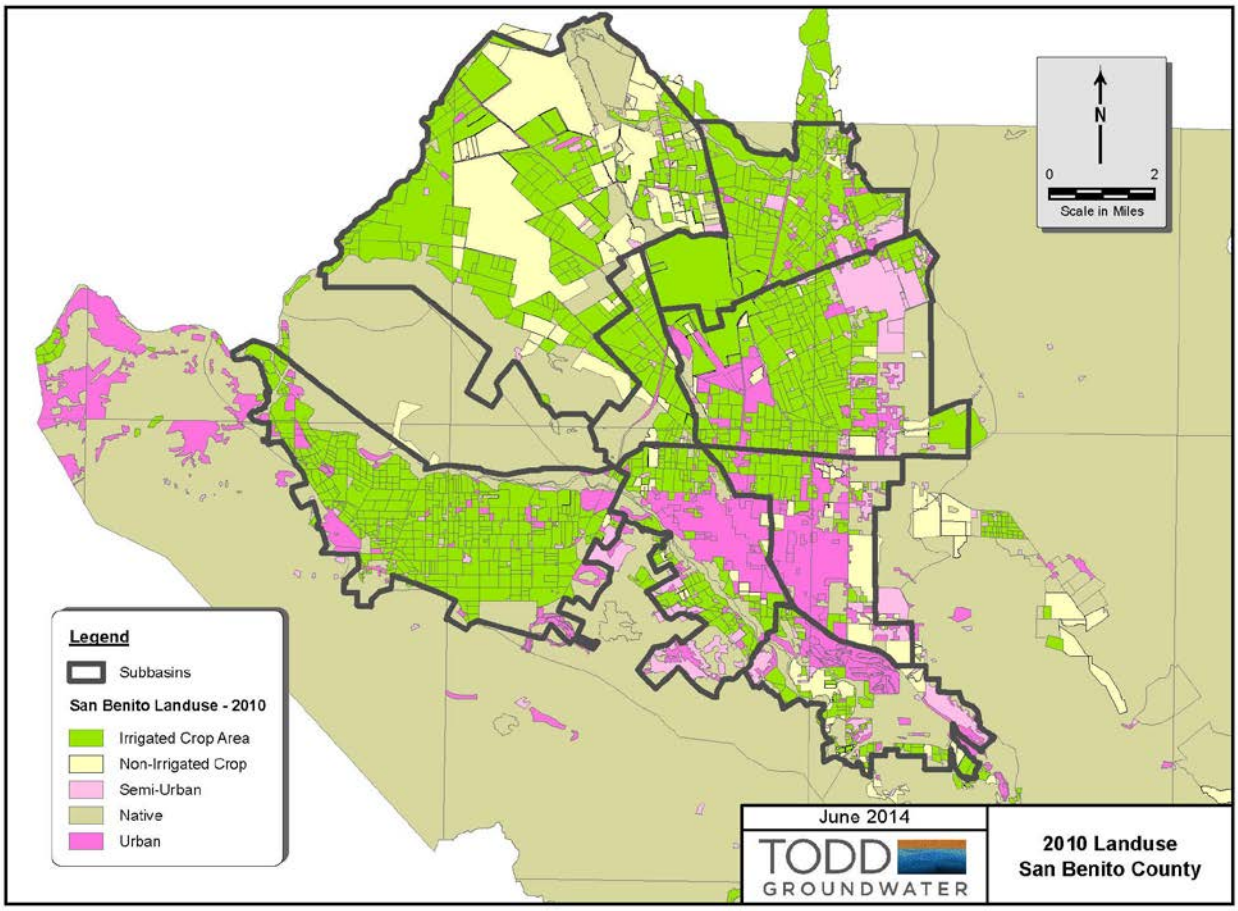
2.3.2 San Benito County Land Use

Figure 2-7 shows the major land use categories from the DWR 2002 land use survey. The DWR land use data includes crop type and acreage that can be used in conjunction with other factors to estimate crop water use. Based on the 2010 update to the San Benito County land use map, irrigated agriculture in SBC encompassed approximately 31,077 acres. Some of the prime agricultural areas are gradually being

converted to urban areas as the population is expanding. Urban land uses are primarily around Hollister and San Juan Bautista in the northern area of the County. Unincorporated residential developments exist primarily around the golf courses and on the edges of alluvial fans and foothills. Industrial areas in the unincorporated portions of SBC include various agricultural uses, sand and gravel mines, and munitions manufacturing facilities.

Hollister is the largest urban area in San Benito County, representing approximately 65% of the population. Areas within the City range from light to densely populated residential zones. Commercial uses are present along major roadways especially in the downtown area. Light industrial and agricultural land uses exist in the northwestern area of the City.

Figure 2-7: Major Land Use in San Benito County

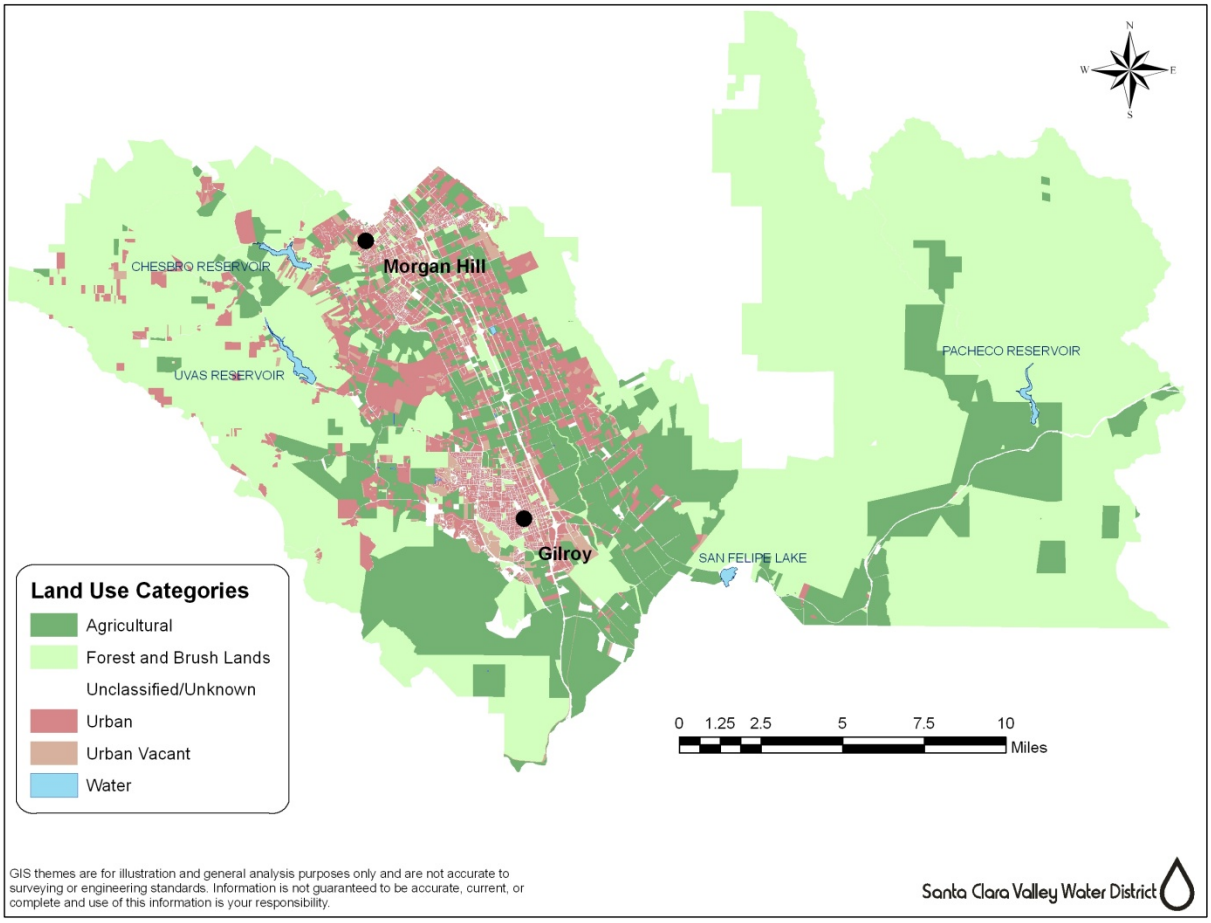


2.3.3 SCVWD South County Land Use

Land use data were available from the Santa Clara County assessor. Gilroy and Morgan Hill are the major urban areas within SCVWD South County. Gilroy, the larger of these two cities, encompasses approximately 14,610 acres. Urban areas within Gilroy range from low-density to high-density residential zones with regions of commercial and industrial use. Gilroy and Morgan Hill are both expected to grow in the future, but unlike North County where urbanization due to the strong growth in the manufacturing and service sectors has eliminated most of the agriculture, South County is expected to maintain its agricultural roots. Like PVWMA and SBCWD, the majority of land use in South County will remain agricultural and rural residential.

Figure 2-8 shows the major land use categories for South County based on Santa Clara County assessors' data.

Figure 2-8: Land Use in SCVWD South County



2.4 Water Demand

Existing and projected water demands were collected from various planning efforts by SBCWD, PVWMA and SCVWD. Major water uses in the watershed are comprised of agriculture irrigation and municipal and industrial (M&I) use. Projections from planning efforts were established based on considerations of land development, population projections, and other considerations. Table 2-1 summarizes the projected water demand for the watershed over the 20-year planning horizon.

Table 2-1: Existing and Projected Water Demand through 2035

Year	PVWMA (AFY)[a]	SBCWD (AFY)[b]	SCVWD (AFY)[c]	Pajaro River Watershed Total (AFY)
2010	50,000	76,400	46,000	**172,400**
2015	55,000	81,800	46,670	**183,470**
2020	53,000	87,200	45,060	**185,260**
2025	52,000	92,600	45,370	**189,970**
2030	51,000	92,600	45,860	**189,460**
2035	50,000	92,600	46,330	**188,930**

Footnotes:

a. Source: Revised Basin Management Plan (Carollo, 2014); Acre-feet per year (AFY).

b. Source: Groundwater Management Plan Update for the San Benito County Part of the Gilroy-Hollister Groundwater Basin (Kennedy Jenks, 2004). Projected demands for 2030 and 2035 are under development through the County General Plan Update, therefore the estimated demand for 2025 is assumed for 2030 and 2035 until more accurate data is available.

c. Source: SCVWD Urban Water Management Plan 2010 (SCVWD, 2011).

As shown in the table, water demands are projected to increase by about 10% from 2010 to 2035. Demands are projected to peak in about 2025, and then level out of decline slightly.

2.5 Water Quality and Quantity

The region's water supplies consist of groundwater, local surface water, imported surface water from the CVP, and recycled water. Major water supply and quality issues in the watershed include:

- Pajaro Valley Groundwater Basin overdraft;
- San Felipe Division water supply reliability;
- Salinity and hardness in the Gilroy-Hollister groundwater basin;
- Contaminated or poor groundwater quality throughout the watershed;
- Sediment and nutrient in surface water throughout the watershed;
- Iron and manganese in the Aromas Water District groundwater;
- Perchlorate in the Hollister area;
- Nitrate in the Llagas Sub-basin; and
- Seawater intrusion and nitrate contamination in the Pajaro/Sunny Mesa Community Service District service area.

Additional water supply and quality issues are described in the following sections along with a summary description of the various supplies.

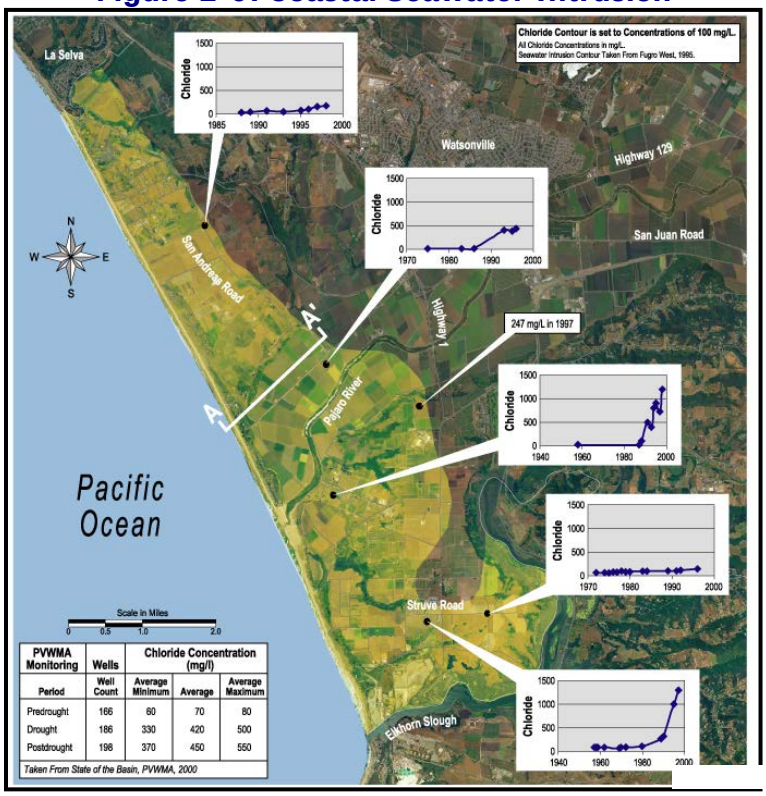
2.5.1 Groundwater Supply

Groundwater is the major water supply in the Pajaro River watershed. PVWMA, SBCWD, and SCVWD are responsible for management of various groundwater basins in the Pajaro River watershed. Groundwater basin characteristics of importance include water quality, supply sustainability, land subsidence, and liquefaction. The quality and sustainability of groundwater varies throughout the watershed and is dependent on management activities and local practices. Land subsidence and

liquefaction issues are associated with groundwater level management and can be related to sustainable yield and groundwater basin operation.

The Pajaro Valley Groundwater Basin, which is separated from the rest of the watershed's groundwater basins by the San Andreas Fault, is affected by overdraft and seawater intrusion that are impacting the quality of groundwater. 90% of total water demand is from agriculture and 8,500 acres of land near the coast are either experiencing or are threatened by seawater intrusion. Other Pajaro Valley groundwater quality concerns include nutrients, manganese, Methyl Tertiary Butyl Ether (MTBE, from underground gasoline storage tank leaks), and other contaminants. As previously described, the Pajaro Valley Groundwater Basin is influenced by the Pajaro River, which drains the upper portion of the watershed including the SCVWD and SBCWD jurisdictional areas. Therefore, collaboration by the stakeholders in the region is critical for managing the groundwater basin. Figure 2-9 shows the extent of seawater intrusion in the lower watershed.

Figure 2-9: Coastal Seawater Intrusion



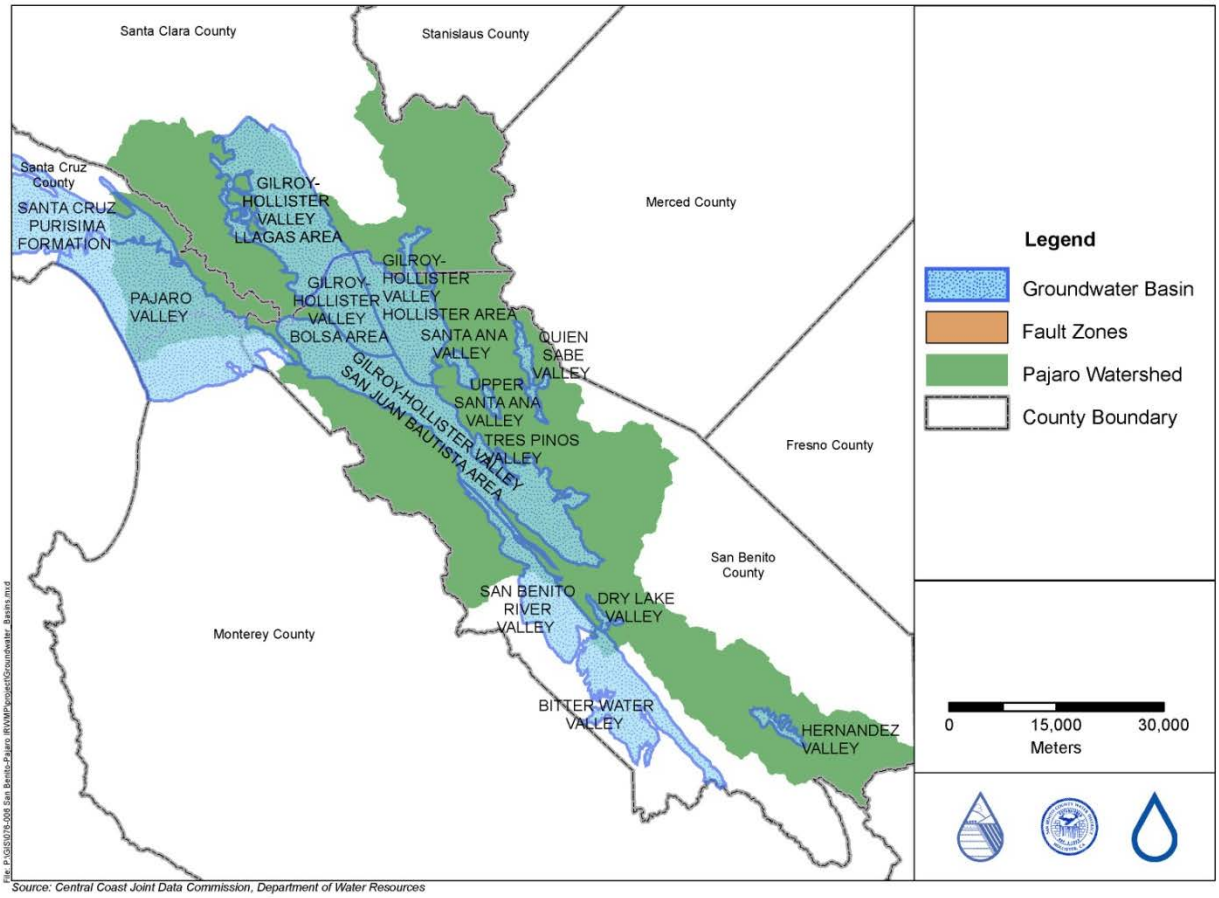
As part of the IRWM Plan Update, a focused study of the water resource issues and needs in the Pajaro Sunny Mesa Community Services District service area was completed. PSMCSD serves a Disadvantaged Community (DAC) and the study was conducted as part of the focused outreach and technical support to DACs in the Pajaro River Watershed IRWM region. The study documented the existing systems owned and/or operated by PSMCSD, identified critical water supply issues facing the PSMCSD systems, and recommended projects that will begin to resolve these issues.

As documented in the study, the PSMCSD service area is distributed across portions of the southernmost Pajaro Valley Groundwater Basin and portions of the northernmost Salinas Valley Groundwater Basin. Current monitoring and reporting on groundwater conditions is provided by PVWMA and MCWRA.

Both agencies report seawater intrusion in the PSMCSD area. To the north of Elkhorn Slough, PVWMA has reported the gradual encroachment of seawater intrusion (100 mg/L chloride) from 1951 to 2011. The Springfield MWC service area of PSMCSD is within the intruded zone. To the south of Elkhorn Slough, MCWRA has reported seawater intrusion in the 180-foot aquifer (500 mg/L chloride) from 1944 to 2011. The Moss Landing Harbor service area of PSMCSD is within the intruded zone.

The major groundwater basin that underlies the SCVWD and SBCWD portions of the watershed is the Gilroy-Hollister Valley Groundwater Basin, which can be further subdivided into the Llagas, Bolsa, San Juan Bautista and Hollister sub-basins. Portions of the Gilroy-Hollister Valley Groundwater Basin are subject to high groundwater levels; over the past few years, the groundwater table has approached or reached the land surface at several locations creating nuisance problems for existing land uses. Portions of this basin are also affected by high salinity levels, nutrients, MTBE, and other contaminants, which can impact the beneficial use of groundwater. Figure 2-10 shows the groundwater basins in the watershed in relation to county boundaries and fault lines.

Figure 2-10: Groundwater Basins within the Pajaro River Watershed Region



Groundwater recharge occurs through natural methods as well as artificial, or managed, methods. Currently, natural methods such as infiltration of rainfall, seepage of stream flow, and percolation of irrigation water are the primary sources of recharge in the Pajaro Valley Groundwater Basin. The variation in precipitation and stream flow influences how and when the Pajaro Valley Groundwater Basin is recharged. Within the SBCWD portion of the Gilroy-Hollister Valley Groundwater Basin, recharge occurs through a combination of natural and artificial methods including infiltration of rainfall, direct runoff, CVP water percolation, percolation from surface water from reservoirs, and deep percolation of

irrigation water and treated wastewater effluent. Percolation of imported CVP has served as a significant source of recharge in the Hollister and San Juan Bautista sub-basins; the Bolsa sub-basin does not receive CVP water. Groundwater recharge is also promoted through releases from the Hernandez and Paicines Reservoirs which store runoff during the wet months and release during the dry season. Both artificial and natural recharge are important for sustaining the groundwater supplies in the Llagas sub-basin of the Gilroy-Hollister Valley groundwater basin and can be an effective tool for conjunctive management of surface and groundwater supplies. In an effort to balance groundwater extraction and to ensure that groundwater supplies are sustained, SCVWD operates several stretches of active in-stream recharge and four percolation ponds within the Llagas sub-basin. These artificial recharge operations employ water from local reservoirs and imported water. The limiting factor in SCVWD's groundwater recharge operations is the condition and extent of its infrastructure.

The quantity of groundwater available for use in the region is based on the groundwater sustainable yields and the groundwater quality. Table 2-2 presents the groundwater quantities that are assumed for the region and Table 2-3 summarizes groundwater quality concentration ranges for various sub-basins within the Pajaro River watershed.

Table 2-2: Groundwater Sustainable Yields

Service Area Basin	Sustainable Yield (AFY)
PVWMA	24,000[a]
SBCWD	54,000[b]
SCVWD	21,500[c]
Total	**99,500**

Footnote:

a. The sustainable yield with current pumping practices is only 24,000 AFY; however with modified practices it may increase to 48,000 AFY. (RMC, PVWMA Revised Basin Management Plan, February 2002)

b. While the sustainable yield is 54,000 AFY, the assumed beneficial yield is only 39,000 AFY due to water quality issues. (Kennedy Jenks, 2004)

c. The 2012 Groundwater Management Plan lists the 10-year average natural recharge of Llgas Sub-basin as 21,500 AFY (SCVWD, 2012 GWMP).

Table 2-3: Groundwater Quality Concentration Ranges for Pajaro River Watershed Sub-basins

Parameter	Pajaro Valley[a]	San Benito Basin Wide[b]	Llagas[c]
Chloride (mg/L)	10-18,500	2.5-1,610	16-109
Sulfate (mg/L)	1-2,872	0.2-1,400	3.5-63.2
Nitrate (mg/L)	0.1-1,487	0.1-513	<0.05-148
TDS (mg/L)	300-28,000	8.0-6,321	288-746
SAR	0.2-45.3	94-240	0.47-3.38
Electrical Conductance (uS/cm at 25°C)	0-43,000	--	340-1,100
Aluminum (µg/L)	111-2,200	0.1-13,000	<20-130
Arsenic (µg/L)	0-30	0-540	<2
Barium (µg/L)	0-527	0.1-1,400	20-430
Boron (µg/L)	60-1,900,000	46-65,000	<50-220
Cadmium (µg/L)	1-175	0.5-10	<1
Chromium (µg/L)	1-140	0-87	<10
Copper (µg/L)	8-1,600	0-1,240	<50-150
Fluoride (mg/L)	0.23-230	0-0.51	<0.05-0.32
Iron (µg/L)	0.55-28,500	0-24,000	<20-270
Lead (µg/L)	1-80	0-35	<5
Manganese (µg/L)	0.36-4,800	0-2,640	<20-110
Mercury (µg/L)	0.1-5.8	0-30	<1
Nickel (µg/L)	0-25	0.5-520	<10
Selenium (µg/L)	1-5	0.6-61	2.1-2.8
Silver (µg/L)	0-5	7-80	<10
Zinc (µg/L)	2-6,000	0.1-3,000	<10-130

Footnotes:

a. Source: Data from PVWMA.
b. Source: Todd Engineers, *Development of a Water Quality Monitoring Program - Hollister Groundwater Basin*, June 2004.
c. Source: Santa Clara Valley Water District 2010 Groundwater Quality Report, June 2011. Values represent the lowest detected value and maximum value.

Specific groundwater quality issues of concern include seawater intrusion along the coast, perchlorate plumes in San Martin and Hollister, long-term groundwater salinity build up in the upper watershed, and nitrates. In an effort to better understand and manage the salt and nutrient issues, three Salt and Nutrient Management Plans were completed as part of the Pajaro River Watershed IRWM Plan Update. The plans were completed for the three critical groundwater subbasins, the Llagas Subbasin managed by SCVWD, the Bolsa, Hollister and San Juan Bautista Area Subbasins managed by SBCWD and the Pajaro Valley Groundwater Basin managed by PVWMA. A summary of the conclusions for each subbasin is provided below.

Groundwater quality within the Llagas Subbasin is generally good and is acceptable for potable, as well as irrigation and livestock, uses with the notable exception of nitrate. Anthropogenic activities have resulted in elevated nitrate concentrations in many production wells. The current analysis indicates that average Total Dissolved Solids (TDS) and nitrate-NO_3 concentrations in the subarea/layers and Llagas

Subbasin as a whole are below their respective Water Quality Objectives (WQOs). Accordingly, there is available assimilative capacity when compared with the WQOs. While average nitrate-NO_3 concentrations are below the Maximum Contaminant Level (MCL), nitrate-NO_3 is present above the MCL in many wells in the Subbasin and elevated nitrate has been a recognized water quality concern for many years. In response to this condition, the District and stakeholders have conducted studies and developed programs to mitigate nitrogen releases and water quality impacts. Predictions indicate that the WQOs (secondary MCL for TDS and the MCL for nitrate-NO_3) will not be exceeded in the future planning period. Sources that add salt and nutrient (S/N) load and degrade groundwater quality as well as those that improve groundwater quality are similar in the future planning period as in the baseline period.

Major current sources of TDS loading to the Subbasin include agricultural irrigation return flows, municipal and domestic irrigation return flows, wastewater treatment and recycling facility percolation ponds, and septic systems. Note that all recharge sources (with any measurable S/N concentration) add S/N load to the Subbasin; however, recharge sources that have TDS and nitrate-NO_3 concentrations lower than the ambient average groundwater concentrations will improve groundwater quality relative to background. Managed Aquifer Recharge (MAR) contributes a significant portion of the TDS load in the northern Subbasin, where most recharge occurs, but this recharge improves groundwater quality because the recharge water is very low in TDS and nitrate-NO_3 compared to the groundwater. Major current sources of nitrate-NO_3 loading to the Subbasin include agricultural irrigation return flows, septic system, and domestic and municipal irrigation return flows. The District has had a voluntary, comprehensive groundwater quality monitoring and reporting program for many years to ensure that water quality concerns are identified and actively managed.

Groundwater quantities in the Hollister and San Juan Bautista Area Subbasins are at or near historic highs in most of the subbasin area due to imported water, managed percolation, and decreased groundwater use. The Bolsa Subbasin however, which does not receive CVP imported water and relies on solely groundwater for water supply has shown some depression due to groundwater pumping. All of the subbasins have existing assimilative capacity for TDS and nitrate, although very limited assimilative capacity exists in the San Juan Bautista North area.

TDS and nitrate levels are generally well below the respective WQOs and other pertinent criteria. In reviewing time concentration data, TDS trends are somewhat mixed; however, more wells show decreasing trends than increasing trends, mainly due to large outflows. In the Bolsa Subbasin, due to the lack of groundwater outflows, TDS concentrations are expected to increase slightly. Nitrate trends in concentration were projected to be virtually unchanged; increases in nitrate concentration are projected to be small, well below 10 mg/L nitrate by the end of 2021. At this time, no additional measures, beyond those that have already been implemented, are recommended. The SNMP process will, however, enable continued evaluation of the efficacy of implementation measures.

The groundwater budget for the Pajaro Valley Groundwater Basin (PVGB) suggests an average deficit of 15,000 AFY over a five year simulation period. Based on the modeling results, PVWMA established a target of reducing groundwater production in the PVGB by approximately 12,000 AFY. An update to the PVWMA Basin Management Plan (2012 BMP Update) was developed by an Ad Hoc Basin Management Plan committee, established by the Board of Directors in 2010. Three main projects and programs will help meet this goal: 1) conservation programs (estimated savings of 5,000 AFY), 2) optimizing use of existing water supply facilities, including the recycled water facility (estimated addition of 3,000 AFY), and 3) construction of new water supplies capable of producing 4,100 AFY.

Groundwater quality varies significantly both spatially and vertically throughout the PVGB. For example, TDS concentrations range from a minimum of 45 mg/L to a maximum value over 27,000 mg/L. Locations in the PVGB where TDS concentrations are highest include the western boundary, consistent with the mapped seawater intrusion front. Eastern areas are elevated including Murphy Crossing and the East Area where stream flow infiltration of high TDS water originating in the upper reaches of the Pajaro

River Watershed occurs. Seawater intrusion is the greatest source of salts to the aquifer system, with approximately 20% of the groundwater within the basin observed to have chloride concentrations in excess of 100 mg/L. Elevated groundwater concentrations of nitrate-NO3 are found in the sand dunes of the San Andreas Terrace as well as in the eastern area between Highways 129 and 152. The main source of nitrates in the basin is direct infiltration via agricultural land uses, followed by streamflow infiltration. Given that no WQOs are explicitly stated for the PVWMA area in the current Water Quality Control Plan for the Central Coastal Basin (Basin Plan, 2011), the threshold concentrations for each constituent of concern were selected based on the thresholds defined for neighboring basins. The analysis suggests a significant amount of assimilative capacity with respect to TDS remains in the PVWMA groundwater basin with over 90% of area to have concentrations below 1,000 mg/L TDS. For nitrates, the analysis suggests some level of remaining assimilative capacity for over 80% of the Basin. However, nearly 20% of the Basin has average nitrate concentrations that exceed the selected threshold of 45 mg/L.

The PVWMA has targeted additional projects to increase water supply and quality including adding additional recycled water storage, increasing recycled water delivery, increasing managed aquifer recharge, and increasing agricultural water use efficiency through an "On-Farm Irrigation Efficiency Program."

The City is faced with a stringent hexavalent chromium regulation that will be implemented in July 2014. 90% of the City of Watsonville drinking water demands are supplied by twelve groundwater wells extracting from the Pajaro Valley basin, all of which are impacted by hexavalent chromium and six of which will exceed the new 10ppb MCL regulatory limit. 50% of the City's water supply will be in violation of the new MCL. Until treatment is implemented, the impacted wells will not meet primary drinking water standards leaving the City vulnerable to drinking water MCL violations. The City is asking the state for a review of economic impacts to communities and for financial assistance to comply with the regulation.

Other groundwater quality issues include a perchlorate plume in the Morgan Hill area that originated from a former flare manufacturing facility. Currently, the responsible party, Olin Corporation is conducting pump and treat cleanup and monitoring natural attenuation of the plume.

2.5.2 Local Surface Water

Local surface waters provide a variety of important functions and benefits in the watershed. These functions and benefits include drainage, flood protection, groundwater recharge, ecological habitats, recreation, and water supply. Important surface water characteristics include water quality, flood conveyance, and interaction with groundwater. Figure 2-11 shows the major surface waters in the watershed including reservoirs, creeks, and rivers.

Table 2-4 provides descriptions of the major reservoirs owned by agencies within the Pajaro River watershed. San Luis Reservoir, which lies outside of the watershed, will be discussed in greater detail in Section 2.5.3.

Figure 2-11: Major Surface Waters

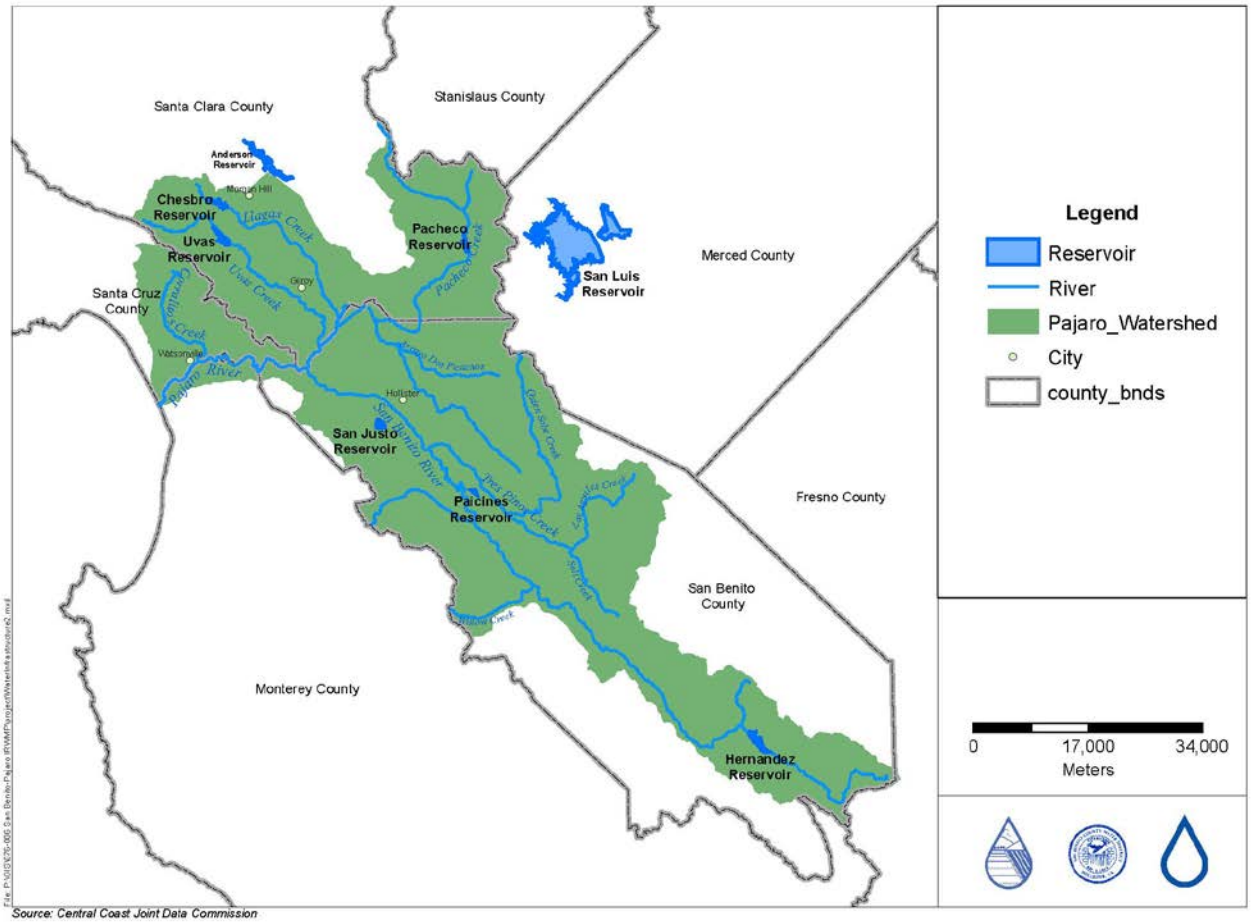


Table 2-4: Existing Major Local Surface Supply Reservoirs

Agency/Reservoir Name	Capacity (AF)	Notes
SCVWD		
Chesbro Reservoir	7,945	Chesbro Reservoir discharges to Llagas Creek, which ties into Pajaro River. The reservoir is operated primarily for flood protection, but also facilitates groundwater recharge in the Gilroy-Hollister Groundwater Basin, provides environmental benefits, and supports recreation activities.
Uvas Reservoir	9,835	Uvas Reservoir discharges to Uvas Creek, which ties into Pajaro River. The reservoir is operated to facilitate groundwater recharge in the Gilroy-Hollister Groundwater Basin. It also provides flood protection, environmental, and recreational benefits.
Anderson Reservoir	90,373	Anderson Reservoir discharges to Coyote Creek, which flows to the San Francisco Bay. The reservoir is operated to facilitate groundwater recharge in the Santa Clara Valley Groundwater Basin and provide an emergency source of supply to SCVWD water treatment plants. The reservoir also provides flood protection, environmental, and recreation benefits. Though located outside the Pajaro River Watershed, historically, the reservoir was connected to the Gilroy-Hollister Groundwater Basin via a pipeline.
SBCWD		
Hernandez Reservoir	18,300	Hernandez Reservoir stores runoff from the upper San Benito River and has a tributary watershed of about 85 square miles. The reservoir covers about 610 acres. The reservoir is operated to facilitate groundwater recharge in the Gilroy-Hollister Groundwater Basin and provide flood protection.
Paicines Reservoir	2,870	The Paicines Reservoir is an off-stream reservoir located between the San Benito River and Tres Pinos Creek and is filled by water diverted from the San Benito River, with some water coming from water stored and released from Hernandez Reservoir.
San Justo Reservoir	10,000	San Justo Reservoir (owned by the USBR) is located 3 miles southwest of Hollister. San Justo Reservoir provides elevated operational storage and flexibility for the SBCWD CVP system.
Pacheco Pass Water District		
Pacheco Reservoir	6,143	Pacheco Reservoir discharges to North Pacheco Creek which ties into the Pajaro River. This reservoir facilitates local groundwater recharge. The reservoir is owned and operated by Pacheco Pass Water District although data collection and management is performed by SCVWD.

College Lake, a potential new surface storage and flood protection reservoir, is located approximately one mile northeast of the Watsonville city limits. It is a naturally occurring seasonal lake that receives water inflows from the Green Valley, Casserly, and Hughes Creek subwatersheds. These streams drain approximately 11,000 acres of range, rural residential and crop lands. Outflows from the lake naturally flow downstream to Salsipuedes Creek in the winter months. Downstream from College Lake, Corralitos Creek converges with Salsipuedes Creek, which flows into the Pajaro River and ultimately into the Monterey Bay. An existing low dam on the south side of the lake causes inundation of approximately 260 acres of the basin. In the spring, the lake basin is typically pumped dry to allow farming to take place during the summer months. This practice continues today and a majority of the lakebed is used for row crops including vegetables, strawberries, flowers, raspberries, and grapes.

As part of the Pajaro River Watershed IRWM Plan Update, the Santa Cruz County RCD is leading a study to improve understanding of the hydrology of College Lake. This effort will be used to support collaboration between private landowners and public agencies in development of a management alternative to maximize benefits for water supply and flood management, while simultaneously improving water quality and habitat within the lake. The study will include the selection of a preferred alternative which will balance water supply, water quality, habitat, agriculture, and community needs.

2.5.2.1 Watershed Flooding

Flooding along the Pajaro River is a major point of conflict in the watershed. In 2000, the Pajaro River Watershed Flood Prevention Authority (FPA) was formed by the State legislature to work with both upper and lower watershed stakeholders to investigate and develop a regional recommendation to address flooding along the Pajaro River. A watershed study has been completed with a recommended integrated set of flood projects in the lower and upper watershed to address flooding. Major elements of the Pajaro River Flood Protection Program include the Soap Lake Floodplain Preservation Project, Lower Pajaro River Bench Excavation, and the Corps' Lower Pajaro River Flood Risk Reduction Project.

The Pajaro River is a perennial stream that flows between four counties. In the upper watershed, the river is the dividing line between Santa Clara and San Benito counties. In the lower watershed, the river is the dividing line between Monterey and Santa Cruz counties. The downstream portion of the River is channelized with a levee that runs 11.3 miles to the ocean through Santa Cruz and Monterey Counties. The levee was deemed inadequate by the Corps when it first flooded in 1955. Another major flood occurred in 1995 that has resulted in a renewed urgency to increase the levee's level of flood protection. Monterey and Santa Cruz counties provide annual maintenance of the levee system. On-going vegetation and sediment maintenance activities are done in order to provide as much flood conveyance capacity as possible within the existing levee system. The levee system suffers from restricted flood carrying capacity caused by accumulated sediment deposition.

The City of Watsonville, the unincorporated town of Pajaro, and surrounding agricultural areas in Monterey and Santa Cruz Counties, are subject to flooding from the Pajaro River. In addition, the City of

Watsonville and surrounding agricultural areas in Santa Cruz County are also subject to separate and independent flooding from Salsipuedes and Corralitos Creeks.

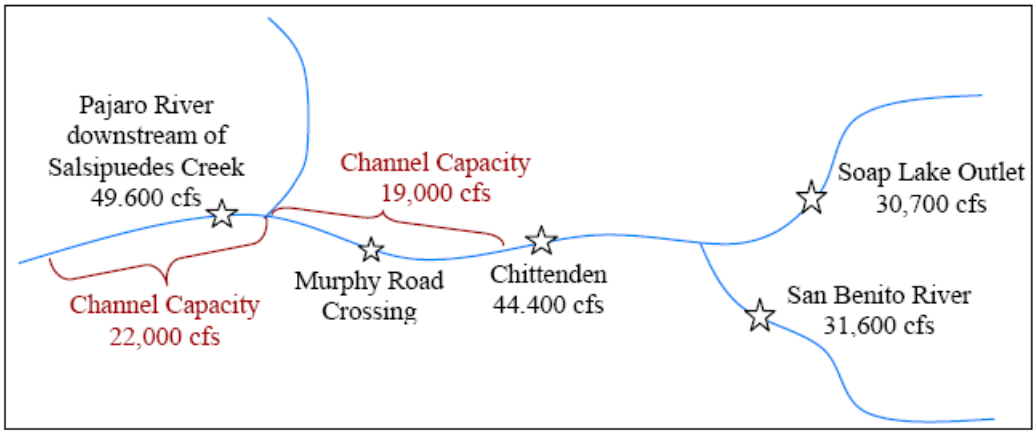
Significant flooding and associated urban and agricultural damages in Monterey County resulted from the March 1995 flood on the Pajaro River. Agricultural crop damages were estimated at $67 million for the 3,280 acres that were flooded, and urban damages in the unincorporated town of Pajaro were estimated at $28 million. In February 1998, significant flooding occurred in Santa Cruz County downstream of the urban areas of Watsonville, with an estimated $1.7 million in agricultural crop damages and $0.4 million in non-crop damages. This relatively low damage estimate is due to the fact that 800 out of 1,100 acres of land flooded were in the preparation phase and without established plantings.

The existing channel capacity in the lower reaches of Pajaro River is approximately 22,000 cubic feet per second (cfs), which is well below the expected 100-year flood event of 44,400 cfs. The following figures and data are excerpted from the *Pajaro River Watershed Study Phase 2 Report, RMC, April 2003* that was produced for the PRWFPA (RMC, 2003).

Table 2-5: Hydrologic Model Peak Flows Based on General Plan Buildout Conditions

Watershed Location	Peak Model Flow Rate (cfs)		
	25-year Event	50-year Event	100-year Event
San Benito River	18,800	26,200	31,600
Soap Lake Outlet on Pajaro River	21,600	27,400	30,700
Chittenden Gage on Pajaro River	29,300	38,400	44,400
Pajaro River Downstream of Salsipuedes Creek	32,700	43,100	49,600

Figure 2-12: 100-Year Return Period Peak Design Flows on the Lower Pajaro River



Two recent legal decisions, the Arreola Decision and the Paterno Decision, have shaped flood management policy and prompted warnings to State and local government about California's flood management crisis. The Arreola Decision stems from damages in the 1995 Pajaro River flood. A white paper was prepared at the direction of the legislature after the Paterno Decision that held the State liable for flood damages caused by levee failure on the Yuba River.

In 2012 and 2013, SCCFC&WCD and MCWRA implemented the Pajaro River Bench Excavation Project. The Pajaro River Bench Excavation Project is specifically designed to relieve the magnitude and severity of potential future flooding of the Pajaro River levees until the Corps Levee Reconstruction Project is built. The current flood conveyance capacity is equivalent to an 8-year flood. Model results

indicate that the 100-year flood stage will be reduced by a maximum of 1.2 feet and the project will increase capacity by approximately 2,000 cfs or approximately 10% once the benches are constructed. The project creates a 2.5 year floodplain to re-establish flow levels at bank-full capacity. The project improves channel form and function by enhancing the potential for increased sinuosity within the newly created floodplain area. The increased meander lengths for the stream lessen the stream gradient and also are expected to reduce flow velocities.

This is expected to be a more self-maintaining scenario for the River, returning it to its natural ability to more effectively move sediment out of the river channel system to the ocean by natural geomorphic processes. This project creates more lateral room for the river to meander over a wider floodplain area within the levee channel. The benches also allow more efficient and less intrusive sediment management techniques. Model results indicate that benches allow sediment to be collected outside of the main channel and closer to the banks. Reducing the need for channel maintenance will lead to reduced annual costs and less environmental impact. Sediment removal equipment will also not necessarily need to be operated deep in the waterway since the benches will move the removal areas closer to the levees.

In an effort to better understand how sediment is eroded, transported and deposited in the Pajaro River, the FPA completed the San Benito River Watershed Study as part of the Pajaro River Watershed IRWM Plan Update. The San Benito River is the main tributary to the Pajaro River, with a watershed area of 607-square miles upstream of Hollister, California. The San Benito River watershed has relatively high relief, and lies parallel with, and slightly north of, the San Andreas Rift Zone for a length of approximately 60 miles. Land use within the watershed is largely rural, dominated by agriculture and ranching. Whether the San Benito or the upper Pajaro River is the main source of sediment to the lower Pajaro River is uncertain; the San Benito River watershed is larger (659 square miles compared with 513 square miles for the upper Pajaro River at the confluence of the two channels), has steeper overall relief and has fewer depositional areas that would trap sediment from the upper watershed. By contrast the upper Pajaro River watershed is slightly smaller but generates more runoff due to higher annual rainfall. Determining the relative sediment contribution of the two tributaries and the rate at which sediment is transported to the downstream flood management reaches was the primary objective of the study.

Study results show that the lower reaches of the San Benito River have generally remained stable to depositional, while the upper half has experienced persistent incision, with the highest observed rates near the upstream extent of the study area. It appears that multiple knickzones have migrated upstream at varying rates, thus propagating incision in a headward direction. Over the past decade, the upper part of the study reach has exhibited incision rates on the order of 0.3 to 0.6 feet per year. It is likely that these rates of incision will persist into the near future, generating excess sediment that is stored in the lower reach of the San Benito River and transported downstream into the Pajaro River. The highest rates of future fluvial bed incision are expected to occur upstream roughly from the old Highway 156 crossing to approximately one-quarter mile upstream of Nash Road. It is unclear to what degree the observed incision and possible knickzone migration is attributable to anthropogenic causes versus natural processes.

In contrast to the upper San Benito River, the upper Pajaro River (from the San Benito confluence upstream to Highway 101) has shown substantial aggradation since 1992 (between 1.9 and 5.1 feet). It does not appear that systemic incision on this reach of the Pajaro River is a notable source of sediment to the lower Pajaro River. It also appears unlikely that the flood detention function provided by Soap Lake would be threatened by incision along the Pajaro River at this time, as has sometimes been postulated.

Though the relative contributions between the two systems appears highly variable from year to year, sediment transport model results show that the San Benito River is a significant source of sediment for the lower Pajaro River, contributing a total cumulative load of 299,515 tons during a 100-year event, and 111,256 tons being delivered over the course of a 10-year event. Because the finest sediment largely passes through the lower Pajaro River and is transported to the ocean, the analysis separated out the total load from the sand and gravel load that are more likely to be deposited in the channel and to reduce flood

conveyance around Watsonville. Sand and gravel comprise approximately 22 to 23 percent of the cumulative, event-based sediment load from the San Benito River. A fraction of the sediment load delivered from the San Benito River is stored within the lower Pajaro River upstream of the Chittenden Pass and is likely remobilized during subsequent flood events. The remaining material is transported to the lower Pajaro where much is deposited in the flood prone reaches.

Predicted peak sediment transport rates, compared to observed sediment transport rates on the Pajaro River, indicate that the majority of the sediment deposited in the lower Pajaro River is contributed by the San Benito River. Event-based modeling results suggest that during extreme floods (i.e., from the 25-year and 100-year events) 50 to 64 percent of the lower Pajaro River's sediment load comes from the San Benito River, and during smaller, more frequent flood events (i.e., from the 10-year event down) the San Benito River's contribution gets progressively larger, increasing from approximately 80 to 100 percent.

Based on the model results, approximately 1,686,597 total tons of sediment would be delivered to the lower Pajaro River from the San Benito over a period of time reflected by the WY 1989-2010 hydrograph, 592,823 tons (or 35 percent) of which would be sand and gravel (and therefore most likely to be deposited in the area of greatest flood risk). Volumetrically, this represents approximately 1,716,971 cubic yards of total material and 471,709 cubic yards of sand and gravel. By comparison the Lower Pajaro River Bench Excavation Project has removed approximately 322,000 cubic yards of sand and gravel from the lower Pajaro River, representing about 15 years of cumulative coarse sediment delivery from the San Benito River (assuming all sediment was delivered from the mouth of the San Benito River to the bench excavation project area). Cumulatively, it is estimated that the San Benito River accounts for approximately 48 to 56 percent of the total sediment load and up to 86 percent of the sand and gravel load that would be delivered to the lower Pajaro River over an equivalent hydrograph.

Based on the study results, it was recommended that an opportunities and constraints assessment for erosion reduction be carried out on the San Benito River (between Hollister and the confluence with the Pajaro River). Ideally, this would include an assessment of natural versus anthropogenic causes of erosion and sources of sediment, and should focus on arresting potential knickzones that may migrate upstream and on stabilizing the banks and bed of the San Benito River.

The Upper Llagas Creek has flooded communities from San Martin to Morgan Hill since 1939. The current effort to mitigate flood damage began in 1982 when the Natural Resource Conservation Service and the SCVWD completed a comprehensive restudy of the Llagas Creek floodplain. At the time, an estimated 1,123 residential buildings, 64 mobile homes, 463 commercial establishments, and 24 industrial buildings were located in the flood-prone area; damages from a 100-year flood were estimated to be $8.5 million. Recurring floods have damaged homes and businesses. Most recently, on January 4, 2008, many residential and commercial areas of Morgan Hill experienced flooding depths ranging from a half foot up to three feet. As part of SCVWD's Safe, Clean Water Program (approved by voters in November 2012), the Upper Llagas Creek Flood Protection Project will provide flood protection to communities along the East Little Llagas Creek, West Little Llagas Creek and Llagas Creek in San Martin and Morgan Hill. In addition, the project design is being updated to protect homes, businesses and acres of agricultural land to preserve and enhance the creek's habitat, fish and wildlife.

The project extends approximately 13 miles from about Buena Vista Avenue to just beyond Llagas Road. The project will provide 100-year level of flood protection in the urban areas of Morgan Hill, as well as an approximate 10-year level of flood protection and no induced flooding in the agricultural areas of Gilroy and Morgan Hill. Measures to improve flooding potential include establishing riparian buffers, widening stream channels, removing physical barriers from waterways, installing drainage swales, and rehabilitating or replacing existing culverts.

2.5.2.2 Water Quality

The State Water Resources Control Board (SWRCB) has identified a number of water bodies in the Pajaro River watershed that suffer significant water quality impairments from a variety of pollutants that prevent their beneficial use as defined in the Regional Water Quality Control Board (RWQCB) Basin Plan. The beneficial uses affected include municipal, agricultural, and industrial water supply, groundwater recharge, support of rare, threatened or endangered species, migration and spawning of aquatic organisms, and preservation of wildlife habitat, biological habitats of special significance, cold and warm freshwater habitat, as well as estuarine ecosystems.

The impaired water bodies are listed on the RWQCB Clean Water Act (CWA) Section 303(d) list of impaired water bodies for nutrient, sediment, fecal coliform and other pathogens, mercury, chloride, pH, low dissolved oxygen, salinity, and pesticide pollutants/stressors. Table 2-6 summarizes the CWA Section 303(d) listed water bodies and the identified pollutant/stressors, based on the U.S. EPA 2010 Integrated Report (Clean Water Act Section 303(d) List / 305(b) Report). In total, 160.2 miles of river and creek reaches and 626 acres of reservoirs are impaired. Each water body-pollutant combination must be addressed through the development of a Total Maximum Daily Load (TMDL), which determines the total pollutant load that a water body can receive without affecting beneficial use. Each TMDL includes a determination of target load allocations for each source and identifies parties that will be responsible for attaining the TMDL allocations through reductions in pollutant loading. Once a TMDL is established, it must be implemented over a time period specified in the TMDL. The status of the TMDL associated with each water body-pollutant combination is included in Table 2-7.

Table 2-6: Pajaro River Watershed CWA Section 303(d) Listed Water Bodies (2010 Update)[1]

Water Body Name (Length/Area Impaired)	Pollutant/Stressor	Potential Sources
Chesbro Reservoir	Mercury	Source Unknown
Corralitos Creek (13 miles)	Fecal Coliform	Collection system failure, natural source s, septic tanks, pasture grazing, transient encampments, and urban runoff
	E. Coli	Collection system failure, combined sewer overflows, natural sources, septic tanks, pasture grazing, transient encampments, urban runoff
	Turbidity	Agriculture and urban runoff
	pH	Agriculture and urban runoff, natural sources
Furlong Creek (8.5 miles)	Chlorpyrifos	Agriculture
	E. Coli	Agriculture and natural sources
	Fecal Coliform	Agriculture and natural sources
	Nitrate	Agriculture
	Turbidity	Agriculture
Hernandez Reservoir (626 acres)	Mercury	Surface Mining

[1] U.S. EPA 2010 Integrated Report (Clean Water Act Section 303(d) List / 305(b) Report)

Water Body Name (Length/Area Impaired)	Pollutant/Stressor	Potential Sources
Llagas Creek above Chesbro Reservoir (8.5 miles)	Temperature	Source unknown
	pH	Source unknown
Llagas Creek below Chesbro Reservoir (16 miles)	Chloride	Non-point Source, Point Source
	Chlorpyrifos	Agriculture, Source Unknown
	Electrical Conductivity	Source Unknown
	E. Coli	Source Unknown
	Fecal Coliform	Pasture Grazing-Riparian and/or Upland Irrigated Crop Production Agricultural Return Flows Habitat Modifications
	Low Dissolved Oxygen	Municipal Point Sources Irrigated Crop Production Agricultural Return Flows Habitat Modification
	Nutrients	Municipal Point Sources Agriculture Irrigated Crop Production Pasture Grazing-Riparian and/or Upland Agriculture-Storm runoff Agriculture-Irrigation Tailwater Agriculture-Return Flows Urban Runoff/Storm Sewers Habitat Modification Non-point Source Unknown Point Source
	Sedimentation /Siltation	Agriculture Hydromodification Habitat Modification
	Sodium	Nonpoint Source, Source Unknown
	TDS	Source Unknown
	Turbidity	Source Unknown
Millers Canal	Chlorophyll-a	Agriculture, channelization, grazing-related sources, removal of riparian vegetation, source unknown
	Chlorpyrifos	
	E. Coli	
	Fecal Coliform	

Water Body Name (Length/Area Impaired)	Pollutant/Stressor	Potential Sources
	Low Dissolved Oxygen	
	Temperature	
	Turbidity	
	pH	
Pacheco Creek	Fecal Coliform	Agriculture, grazing-related sources, natural sources
	Low Dissolved Oxygen	Agriculture, grazing-related sources, natural sources
	Turbidity	Agriculture, grazing-related sources
Pajaro River (32 miles)	Boron	Agriculture, other urban runoff, saltwater intrusion, source unknown
	Chlordane	Source unknown
	Chloride	Agriculture, natural sources, other urban runoff, saltwater intrusion
	Chlorpyrifos	Agriculture, other urban runoff
	DDD	Source unknown
	Dieldrin	Source unknown
	E. Coli	Collection system failure, natural sources, onsite wastewater systems, pasture grazing – riparian and/or upland, transient encampments, urban runoff/storm sewers
	Fecal Coliform	Collection system failure, natural sources, onsite wastewater systems, pasture grazing – riparian and/or upland, transient encampments, urban runoff/storm sewers
	Low Dissolved Oxygen	Agriculture, grazing-related sources, other urban runoff, removal of riparian vegetation, unknown nonpoint source
	Nitrate	Agriculture, urban ruoff/storm sewers
	Nutrients	Agriculture Irrigated Crop Production Agriculture-Storm Runoff, Subsurface Drainage, Irrigation Tailwater, Return Flows Urban Runoff/Storm Sewers Wastewater-land Disposal

Water Body Name (Length/Area Impaired)	Pollutant/Stressor	Potential Sources
		Channelization Removal of Riparian Vegetation Non-point Source
	PCBs	Source unknown
	Sedimentation/ Siltation	Agriculture Irrigated Crop Production Range Grazing-Riparian and/or Upland Agriculture-Storm Runoff Resource Extraction Surface Mining Hydromodification Channelization Habitat Modification Removal of Riparian Vegetation Streambank Modification/Destabilization Channel Erosion
	Sodium	Agriculture, natural sources, other urban runoff, saltwater intrusion, unknown nonpoint source
	Turbidity	Agriculture, grazing-related sources, other urban runoff, removal of riparian vegetation
	pH	Source unknown
Pinto Lake	Chlorophyll-a	Agriculture, groundwater loadings, nurseries, onsite wastewater systems
	Cyanobacteria Hepatotoxic Microcystins	Agriculture, nurseries, septage disposal
	Low Dissolved Oxygen	Agriculture, groundwater loadings, nurseries, onsite wastewater systems
	Scum/Foam Unnatural	Agriculture, nurseries, onsite wastewater systems, urban runoff/storm sewers
	pH	Agriculture, groundwater loadings, nurseries, onsite wastewater systems, other urban runoff
Salsipuedes Creek (Santa Cruz County)	E. Coli	Agriculture, natural sources, other urban runoff, transient encampments
	Fecal Coliform	Agriculture, natural sources, other urban runoff, transient encampments
	Low Dissolved Oxygen	Agriculture, other urban runoff, removal of riparian vegetation
	Turbidity	Agriculture, other urban runoff, removal of riparian

Water Body Name (Length/Area Impaired)	Pollutant/Stressor	Potential Sources
		vegetation
	pH	Source Unknown
San Benito River (86 miles)	Boron	Agriculture, grazing-related sources, natural sources, other urban runoff, resource extraction, source unknown
	Electrical Conductivity	Agriculture, grazing-related sources, natural sources, other urban runoff, resource extraction, source unknown
	E. Coli	Agriculture, grazing-related sources, natural sources, other urban runoff
	Fecal Coliform	Agriculture, natural sources, other urban runoff, source unknown
	Sedimentation/ Siltation	Agriculture Resource Extraction Non-point Source
	Unknown Toxicity	Agriculture, grazing-related sources, natural sources, other urban runoff, resource extraction, source unknown
	pH	Source unknown
Tequisquita Slough (7.2 miles)	Fecal Coliform	Agriculture Natural Sources Non-point Source
	Low Dissolved Oxygen	Source unknown
	Turbidity	Source unknown
	pH	Source unknown
Tres Pinos Creek	E. Coli	Source unknown
	Fecal Coliform	Source unknown
	pH	Natural sources, source unknown
Watsonville Creek	E. Coli	Agriculture, grazing-related sources, natural sources
	Fecal Coliform	Agriculture, grazing-related sources, natural sources
	Low Dissolved Oxygen	Agriculture, grazing-related sources, groundwater loadings, removal of riparian vegetation
	Nitrate	Agriculture, grazing-related sources, groundwater loadings, removal of riparian vegetation
	pH	Agriculture, grazing-related sources, groundwater loadings, removal of riparian vegetation
Watsonville Slough (6.2 miles)	Low Dissolved Oxygen	Agriculture, removal of riparian vegetation, urban runoff/storm sewers
	Pathogens	Urban Runoff/Storm Sewers Source Unknown

Water Body Name (Length/Area Impaired)	Pollutant/Stressor	Potential Sources
		Non-point Source
	Pesticides	Agriculture Irrigated Crop Production Agriculture-Storm Runoff, Irrigation Tailwater Non-point Source
	Turbidity	Agriculture, removal of riparian vegetation, urban runoff/storm sewers

Table 2-7. Status of Pajaro River Watershed TMDLs

TMDL Project Name	Status	Water Body(ies)
Clear Creek and Hernandez Reservoir Mercury TMDL	Completed in 2004	Clear Creek and Hernandez Reservoir
Corralitos Creek Pathogen TMDL	Completed in 2012	Corralitos and Salsipuedes Creeks
Pajaro River Watershed Chlorpyrifos and Diazinon	Completed in 2013	Pajaro River, Pajaro River Estuary, Llagas Creek, and tributaries
Pajaro River Watershed Fecal Coliform	Completed 2010	Pajaro River, San Benito River, Llagas Creek, Tesquiquita Slough, San Juan Creek, Carnadero/Uvas Creek, Bird Creek, Pescadero Creek, Tres Pinos Creek, Furlong (Jones) Creek, Santa Ana Creek, and Pacheco Creek
Pajaro River Watershed Nitrate TMDL	Completed in 2006	Pajaro River and Llagas Creek
Pajaro River Watershed Nutrients TMDL	In Progress; Will supercede the Pajaro River Watershed Nitrate TMDL	Mulitple
Pajaro River Watershed Sediment TMDL	Completed in 2006	Pajaro River, Llagas Creek, Rider Creek, and San Benito River
Pinto Lake Watershed TMDLs for Nutrients and Algal Toxins	In Progress	Pinto Lake and Tributaries
Watsonville Slough Pathogens TMDL	Completed in 2006	Watsonville Slough

The nitrate and sediment TMDLs will have the most widespread impact on stakeholders and agencies in the watershed. These two TMDLs have identified irrigated agriculture as a significant anthropogenic

source of both nitrate and sediment loading. Additional sources of sediment loading that have been identified are silviculture, urban/residential areas, streambank erosion, sand and gravel mining, rangeland/grazing, roads and landslides/natural erosion. Nitrate and sediment pose one of the most significant challenges to water quality. For instance, tributary streams to the Pajaro River feed surface water concentrations in excess of 40 (up to 80) ppm nitrate-N during the drought season. The TMDL for Nitrates is scheduled to be implemented over a 20 year period and will use the Central Coast Regional Water Quality Control Board's existing Conditional Waiver for Discharges from Irrigated Agricultural Land to implement the TMDL. The TMDL for Sediment has a timeframe of 45 years and focuses on the implementation of Farm and Range Water Quality Plans, renewal of existing Waste Discharge Requirements for sand and gravel mining operations and a land disturbance prohibition for pasture and rangelands, roads, animal and livestock facilities and hydromodification-related activities. As described below, a number of efforts have evolved that will help address these TMDLs. These efforts involve the participation of a diverse group of stakeholders and agencies throughout the watershed.

The Central Coast RWQCB adopted Order No. R3-2012-0011 (Conditional Waiver of Waste Discharge for Discharges from Irrigated Lands). This order regulates discharges of "waste" as defined in the Water Code section 13050 and "pollutants" as defined in the Clean Water Act from irrigated lands by requiring individuals subject to the order to comply with conditions to ensure that such discharges do not cause or contribute to the exceedance of Regional, State, or Federal numeric or narrative water quality standard in the waters of the State and of the United States.

The Order requires compliance with water quality standards. Dischargers must implement, and where appropriate, update or improve management practices, which may include local or regional control or treatment practices and changes in farming practices to effectively control discharges, meet water quality standards and achieve compliance with this Order. Consistent with the Water Board's Policy for Implementation and Enforcement of the Nonpoint Source Pollution Control Program (SWRCB, 2004), dischargers comply by implementing and improving management practices and complying with the other conditions, including monitoring and reporting requirements. The Order requires the discharger to address impacts to water quality by evaluating the effectiveness of management practices (e.g., waste discharge treatment and control measures), and taking action to improve management practices to reduce discharges. If the discharger fails to address impacts to water quality by taking the actions required by the Order, including evaluating the effectiveness of their management practices and improving as needed, the discharger may then be subject to progressive enforcement and possible monetary liability. The Discharger has the opportunity to present their case to the Central Coast Water Board before any monetary liability may be assessed (RWQCB Order R3-2012-0011).

The Central Coast RWQCB is currently developing the TMDL for nutrients and algal toxins in the Pinto Lake Watershed. Pinto Lake is listed on the 303(d) list due to impairments by toxic algal blooms and nutrients. This type of water quality impairment is a biological response to excessive loading of nutrients to the lake, such as phosphorus. Episodic algal blooms in Pinto Lake, which result from nutrient-driven biostimulation, constitute a potential health risk and public nuisance to humans, their pets, and to livestock and wildlife. Pinto Lake is considered one of the most toxic lakes ever recorded in the scientific literature.

The City of Watsonville was awarded a 319(h) planning grant to evaluate treatment alternatives and then a 319(h) implementation grant to implement the recommended treatment approach. Currently being implemented, the Pinto Lake Restoration Project will be based on the findings of the planning study and the extensive research completed as part of the planning study. The main objectives of the Pinto Lake - CLEAN THE GREEN project are as follows:

- Treat internal nutrient loadings that drive cyanobacteria blooms using environmentally safe and proven technologies including polymers/coagulants.

- Treat nutrient loadings from the tributaries (which flow seasonally into the lake) with a flow-based polymer/coagulant (such as alum) dosing system and through implementation of nutrient best management practices (BMPs) within the watershed.
- Coordinate with watershed stakeholders to gain participation in implementation efforts that reduce loadings to Pinto Lake.
- Collect and analyze water quality data verifying reduction of nutrients in-lake and from the watershed as a result of treatment efforts.

The Santa Cruz County RCD completed the *Lower Pajaro River Enhancement Plan* (December 2002) to assess erosion and sedimentation problems in several tributary watersheds in the Lower Pajaro River Watershed. The plan was supported by a grant jointly funded by the California Coastal Conservancy and the Central Coast RWQCB. A key goal of this enhancement plan was to work in cooperation with landowners, land managers, and agency staff to assess historical and existing conditions in order to determine principal physical factors causing significant erosion and sedimentation problems in the areas studied. The baseline study identified enhancement strategies to address and reduce drainage and erosion problems in the study area. The Plan was reviewed by a steering committee of Lower Pajaro landowner and interest groups and by a Technical Advisory Committee (TAC) of agencies and resource professionals.

A variety of alternative on-farm and bank stabilization BMPs were presented that are used to stabilize sediment (source control) and to reduce erosion and the delivery of sediment from upland areas and waterways. All of the practices described are cost-effective methods designed to stabilize soil by primarily slowing runoff from the fields and by stabilizing stream and waterway banks that are experiencing excessive bank erosion. These sheet and rill erosion from bare fields and bank erosion from unstable drainage ditches and waterways are resulting in erosion and sedimentation problems in the Pajaro Valley region. Several of the recommended BMPs also provide additional benefits to the land by conserving soil, improving water infiltration and groundwater recharge, improving soil fertility, reducing costs for ongoing maintenance of infrastructure (access roads and drainage systems), reducing land loss, enhancing habitat and improving water quality. Practices described are well established techniques, recommended by local, state and federal resource conservation agencies, including the Santa Cruz County RCD and the Natural Resource Conservation Service.

The Monterey Bay National Marine Sanctuary (MBNMS) *Action Plan IV: Agriculture and Rural Lands* focuses on strategies to protect water quality from potential adverse impacts of agricultural land management, while recognizing the importance of maintaining agricultural use of the lands for the long-term health of the watersheds. The Plan was developed and adopted with participation from over twenty stakeholders. This is because effectively managed agricultural lands can act to slow and capture storm water runoff, provide sites for recharge, water storage and wildlife habitat, and reduce the impact of flood events.

The aspects of agriculture that potentially impact water quality include erosion and sedimentation, offsite transport of chemical fertilizers and pesticides, and microbial contamination. Storm water, flooding, irrigation, and leaching can all mobilize substances that are beneficial while on-site, but become pollutants as they concentrate in neighboring groundwater, streams, rivers, wetlands, and nearshore waters. Though each individual farm or ranch may contribute a relatively small amount of pollutants, the cumulative effects through the length of a watershed can be damaging. At the same time, the offsite movement of sediments, pesticides and nutrients can represent a long-term economic loss to the grower.

Many farmers, ranchers and forest landowners have already adopted a variety of management measures to reduce polluted runoff. Expanding and strengthening the conservation practices already begun by the

industry, in the main goal of this program, and can help protect our natural resources and sustain the long-term economic viability of agriculture.

Some management practices that address these issues may have long-term economic benefits for the grower or rancher, as well as improving habitat for fish and wildlife and reducing offsite damage to public trust resources. Costs for other practices may exceed any economic benefit to the agricultural landowner or operator, though the benefit to the public may be considerable. The Action Plan encourages increased support for the development and implementation of economically feasible management improvements, and the development of incentives which allow implementation of marginally economic practices where substantial benefits to natural resources may justify public investment.

2.5.3 Imported Water Supply

Import water supply from the CVP is delivered to the region through the San Felipe Division Facilities, which supply water from San Luis Reservoir. The reservoir is a joint project by the United States Bureau of Reclamation (USBR) and the State of California, and provides storage for both CVP and SWP supplies. Major infrastructure for the San Felipe Unit also includes the Pacheco Pumping Plant, Pacheco Conduit, Santa Clara Conduit, and Hollister Conduit. The SBCWD operates San Justo Reservoir (owned by the USBR), which is used as operational storage for the San Benito CVP water system. SBCWD is currently working on eradication of the invasive zebra mussel in the reservoir.

As previously described, the SCVWD, SBCWD, and PVWMA all have CVP water contracts or contract reservations. However, only SCVWD and SBCWD have existing conduits allowing for use of CVP water. The San Felipe Division currently provides supply for agricultural and M&I designations in SCVWD and SBCWD service areas. Table 2-8 summarizes the contract entitlements for each agency from the CVP.

Table 2-8: San Felipe Unit Contractors CVP Contracts

CVP Contractor	CVP Agricultural (AFY)	CVP M&I (AFY)
SCVWD[a]	31,100	119,400 – 130,000[b]
SBCWD	35,500	8,250
PVWMA	6,260[c]	Not Applicable
Total	**72,860**	**127,650 – 138,250**

Footnotes:

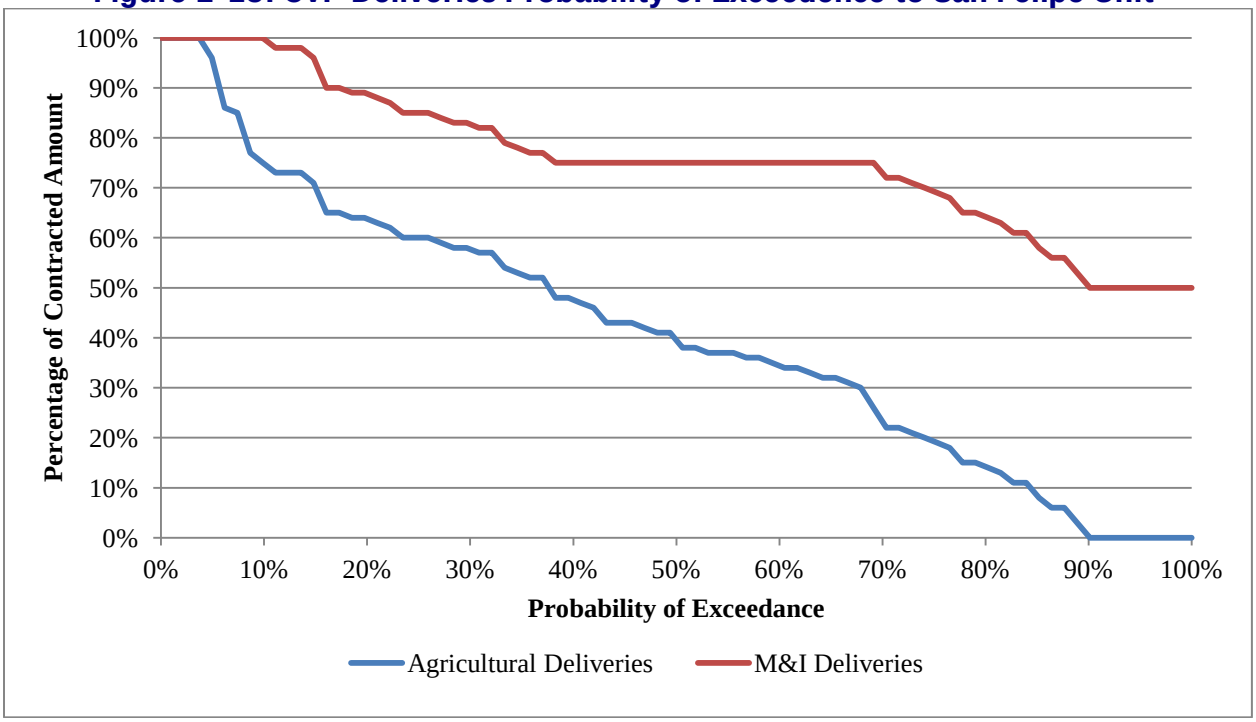
a. The SCVWD CVP water is used throughout Santa Clara County. Assumes no additional supplies are secured through transfers, spot market, or options.

b. SCVWD's maximum total (Agriculture plus M&I) contract amount is 152,500 AFY. Depending on Agricultural allocations and use, SCVWD can be allocated between 119,400 and 130,000 AFY of M&I supply for a total contract amount of 152,500 AFY.

c. PVWMA does not have a connection to the CVP system. The 6,260 AFY derives from a three-way contract between Westlands Water District and SCVWD. PVWMA has not exercised its right to that water. They have executed a contract with Mercy Springs but have not taken any supply.

CVP water is a hydrologically dependent supply and is subject to delivery reductions by the USBR. Figure 2-13 is a representation of deliveries that can be expected over a number of years (based on CALSIM II Model - 2031 Level of Development [LOD] and implementation of the draft CVP M&I Shortage Policy). As shown on the graph, the 50% probability of exceedance indicates that every other year CVP water is expected to have allocations less than about 40% of agriculture contract amount and 75% of M&I contract amount. Table 2-9 summarizes the contract amounts and the projected annual supply availability for the SCVWD, SBCWD, and PVWMA. The project annual supply availability has decreased significantly since the 2007 IRWM Plan, when average CVP supply availability was 34,100 AFY for agriculture and 114,800 AFY for M&I, as a result of Biological Opinions that constrained CVP operations.

Figure 2-13: CVP Deliveries Probability of Exceedence to San Felipe Unit



Notes:
1. Data source: 2011 State Water Project Delivery Reliability Report (Future with Climate Change scenario)
2. Based on 2031 level of development
3. CVP allocations from CALSIM II adjusted to reflect the draft CVP M&I Shortage Policy, which provides for minimum M&I deliveries

Table 2-9: CVP Contracts and Long-Term Average Supplies

Agency	CVP Agricultural Contract Amount (AFY)	Average Available Agricultural Supply (AFY)	CVP M&I Contract Amount (AFY)	Average Available M&I Supply (AFY)
SCVWD[a]	33,100	10,900	119,400 - 130,000	90,100
SBCWD	35,500	17,100	8,250	5,700
PVWMA	6,260	3,000	NA	NA
Total	**64,260**	**31,000**	**127,650 – 138,250**	**95,800**

Notes:
1. NA – Not applicable.
2. The SCVWD CVP water is used throughout Santa Clara County.

Within the watershed, CVP water allocations are served directly for agricultural irrigation, treated and served for M&I use, and used for groundwater recharge and conjunctive use programs. Table 2-9 summarizes the average CVP water quality from the San Felipe Division.

Table 2-10: CVP San Felipe Unit Water Quality

Parameter	Quality
Conductivity	
Range (uS/cm)	360-770
Expected (uS/cm)	540
TDS	
Range (mg/l)	160-368
Average (mg/l)	278
Chloride	
Range (mg/l)	6-107
Expected (mg/l)	70
Sodium	
Range (mg/l)	20-80
Average (mg/l)	55
pH	
Minimum	7.0
Maximum	9.0
Boron	
Range (ug/l)	110-216
Average (ug/l)	162
Nitrogen	
Ammonia (mg/l)	0.1-6.3
Nitrate (mg/l as NO_3)	3.0
Bicarbonate	
Maximum (mg/l)	79
Turbidity	
Range (NTU)	1.0-12.0
Expected (NTU)	2

Notes:
1. Data collected from 2000 to 2012 from the Pacheco Pump Plant Trash Racks at San Luis Reservoir.

The reliability of imported water supply and the region's reliance on Delta-conveyed imported water supplies is a significant issue in the Pajaro River Watershed. As discussed below, the water management agencies are developing recycled water supplies to reduce reliance on imported water supplies. The agencies are also implementing programs to increase and/or optimize the use of existing local groundwater and/or local imported water supplies. In addition, water suppliers throughout the watershed are implementing aggressive water conservation programs. Together, these efforts will reduce the region's reliance on Delta-conveyed imported supplies. Nonetheless, imported water will continue to be a critical source of supply for the region.

2.5.4 Recycled Water

Recycled water is currently being produced by the South County Regional Wastewater Authority (SCRWA) for use in southern Santa Clara County for landscape irrigation, crop irrigation, and industrial use. In 1999, the SCRWA, SCVWD, the City of Morgan Hill, and the City of Gilroy entered into a partnership agreement to expand recycled water use in southern Santa Clara County. SCRWA was designated as the producer, SCVWD as the wholesaler, and the cities of Gilroy and Morgan Hill as the recycled water retailers. Currently, recycled water is only delivered to the Gilroy area. The South County Recycled Water Master Plan was completed in October 2004 and outlines near-term, short-term, and long-term project recommendations. The near-term phase was jointly implemented by SCRWA and SCVWD in 2005-2006 allowing for an additional 800 AFY of recycled water delivery. The agencies partially funded the expansion with an implementation grant for $2.2 million. Approximately $2 million of a Federal stimulus grant was also received for one phase of the short-term projects consisting of constructing recycled water pipelines. Phase 1A of the short-term project was completed in 2012. It included 3,000 feet of 36-inch pipeline and associated facilities. Phase 1B is scheduled for completion in 2016 and will include 14,000 feet of 30-inch pipeline and additional recycled water turnouts. Phase 2 will be completed by 2019 and includes an additional 11,600 feet of 30-inch pipeline. Construction of the long-term component of the 2004 South County Recycled Water Master Plan has not been scheduled or funded. Completion of the short-term project is expected increase recycled water use from about 2,000 AF in 2013 to about 3,000 AF by 2020.

Another recycled water project that has been developed in the watershed is the Watsonville Area Water Recycling Project (WAWRP). The WAWRP was implemented by PVWMA and the City of Watsonville as part of PVWMA'S long-term plan to halt seawater intrusion. The project is fully operational with recycled water deliveries beginning in April 2009. The recycled water facility produces approximately 4,000 AFY of recycled water to be blended with 2,000 AFY of "blend" water, for a total of 6,000 AFY of water for agricultural customers along the Pajaro Valley coast. The WAWRP assists in balancing the Pajaro Valley Groundwater Basin and provides sustainable supply for the PVWMA service area.

The Final Program Environmental Impact Report for the Hollister Urban Area Water and Wastewater Master Plan and Coordinated Water Supply Treatment Plan was completed in January 2011. The plan consists of a number of projects for water, wastewater, and recycled water. SBCWD and its project partners have initiated a phased implementation of the master plan. The Program is scheduled to be completed by 2023 and is phased to provide flexibility in responding to changing conditions. The plan calls at least 1,170 AFY of recycled water use.

Table 2-11: Existing and Expected Recycled Water Quality

Wastewater Parameter	SCRWA[a]	Hollister Domestic WWTP[b]	Watsonville[c]
pH	7.5	7.6	7.6
Chloride (mg/L)	169	285	150
Sodium (mg/L)	115	283	180
Boron (mg/l)	0.33	--	0.46
Sulfate (mg/L)	62	213	150
TDS (mg/L)	640	1,130	950
Ammonia	0.51	28.7	ND
Nitrate (mg/L)	2.76	9.3	6.1
Kjeldahl N (mg/L)	1.32	31.4	24
Total Nitrogen (mg/L)	2.91	2.7	--

Footnotes:

a. Average SCRWA effluent for 2011. (SWRCB website)
b. The data listed are recorded in the year 2003 (January to June); WWTP, wastewater treatment plant.
c. Weekly secondary effluent data from November 2000 to October 2001.

2.5.5 Water Conservation

Water conservation is key in reducing dependence on CVP supplies, ensuring water use efficiency, helping to respond to drought conditions, and in achieving SBx7-7 requirements. SBx7-7, or the Water Conservation Bill of 2009, seeks to achieve a 20% statewide reduction in urban per capita water use by December 31, 2020. The bill requires each urban water supplier to develop urban water use targets for 2015 and 2020 to help meet the 20% reduction goal by 2020. DWR established compliance options for urban water suppliers to develop urban water use targets which were to be included in the suppliers' 2010 UWMPs. The 2015 UWMPs are to include demonstration that the supplier is on track for meeting its 2015 and 2020 targets. The urban water suppliers in the Pajaro IRWM region have developed targets, which were included in their 2010 UWMPs and are implementing conservation measures (or BMPs) to achieve the water use reduction targets.

In addition, the RWMG partners, Project Sponsors, and other stakeholders are implementing agricultural water conservation programs to manage agricultural water demands. Agricultural irrigation is the highest water use sector in the Pajaro River Watershed.

2.5.6 Desalted Water

The Hollister Urban Area Water Project is implementing the 2008 Hollister Urban Area Water and Wastewater Master Plan (Master Plan) and the 2010 Coordinated Water Supply and Treatment Plan (Coordinated Plan). The overall purpose of the project is to:

- Improve the quality of municipal drinking water, industrial supply, and recycled water for urban and agricultural irrigation users,
- Provide a reliable and sustainable water supply to meet the current and future demands of the Hollister Urban Area (HUA), and

- Implement goals for the Hollister Water Reclamation Facility to be the primary wastewater treatment plant for incorporated and unincorporated lands in the HUA to protect groundwater quality and public health.

One element of project is phased groundwater demineralization.

2.5.7 Future Water Supply Versus Demand

Table 2-12 shows the supplies currently available for PVWMA, SBCWD and SCVWD in the Pajaro River Watershed in comparison to the forecasted demand in 2035. There is an average supply gap of about 10,000 AFY. This down from projected supply gap of about 70,000 AFY in the 2007 IRWM Plan. However, additional demand management and/or supply development will be required to completely close the supply gap. Future solutions may involve increasing recharge opportunities to increase the safe yield and diversifying the portfolio with recycled water, additional surface water supplies, water transfers, and other water supply sources.

Table 2-12: Water Supply and Demand Projections

Source of Supply	2015	2020	2025	2030	2035
Groundwater (AFY)	99,500	99,500	99,500	99,500	99,500
Surface Water (AFY)	16,120	17,370	20,920	21,020	21,020
CVP (AFY)	48,244	48,244	48,244	48,244	48,244
Recycled Water (AFY)	6,670	8,170	8,170	8,170	8,170
Total Supplies (AFY)	172,549	175,304	178,859	178,964	178,969
Total Demands (AFY)	183,470	185,260	189,970	189,460	188,930

Notes:
1. Groundwater from Table 2-2
2. Surface water from agency projections
3. CVP from Table 2-9; assumes 18% of SCVWD total CVP deliveries are used in the Llagas Subbasin
4. Recycled water from Section 2.5.4
5. Demands from Table 2-1

2.6 Ecological Processes/Environmental Resources

The Pajaro River Watershed is tributary to Monterey Bay, a federally protected National Marine Sanctuary administered by the National Oceanic and Atmospheric Administration (NOAA). The Monterey Bay National Marine Sanctuary (MBNMS) is one of the world's most diverse marine ecosystems. It is home to numerous mammals, seabirds, fishes, invertebrates and plants. It is also a remarkably productive coastal environment. MBNMS was established for the purpose of resource protection, research, education, and public use of this national treasure. As a contributing water and sediment source, the Pajaro River plays an integral role in MBNMS health.

The Pajaro River Watershed supports a multitude of the environmental resources including biotic habitats, special status plant and animal species, cultural resources, and visual resources. The California Natural Diversity Database (CNDDB) is a program developed by the California Department of Fish and Wildlife that inventories the status and location of plants and animals in California. The special-status species within the Pajaro IRWM region and the associated federal and California categories are provided in Table 2-13. It should be noted that the IRWMP is a planning study that would not result in the disturbance of any environmental resource. These activities are exempt from the CEQA pursuant to CEQA Guidelines §15262 and §15306. As such, programmatic environmental analysis under CEQA is not required.

Table 2-13: Special-Status Species within the Pajaro IRWM Region

Common Name	Scientific Name	Federal List Category	California List Category
Bald Eagle	Haliaeetus leucocephalus	Delisted	Endangered
Bank Swallow	Riparia riparia	None	Threatened
Bay checkerspot butterfly	Euphydryas editha bayensis	Threatened	None
California condor	Gymnogyps californianus	Endangered	Endangered
California red-legged frog	Rana draytonii	Threatened	None
California tiger salamander	Ambystoma californiense	Threatened	Threatened
Coyote ceanothus	Ceanothus ferrisiae	Endangered	None
Coyote ceanothus	Ceanothus ferrisiae	Endangered	None
Least Bell's vireo	Vireo bellii pusillus	Endangered	Endangered
Metcalf Canyon jewel-flower	Streptanthus albidus ssp. albidus	Endangered	None
Monterey spineflower	Chorizanthe pungens var. pungens	Threatened	None
Nelson's antelope squirrel	Ammospermophilus nelsoni	None	Threatened
San Benito evening-primrose	Camissonia benitensis	Threatened	None
San Joaquin kit fox	Vulpes macrotis mutica	Endangered	Threatened
Santa Clara Valley dudleya	Dudleya abramsii ssp. setchellii	Endangered	None
Santa Cruz long-toed salamander	Ambystoma macrodactylum croceum	Endangered	Endangered
Santa Cruz tarplant	Holocarpha macradenia	Threatened	Endangered
Steelhead - south/central California coast DPS	Oncorhynchus mykiss irideus	Threatened	None
Tidewater goby	Eucyclogobius newberryi	Endangered	None
Vernal pool fairy shrimp	Branchinecta lynchi	Threatened	None
Western snowy plover	Charadrius alexandrinus nivosus	Threatened	None
Western yellow-billed cuckoo	Coccyzus americanus occidentalis	Candidate	Endangered

Source: CNDDB, 2012

Several creeks and rivers support riparian habitat, including the Pajaro River, Llagas Creek, Uvas/Carnadero Creek, San Benito River, Miller Canal, Corralitos Creek, and other associated tributaries. Riparian and wetland areas along these water features and along various drainage ditches provide habitat and movement corridors for wildlife. Some of the wetland areas contain suitable habitat for two sensitive species known to occur in the project vicinity: the California red-legged frog and the California tiger salamander. On August 23, 2005 the U.S. Fish and Wildlife Service (USFWS) approved the "Designation of Critical Habitat for the California Tiger Salamander, Central Population; Final Rule." This rule designated approximately 382,666 acres of critical habitat, which includes the Soap Lake floodplain area, located in the upper watershed.

San Felipe Lake, which is the central feature of the "Bolsa de San Felipe", is designated as a "California Important Bird Area" by the National Audubon Society. The Bolsa is a crossroads for birds migrating between San Francisco Bay to the north, Monterey Bay to the west and the Central Valley to the east. The Bolsa is also identified by the National Audubon Society as a "bird vagrant trap", a site where bird

species far outside of their normal range appear. The fields surrounding San Felipe Lake are saturated with water during the winter months and it is possible that vernal pools could be located here. If vernal pools do exist around the lake, they could serve as potential habitat for fairy shrimp and the larval stage of California tiger salamander (SCVWD, 2003).

The Pajaro River serves as a migration pathway for adult steelhead (*Oncorhynchus mykiss*) migrating to spawning and nursery habitat in the upper watershed and for steelhead smolts (1-2 year old juveniles) migrating from that habitat to the ocean. However, because of low, warm summer streamflows and substrate dominated by sand or silt, the Pajaro River provides almost no potential rearing habitat for steelhead (Smith, 2002). Uvas, Llagas, and Corralitos Creeks provide potential spawning and rearing habitat, and Uvas provides access, spawning and rearing in all but extreme drought years. Use of Llagas Creek by steelhead is less frequent and less extensive (HRG, 1997). The entire Pajaro River watershed provides potential habitat for several fish species and comprised one of the major drainages of the south-central California Evolutionarily Significant Unit (ESU) for the steelhead. Although once present in the Pajaro River, Coho salmon have not been present in the river since at least the late 1960s.

In December 2013, the National Marine Fisheries Service of the National Ocean and Atmospheric Administration released the South-Central California Coast Steelhead (SCCCS) Recovery Plan. The planning area extends from the Pajaro River in Santa Cruz/Monterey County south to, but not including, the Santa Maria River at the San Luis Obispo/Santa Barbara County line. The Recovery Plan is a guideline document for achieving recovery goals that include specific biological objectives and viability criteria for populations of *O. mykiss* and the distinct population segment (DPS) as a whole. Reduced access to historic spawning and rearing habitat is considered a principle cause for the decline of the SCCC steelhead. Critical recovery actions identified for the Pajaro River Watershed include:

- Develop and implement operating criteria to ensure the pattern and magnitude of groundwater extractions and water releases from Uvas Dam and Pacheco Dam to provide the essential habitat functions to support the life history and habitat requirements of adult and juvenile steelhead.
- Physically modify fish passage impediments to allow steelhead natural rates of migration to upstream spawning and rearing habitats, and passage of smolts and kelts downstream to the estuary and ocean and restoration of spawning gravel recruitment to the lower mainstem.
- Manage instream mining to minimize impacts to migration, spawning and rearing habitat in major tributaries, including Uvas, Corralitos, Llagas, and Pacheco Creeks, and the San Benito River.
- Identify, protect, and where necessary, restore estuarine rearing habitat, including management of artificial sandbar breeching at the river's mouth.

The overall goal of the South-Central California Steelhead Recovery Plan is to prevent the extinction of anadromous steelhead by ensuring the long-term persistence of viable, self-sustaining, wild populations of steelhead across the DPS.

2.7 Cultural Resources

The Pajaro River watershed is rich with cultural resources including various Native American and historic-period cultural sites, historic buildings and landmarks, and sites of traditional and historic significance. Generally, areas within a quarter mile of rivers and creeks have a moderate to high potential for archeological sensitivity.

Cultural resources that have been identified throughout the Pajaro River watershed are:

- Prehistoric archeological sites – Places where Native Americans lived or carried out activities during the prehistoric period before 1769 AD;

- Historic archaeological sites – Places where human activities were carried out during the historic period between 1769 AD and 50 years ago;
- Traditional cultural properties – Places associated with the cultural practices or beliefs of a living community that are rooted in that community's history and are important in maintaining the continuing cultural identity of the community;
- Historic structures – Houses, outbuildings, stores, offices, factories, barns, corrals, mines, dams, bridges, roads, and other facilities that served residential, commercial, industrial, agricultural, transportation, and other functions during the historic periods (more than 50 years ago); and
- Paleontological resources – Fossilized remains of animals and plants, typically found in sedimentary rock units that provide information about the evolution of life on earth over the past 500 million years or more.

The information herein should not be considered comprehensive of the entire Pajaro River watershed, as it originates from previous environmental documentation for specific projects and their associated project areas within the watershed. Within the scope of the IRWMP, further research to compile and document the cultural resources within the Pajaro Watershed will be performed in conjunction with environmental evaluations on a project-specific basis. Due to the sensitivity of cultural resources, specific details about the location and nature of identified cultural resources are kept confidential.

2.7.1 Cultural Resources in Soap Lake

The Soap Lake project area encompasses about 8,000 acres of floodplain lands upstream of the Pajaro River at Highway 101 and is split between the counties of Santa Clara and San Benito near Hollister. Research indicated that 26 recorded Native American and historic-period cultural sites have been previously identified within the Soap Lake area – 18 within Santa Clara County and 8 within San Benito County.

Native American archaeological sites located in the southern Santa Clara Valley tend to be located along creek banks, along the margin of former marshland, and near the mouths of canyons where they open into the Valley. At the time of Euro American contact, the Native Americans that lived in the area belonged to the Ohlone group of Indians. Given the environmental setting of Soap Lake and the presence of recorded prehistoric archaeological sites, there is a high potential for Native American sites in the Soap Lake area.

Other cultural resources include, but are not limited to the following:

- The Bautista de Anza National Historic Trial, a National Historic Trail crossing the Soap Lake area;
- Miller Canal, an unlined historic canal between San Felipe Lake and the Pajaro River; and
- Prehistoric lithic scatters within sparse to moderate density chert debitage, flaked stone and ground stone.

No single repository exists for information on fossil locations within California. Exact locations of fossils are not usually published in order to protect the resource from unauthorized collecting and subsequent loss of scientific information. Paleontological resources have been identified near Gilroy within the Soap Lake area; however, since the exact location of these resources cannot be published, it is unknown whether these resources are directly within the Soap Lake floodplain.

Human remains were identified in three sites within the Soap Lake project vicinity. In addition, one unrecorded site is a possible Native American burial/cremation site.

2.7.2 Cultural Resources in PVWMA Service Area

The archeological, ethnography, and historical context for the PVWMA service area consists of information about, and sites located within, the southern Santa Clara Valley and the Monterey Bay region. This information was gathered from a literature review of the October 2001 PVWMA Revised BMP Draft EIR.

The southern Santa Clara Valley region was initially settled 4,000 to 7,000 years ago. Review of a prehistoric archeological site database and recent research suggests that the habitation characteristic of the inhabitants followed an early period of high mobility, proceeded by a middle period of more sedentary settlement with indication of year-round occupation and reliance on a subsistence economy which lasted until 850-1,500 years ago, and ended with a late or protohistoric period which showed an adaptive shift to more mobile settlement patterns with a reduction in territorial base, and more usage of local resources.

For the Monterey Bay region of PVWMA, it has been proposed that two archeological population patterns existed. The Sur Pattern which appeared more than 3,000 years ago is thought to correspond with Hokan ancestors of the Esselen and represents an early "forager" subsistence strategy. The Monterey Pattern which appeared about 2,450 years ago, corresponds with Penutian ancestors of historic Costanoan and represents a "collector" subsistence strategy. In an archeological sense, the two populations represent a distinct shift in settlement, subsistence, and use of the region through time.

The ethnographically documented aboriginal inhabitants of the PVWMA were part of the Ohlone (or Costanoan) language group, which extended from the San Francisco Bay area south to the southern Monterey Bay and lower Salinas River areas. Information regarding these people was obtained from records of early Spanish explorers, documents maintained at missions, the works of ethnographs and linguists, and from Native American descendants.

Four groups of original inhabitants are noted within the PVWMA project area: Tiuvta, Unijaima, Motsun, and Ausaima. The Tiuvta occupied the Pajaro River, Elkhorn Slough, and lower Salinas River areas. The Unijaima lived in the mountains and plans of the southwestern Santa Clara Valley, north of the Pajaro River, while the Motsun lived in the San Juan Valley and in the mountains southwest of the valley. The Ausaima lived in the eastern portion of the San Felipe Sink and the hills on the west side of Pacheco Pass.

Following the early inhabitants of the region, the southern Santa Clara Valley region and Monterey Bay experienced periods of Spanish arrival and colonization, Mexican independence and the ranchos, and Anglo-American expansion.

The Spanish colonization of what was then known as Alta California occurred in the late 1700's with several land expeditions traveling through this region. After the first of the expeditions occurred, several missions were founded in the area and they were an important institution in the colonization of Alta California. The San Juan Bautista mission was founded in 1797. The purposes of the missions were to Christianize native people and to acculturate them into colonizers' Hispanic life ways. The neophytes were taught the horticultural and pastoral skills of the Hispanic tradition. This process of culture change assimilated most of the native peoples in the area into the mission system by 1810.

Soon after the mission system began, a process of land granting commenced. Granting of land, commonly called ranchos, continued through the Spanish period and began the California cattle industry. Ranchos, or large tracts of land, in the vicinity of the missions set the stage for a pastoral economy interwoven with the missions, rancheros, and neophyte populations. Spanish control of Alta California ceased in 1821 with the declaration of Mexican independence, but the political change did not occur until

the mission secularizations in 1834, when native peoples were freed from missionary control. At this time, mission lands were granted to private individuals. During this time period, cattle hides and tallow were the medium of exchange in local business transactions and international trading ships. The Mexican population grew and the native population declined, and Anglo-Americans began to settle in Alta California, often marrying into Mexican families, becoming Mexican citizens, and receiving land grants.

After the Mexico-U.S. War, the 1848 treaty of Guadalupe Hidalgo formalized Mexico's capitulation, and Alta California was annexed by the United States. That same year the gold strike in the Sierra Nevada Mountains spurred a substantial migration into California that began the Anglo-American occupation of California. During this time, the Pajaro River watershed began to change rapidly as gold-rush related immigration and land ownership disputes occurred from the transition from Mexican to U.S. authority. The latter half of the 19th century saw a continued immigration of Anglo-Americans. This influx altered the culture and economy of the area and the region as a whole, and it became the dominant culture in California. Nevertheless, the Hispanic culture continued to exist. Dispersed farmsteads slowly replaced the immense Mexican ranchos, and the farming of wheat, sugar beets, and other specialized crops slowly replaced cattle ranching as the primary economic activity in the area.

The railroad arrived in the Pajaro River watershed in the late 1800's and agricultural activities in the region were altered with the advent of mechanized farming practices with steam-driven machinery. Larger tracts of land were farmed and land was often reclaimed from the sloughs and lowlands adjacent to the Pajaro River. Tar and asphalt were commercially exploited during the 1860's, while granite mining was started in 1900 in the Pajaro Gap area. By the 20th century, farming activities dominated both the Pajaro Valley and southern Santa Clara Valley.

2.8 Social/Cultural/Economic State

The Pajaro River Watershed social setting is rooted in communities that can generally be classified as suburban and rural in character. The economic setting in the Pajaro River watershed can generally be characterized as agriculturally based. Agricultural production and processing are the major industries throughout the watershed.

San Benito County agriculture is a $255 million industry (San Benito County 2010 Annual Crop Report). The County's farming and grazing lands are extremely productive and support a significant acreage and variety of crops. Some of the most common vegetable crops grown in the County include lettuce, bell peppers, onions, celery, and broccoli. Common orchard crops are walnuts, grapes, apricots, and apples. The City of Hollister is the major urban area in the County and is generally considered a suburban type community. The economy is based on agricultural production and processing.

Agriculture is the cornerstone of the Pajaro Valley economy and is a $400 million plus industry. Crops grown in the Pajaro Valley include strawberries, lettuce, tomatoes, broccoli, and apples. Without development of a sustainable water supply, an estimated 25,660 acres of agricultural land would need to be fallowed to reduce groundwater pumping to eliminate seawater intrusion and the groundwater overdraft. The lost agricultural production has an estimated annual value of $400 million and would result in loss of approximately 11,530 jobs (PVWMA, 2013). Property values would also likely plummet as land would likely be converted to range land. The City of Watsonville is the major urban area in the Pajaro Valley and can be generally classified as a suburban community. The City qualifies as a disadvantage community with an average median household income (MHI) below 80% of the State MHI (See Section 2.9 for additional details). The City's economy is linked to the agricultural production of the region and would be impacted by losses in agricultural production.

South Santa Clara County has historically been based on agricultural production and processing. The total gross value of Santa Clara County's agricultural production was $261 million in 2012 (Santa Clara County Agricultural Crop Report 2012). Santa Clara County agricultural producers grow nursery and cut

flower crops, vegetable, fruit, and wine grape crops, conduct milk and egg production, and livestock grazing and sales.

Major urban areas in southern Santa Clara County include the City of Gilroy, City of Morgan Hill, and unincorporated San Martin. These urban areas can be generally classified as suburban and rural in nature. Gilroy is known as the "Garlic Capital of World" and the local economy has generally been based on the agricultural production of garlic, prunes, tomatoes, flowers, and onions. The Outlets at Gilroy also provide an economic base for the communities. The proximity of southern Santa Clara County to the San Francisco Bay Area also facilitates commuters from Gilroy, Morgan Hill, and San Martin. There has also been an increased interest in southern Santa Clara County for expansion of the technology industry.

2.9 Disadvantaged Communities

A disadvantaged community (DAC) is defined in the California Public Resource Code as a community with an annual MHI that is less than 80% of the statewide MHI [PRC §75005 (g)]. DWR collected and compiled the U.S. Census American Community Survey MHI data for 2006 to 2010 (i.e. 2010 Census Data). This data was reviewed to identify the DACs in the region. The State MHI was $60,883; therefore, communities with an average MHI of $48,706 are considered disadvantage communities. Table 2-14 demonstrates 2010 census data and MHI statistics from major cities located in the Pajaro watershed.

Table 2-14: 2010 Census Data and MHI Statistics in Pajaro Watershed

City[1]	Population	Median Household Income	Average Household Size
Pajaro	**3,070**	**$36,094**	**4.8**
Watsonville	**51,199**	**$46,675**	**3.75**
Amesti	**3,478**	**$47,483**	**3.53**
Freedom	**3,070**	**$48,688**	**3.95**
Hollister	34,928	$63,289	3.53
Gilroy	48,821	$71,340	3.39
Corralitos	2,326	$79,454	2.8
Morgan Hill	37,882	$92,771	3.05
California	37,253,956	$60,883	3.88
80% of the State MHI	-	$48,706	-

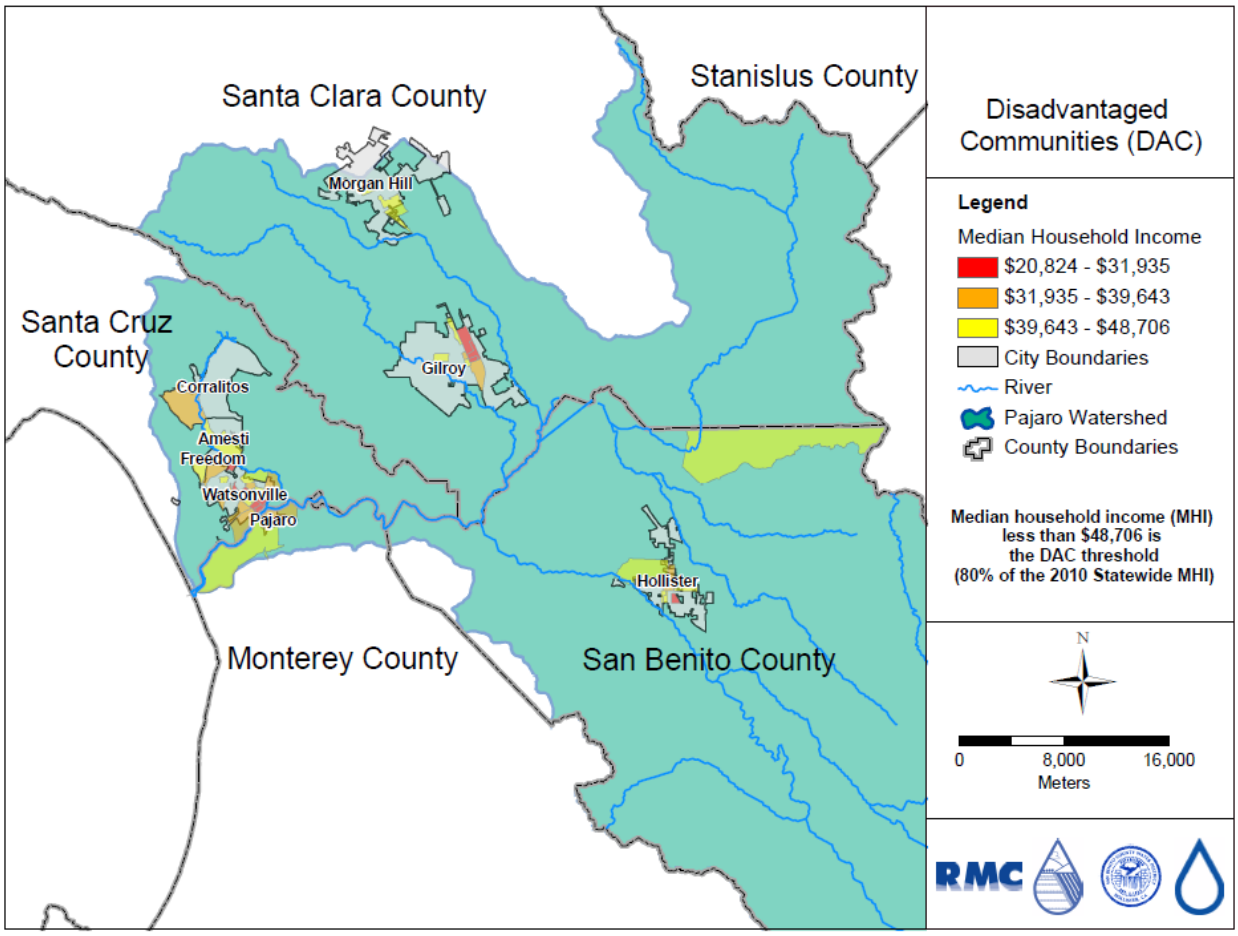
Note:
1. DACs are indicated in bold.

As indicated in Table 2-14, there are four communities in the Pajaro River watershed with MHIs less than 80% of the State MHI. The communities of Pajaro, Wastonville, Amesti and Freedom include significant portions of DACs, shown in Figure 2-14. In addition to the relatively low per capita income as compared to the statewide average, the cost of living in these areas is relatively high compared to the Statewide average, resulting in an increase in the average household sizes in these cities above the state average. In addition to the four cities previously mentioned, four other cities in the Region include DAC areas within their city boundaries. For comparison purposes, socioeconomic statistics for all eight cities with DACs are listed in Table 2-15. In general, the median age in the Region is lower than the state median age of 35.3 years, except for the City of Corralitos. Residents of this Region are more likely to own their houses in larger cities with higher median household income.

Table 2-15: Additional Socioeconomic Statistics in Pajaro Watershed

City	Median Age	Housing Units	% Owner Occupied	% Rental Units
Pajaro	25.6	655	23%	77%
Watsonville	29.2	14089	44%	56%
Amesti	31.3	1015	62%	39%
Freedom	30.2	806	66%	34%
Hollister	30.8	10401	60%	40%
Gilroy	32.4	14854	61%	39%
Corralitos	45.1	888	74%	26%
Morgan Hill	36.8	12859	71%	29%

Figure 2-14: DACs in the Pajaro River Watershed



2.10 Climate Change

Climate change may potentially have significant impacts on California's water resources, due to rising sea levels, decreased snowpack, and increased water temperatures. In addition, extreme conditions, including droughts and floods, are expected to become more frequent and severe. Climate change is expected to

impact water supply, flooding, water demand, and habitat within the Pajaro River Watershed. The specific climate change impacts to the Pajaro region and vulnerabilities are discussed in detail in 14.

3 IRWM Plan Objectives

This chapter meets the following IRWMP Standard from the 2012 Integrated Regional Water Management Grant Program Guidelines.

> **Objectives –** The IRWM Plan must clearly present plan objectives and describe the process used to develop the objectives. Plan objectives must address major water-related issues and conflicts of the region. In addition, objectives must be measurable by some practical means so achievement of objectives can be monitored. The objectives may be prioritized for the region. The IRWM Plan must contain an explanation of the prioritization or reason why the objectives are not prioritized.

In the IRWMP process, development of objectives is a key step, as objectives provide a basis for decision making, guide work efforts, and can be used to evaluate project benefits. In the Pajaro River Watershed IRWMP process, a mission statement, goals and objectives were developed. The planning objectives are targeted outcomes which benefit the region. When implementing regional projects, the Regional Water Management Group (RWMG) and project sponsors will strive to meet as many objectives as possible.

3.1 Mission, Goals and Objectives

A consensus based approach was used in the development of a mission statement for the Pajaro River Watershed RWMG and associated goals and objectives for the region that were presented in the 2007 IRWMP. During the development of the 2007 mission, goals and objectives, the RWMG considered both the needs and issues identified for the region and the statewide priorities. The goals and objectives were presented to stakeholders and then refined based on stakeholder input and consensus. The same process was used to update the goals and objectives for the 2014 IRWMP, with the addition of consideration of Basin Plan Objectives, 20x2020 water efficiency goals, and requirements of California Water Code §10540(c). The results of this collaborative effort are the following mission, goals, and objectives, with the goals and objectives listed in order of priority.

MISSION: The mission of the Pajaro River Watershed Regional Water Management Group is to preserve the economic and environmental wealth and well-being for the Pajaro River watershed through watershed stewardship and comprehensive management of water resources in a practical, cost effective and responsible manner.

> **Water Supply Goal:** Protect and improve regional water supply reliability, protect groundwater resources from overdraft, reduce dependence on imported water, and protect watershed communities from drought while considering climate change impacts on water supply resources and demands.
>
> **Objectives:**
>
> 1. Meet 100% of M&I and agriculture demands (both current and future conditions) in wet to dry years including the first year of a drought
> 2. Meet 85% M&I and 75% agriculture demands (both current and future conditions) in second and subsequent years of a drought
> 3. Identify and address water supply needs of disadvantaged communities in the Pajaro River Watershed
> 4. Implement water conservation programs to reduce M&I and agricultural water uses consistent with SBx7-7 and CVPIA
> 5. Maximize the use of recycled water during the irrigation season and expand other uses of recycled water

6. Optimize the use of groundwater and aquifer storage
7. Maximize conjunction use opportunities including interagency conjunctive use.
8. Optimize and sustain use of existing import surface water entitlements from the San Felipe Unit
9. Maximize the beneficial use of existing local water supplies while protecting existing surface water rights.

Water Quality Goal: Protect and improve water quality for beneficial uses consistent with regional community interests and the RWQCB basin plan objectives through planning and implementation in cooperation with local and state agencies and regional stakeholders.

Objectives:

1. Meet or exceed all applicable groundwater, surface water, wastewater, and recycled water quality regulatory standards
2. Identify and address the drinking water quality of disadvantaged communities in the Pajaro River Watershed.
3. Protect groundwater resources from contamination including salts and nutrients.
4. Address impacts from surface water runoff through implementation of Best Management Practices or other surface water management strategies
5. Meet or exceed delivered water quality targets established by recycled water users.

Flood Management Goal: Ensure flood management strategies are developed and implemented through a collaborative and watershed-wide approach and are designed to maximize opportunities for comprehensive management of water resources.

Objectives:

1. Implement flood management strategies throughout the watershed that provide multiple benefits
2. Reach consensus on the Pajaro River Risk Reduction Project necessary to protect existing urban areas and infrastructure from flooding and erosion from the 100-year event and to maximize opportunities to protect agricultural land uses
3. Work with stakeholders to preserve existing flood attenuation by implementing land management and conservation strategies throughout the watershed
4. Develop approaches for adaptive management to minimize maintenance requirements and protect quality and availability of water while preserving ecologic and stream functions, and enhancing when appropriate
5. Provide community benefits beyond flood protection such as public access, open space, recreation, agriculture preservation and economic development

Environmental Protection and Enhancement Goal: Preserve the environmental wealth and well-being of the Pajaro River watershed by identifying opportunities to restore and enhance natural resources of streams, watersheds, wetlands, and the Monterey Bay when developing and implementing water management strategies.

Objectives:

1. Address opportunities to enhance the local environment and protect and/or restore natural resources, in cooperation with landowners, when developing water management strategies
2. Improve biological and cultural resources, including riparian habitats, habitats supporting sensitive plant or animal species and archaeological/historic sites when implementing strategies and projects
3. Address opportunities to protect, enhance, or restore habitat to support Monterey Bay National Marine Sanctuary marine life in conjunction with water management strategies
4. Address opportunities for open spaces, trails, parks along creeks and other recreational projects in the watershed that can be incorporated with water management strategies, consistent with public use and property rights

3.1.1 Water Supply Objectives

The following paragraphs provide additional explanation of the objectives developed to support the water supply goal.

1. The RWMG established the objective of meeting "100% of M&I and agriculture demands in wet to dry years" to reflect the importance of a reliable water supply. As with all the objectives, this objective may not be met every year, but it serves as targets for the RWMG to strive towards as they implement projects.
2. In recognition of the increased obstacles faced in meeting demands during drought years, the RWMG established the objective of meeting "85% of M&I and 75% of agriculture demands in second and subsequent years of a drought". Because surface water supplies generally cannot be relied upon during dry years, this objective is geared towards developing supplies that are not dependent on yearly precipitation.
3. The objective to "identify and address water supply needs of disadvantaged communities in the Pajaro River Watershed" reflects an unmet need for the City of Watsonville and, more significantly, the Town of Pajaro. The RWMG applies the objectives related to meeting demands to the entire region, but recognizes that the unmet needs of the disadvantaged communities warrant additional focus.
4. The objective to "implement water conservation programs to reduce water use…consistent with SBx7-7 and CVPIA" recognizes that water conservation is one of the most effective ways to manage demands and that demand management will be critical with a changing climate. The RWMG is committed to continuing conservation measures and encouraging water use efficiency throughout the region.
5. Recycled water is valued as a local, drought-proof water supply that will help the region adapt to climate change. By establishing the objective to "maximize recycled water use during the irrigation season and expand other uses of recycled water," the RWMG is promoting the continued development of this reliable supply.
6. The objective to "optimize the use of groundwater and aquifer storage" encourages the RWMG to consider the use of groundwater from a regional perspective as both a supply source and a storage area. Optimizing the use of groundwater and aquifer storage involves capturing the potential synergies offered from coordinated management and use of the groundwater basins.

7. "Maximize conjunctive use opportunities, including interagency conjunctive use" captures the intent of the RWMG to coordinate groundwater and surface water management activities locally and regionally. Management of these supplies on a regional basis can aid in addressing the current imbalance between areas of the watershed which are hindered by high groundwater conditions and areas of the watershed facing overdraft conditions. Conjunctive management is, and will continue to be, critical for meeting needs during droughts and other water supply shortages.

8. "Optimizing and sustaining the use of existing import surface water entitlements from the San Felipe Division" is included as an objective because the RWMG each hold CVP entitlements and their shared connection to the CVP system through the San Felipe Division presents significant opportunities for optimizing the use of CVP import water in the region. Sustaining the use of CVP water is important given the current deficit in water supplies for the region. This objective is designed to encourage coordination among the RWMG in use of CVP import water to maximize the benefit that can be gained from each of the agency's contract options.

9. The objective to "maximize the beneficial use of existing local water supplies while protecting existing surface water rights" is aimed at maintaining rights to local surface waters. While these surface water supplies are not the largest source of supply in the region, they are a critical portion of the region's supply and provide provides flexibility in water supply planning and operations.

3.1.2 Water Quality Objectives

The following paragraphs provide additional explanation of the objectives developed to support the water quality goal.

1. The objective to "meet or exceed all applicable groundwater, surface water, wastewater and recycled water quality regulatory standards" is included in recognition of the importance of providing people and the environment with clean, safe water. The water quality focus should be meeting and, when possible, exceeding applicable water quality objectives.

2. "Identify and address the drinking water quality of disadvantaged communities in the Pajaro River Watershed" is a high priority for the region especially given the serious water quality issues and health threats in the Town of Pajaro.

3. It is important to "protect groundwater resources from contamination including salts and nutrients" because groundwater is the primary water supply for the region.

4. The objective to "address impacts from surface water runoff through implementation of Best Management Practices or other surface water management strategies" is intended to protect the region's water bodies from pollutant loading and aid in meeting TMDLs.

5. The objective to "meet or exceed delivered water quality targets established by recycled water users" recognizes the importance of providing water supplies that meet users' water quality requirements, even those that go beyond regulatory requirements. This objective is especially important for expanding the use of recycled, where user water quality requirements are frequently more stringent than some regulatory standards.

3.1.3 Flood Management Objectives

The following paragraphs provide additional explanation of the objectives developed to support the flood management goal.

1. The RWMG's commitment to protecting communities and managing flood risks throughout the watershed from floodwaters is expressed in the objective to "implement flood management strategies throughout the watershed that provide multiple benefits." The importance of developing and implementing flood management strategies for the watershed is recognized by the RWMG. Specifying multiple beneficial projects is a reflection of the RWMG's desire to move away from the single-purpose flood control projects of the past and move towards the implementation of flood management strategies that can also incorporate water supply, water quality and environmental protection elements.

2. The objective to "reach consensus on the Pajaro River Risk Reduction Project to protect existing urban areas and infrastructure from flooding and erosion from the 100-year event and to maximize opportunities to protect agricultural land uses" is worded specifically to stress the importance of achieving consensus in implementing a flood management project for the Pajaro River. Developing a solution to the flooding issue of the Lower Pajaro River is a watershed-wide issue.

3. Maintaining flood attenuation properties of the watershed is necessary to preventing further increases in storm flows. The objective to "work with stakeholders to preserve existing flood attenuation by implementing land management and conservation strategies throughout the watershed" addresses this need, and it also emphasizes the necessity of working with stakeholders to make land use decisions that are appropriate for the region.

4. The objective to "develop approaches for adaptive management to minimize maintenance requirements and protect quality and availability of water while preserving ecologic and stream functions, and enhancing where appropriate" reflects the importance of pursuing adaptive management approached that adjust to changing conditions and improved understanding of flood issues.

5. The objective to "provide community benefits beyond flood protection such as public access, open space, recreation, agriculture preservation and economic development" addresses multi-objective flood protection projects not covered by the first objective.

3.1.4 Environmental Protection and Enhancement Objectives

The following paragraphs provide additional explanation of the objectives developed to support the environmental protection and enhancement goal.

1. The objective to "address opportunities to enhance the local environment, and protect and/or restore natural resources, in cooperation with landowners, when developing water management strategies" encourages the development of environmental enhancements to projects through partnerships. Cooperation with land owners is important to avoid potential conflicts between the broad base of stakeholders.

2. The next objective, "Improve biological and cultural resources, including riparian habitats, habitats supporting sensitive plant or animal species, and archaeological/historic sites when implementing strategies and projects," reflects the RWMG' commitment to support and, where appropriate, participate in the preservation of the region's environmental and cultural well-being. This objective is also met through environmental documentation required for project implementation.

3. The Pajaro River drains to Monterey Bay, which is a federally protected marine area that supports a diverse marine ecosystem. To continue protection of this critical resource, the RWMG developed the objective "to identify opportunities to protect, enhance or restore habitat to support

Monterey Bay National Marine Sanctuary marine life in conjunction with other water management strategies."

4. Because recreational elements can often be well paired with water resource management projects, the RWMG included the objective "to identify opportunities for open spaces, trails, parks along creeks and other recreational projects in the watershed that can be incorporated with water management strategies, consistent with public use and property rights." As with the first objective, cooperation with landowners was specified to avoid potential conflicts between stakeholders.

3.1.5 Focused Studies Objectives

The following focused studies are being completed as part of the IRWM Plan Update:

- San Benito River Watershed Study
- Salt and Nutrient Management Planning
- College Lake Improvement and Watershed Management

Each of these studies involves the development of goals and objectives and the integration of the goals and objectives into the IRWM Plan. As these plans are completed, the goals and objectives will be incorporated into the IRWM Plan with a discussion of how the goals and objectives are consistent with the IRWM Plan. Based on the work completed to date on these studies, their goals and objectives are consistent with the IRWM Plan goals and objectives and will not necessitate an IRWM Plan update.

3.2 Prioritization of the Goals and Objectives

Since the goals and objectives will be used to guide the RWMG and their stakeholders in the evaluation and ranking of projects proposed for implementation under the IRWM process, the RWMG recognized a need to prioritize the goals and objectives. Clearly defining the priorities of the region allows for a more objective prioritization process for proposed projects.

The RWMG came to agreement on the priorities of the region in 2007 by first looking at the priorities for their own service areas. This exercise allowed the RWMG to identify those areas where they shared the strongest connections and to engage in discussions with stakeholders on how the regional priorities should be shaped. The RWMG reviewed and updated the priority of the objectives for this 2014 IRWM Plan and obtained concurrence from the Stakeholder Steering Committee. All the goals and objectives are important to the region. Thus, the prioritization is relative rather than an absolute determination of importance.

The goals and objectives, as they were presented in Section 3.1, are listed in order of priority.

3.2.1 Water Supply Prioritization

The water supply goal was given the highest priority of the four goals because an adequate supply of water is most critical to protecting human health and the environment and preserving the economic and environmental wealth and well-being of the Pajaro River Watershed. The first two objectives that fall under this goal (i.e. meeting 100% of M&I and agricultural demands in wet to dry years and meeting 85% of M&I and 75% of agricultural demands) were ranked as the first and second priorities, respectively; again the reasoning being that water supply having a reliable supply of adequate is most critical to meeting the region's needs. Meeting the water supply needs of disadvantaged communities was ranked third because, even though the first two objectives apply to the entire watershed, the needs of disadvantaged communities warrant additional attention. Water conservation was ranked above the

remaining water supply objectives in recognition of the State's priority for water use efficiency and because managing demands will be critical for adapting to climate change. Recycled water ranked next at fifth because recycled water is a local, drought proof supply that will be critical for meeting future water demands and adapting to climate change. Conservation and recycled water ranked higher than other supplies since they relieve demands on potable supplies and are relatively drought-proof. Groundwater and conjunctive use ranked sixth and seventh, respectively. Groundwater will continue to be the foundation of the region's water supply and conjunctive use will continue to be invaluable in managing supplies under different hydrologic conditions. Optimizing and sustaining the use of imported CVP water ranked above local surface water supplies based on the higher volume of CVP supply in the watershed. Maximizing the beneficial use of local surface water is an important component of the region's water supply.

3.2.2 Water Quality Prioritization

The water quality goal was given the second highest priority for the region, just behind the water supply goal, because water quality is an integral part of water supply reliability and the region faces water quality issues that affect water management strategies. Of the water quality objectives, meeting or exceeding all applicable regulatory standards was ranked first. This ranking reflects the importance of water quality in meeting water demands; at a minimum, the appropriate regulations for a given water resource must be met if it is to be used as a water supply source and support the wealth and well-being of the watershed. The RWMG also are interested in going beyond simply meeting or exceeding regulatory standards. Addressing the drinking water quality needs of disadvantaged communities was ranked second to reflect the important and ongoing needs of these communities. The third water quality objective is to protect groundwater quality because groundwater is the majority of the drinking water supply in the region, is typically untreated, and does not meet water quality standards throughout the region. The objective to address surface water runoff impacts is ranked below groundwater protection since surface water is treated prior to drinking water use and is used less often than groundwater as a source of drinking water supply. Addressing surface water impacts aids in meeting TMDLs established for the Pajaro River Watershed and supports achieving water quality objectives for multiple beneficial uses. Recycled water quality was ranked fifth because, while it is critical to meeting water supply objectives, it is not currently a source of supply for drinking water or the environment.

3.2.3 Flood Management Prioritization

The flood management goal was ranked third among the regional goals. Flood management is an important issue for the watershed, but the RWMG prioritized having an adequate supply of safe clean water. The general flood protection objective, which covers flood protection projects throughout the watershed, was ranked as the first priority. The more specific Pajaro River Risk Reduction Project was given second priority. The high priority of the objective to reach consensus on the Pajaro River Risk Reduction Project reflects an understanding that a regional, watershed-wide approach will be necessary to implement a project that protects existing urban areas and infrastructure and land uses from a 100-year event. Working with stakeholders to preserve existing flood attenuation by implementing land management strategies was ranked third in recognition of the importance flood attenuation plays in the Pajaro River Risk Reduction Project, as well as mitigating some development impacts. Developing approaches for adaptive management was ranked fourth since this objective works to maintain the flood protection properties of implemented projects; maintaining the benefits of implemented projects prevents the need for additional projects. The flood protection aspects are of greater importance than providing additional community benefits, which was ranked fifth.

3.2.4 Environmental Protection and Enhancement Prioritization

The environmental protection and enhancement goal, which is ranked fourth, represents the RWMG's commitment to look for opportunities to incorporate environmental elements into water management projects. Of the four objectives under this goal, the two which speak to protection of environmental resources throughout the watershed are ranked first and second. The objective to identify opportunities to enhance the local environment and protect, enhance and/or restore natural resources reflects the desire of the RWMG and their stakeholders to provide environmental benefits throughout the watershed, and this objective was given the highest priority among the environmental objectives. In some cases, enhancement and restoration will not be possible, and the best that can be done is protection through minimization of adverse effects; the objective covering this situation was given second highest priority. Protection of the Monterey Bay National Marine Sanctuary marine life specifically was ranked third after the general protection of natural resources throughout the watershed. Finally, identifying opportunities for recreational elements was ranked fourth out of the four objectives. The RWMG would like to create opportunities for open spaces, trails, parks and other recreational projects but this work is considered secondary to the objectives that work towards preserving habitats and biological resources.

3.3 Objective Measures

The table below (Table 3-1) identifies measures that the region will use to assess whether the IRWM Plan objectives are being achieved. For objectives with multiple measures, not all measures will necessarily be used. Additional measures may be identified and added to this table during IRWM Plan implementation.

Table 3-1: Objective Measures

Goals and Objectives	Measure(s)
Water Supply Goal – Protect and improve regional water supply reliability, protect groundwater resources from overdraft, reduce dependence on imported water, and protect watershed communities from drought while considering climate change impacts on water supply resources and demands	
1. Meet 100% of M&I and agricultural demands (both current and future conditions) in wet to dry years including the first year of a drought.	• Current and projected annual acre-feet of total supply by water year type
2. Meet 85% of M&I and 75% agricultural demands (both current and future conditions) in second and subsequent years of drought.	• Current and projected annual acre-feet of total supply by water year type
3. Identify and address water supply needs of disadvantaged communities in the Pajaro River Watershed	• Reliability of disadvantaged community supplies
4. Implement water conservation programs to reduce M&I and agricultural water use consistent with SBx7-7 and CVPIA	• Estimated annual water conservation savings
5. Maximize the use of recycled water during the irrigation season and expand other uses of recycled water	• Annual recycled water use
6. Optimize the use of groundwater and aquifer storage	• Sustainable yields • Operational storage
7. Maximize conjunctive use opportunities including interagency conjunctive use	• Groundwater levels

Goals and Objectives	Measure(s)
8. Optimize and sustain the use of existing import surface water entitlements from the San Felipe Unit	• Long-term average CVP deliveries
9. Maximize the beneficial use of existing local water supplies while protecting existing surface water rights	• Long-term average local surface water use
• **Water Quality Goal – Protect and improve water quality for beneficial uses consistent with regional community interests and the RWQCB basin plan objectives through planning and implementation in cooperation with local and state agencies and regional stakeholders**	
1. Meet or exceed all applicable groundwater, surface water, wastewater, and recycled water regulatory standards	• Concentrations of constituents of concern (i.e., nitrate, chloride, pathogens, turbidity, toxins, etc)
2. Identify and address the drinking water quality of disadvantaged communities in the Pajaro River Watershed	• Exceedences of drinking water standards
3. Protect groundwater resources from contamination including salts and nutrients	• Effectiveness of groundwater protection programs • Acres of protected recharge areas • Cleanup and abatement of groundwater contamination plumes • Implementation of Salt and Nutrient Management Plans
4. Address impacts from surface water runoff through implementation of Best Management Practices or other surface water management strategies	• Acre-feet of stormwater capture • Number of LID projects • Acreage managed with approved Best Management Practice (BMP) techniques.
5. Meet or exceed delivered water quality targets established by recycled water users	• Concentrations of salts in recycled water
• **Flood Management Goal – Ensure flood management strategies are developed and implemented through a collaborative and watershed-wide approach and are designed to maximize opportunities for comprehensive management of water resources**	
1. Implement flood management strategies throughout the watershed hat provide multiple benefits	• Level of flood protection • Effectiveness of flood risk reduction programs
2. Reach consensus on the Pajaro River Risk Reduction Project necessary to protect existing urban areas and infrastructure from flooding and erosion the 100-year event and to maximize opportunities to protect agricultural land uses	• Level of community and agency support

Goals and Objectives	Measure(s)
3. Work with stakeholders to preserve existing flood attenuation by implementing land management and conservation strategies throughout the watershed	• Acres of floodplain preserved
4. Develop approaches for adaptive management to minimize maintenance requirements and protect quality and availability of water while preserving ecologic and stream functions, and enhancing when appropriate	• Sediment load • Invasive species
5. Provide community benefits beyond flood protect such as public access, open space, recreation, agriculture preservation and economic development	• Level of additional recreational opportunities • Number of agricultural acres preserved • Per capita income • Value of agricultural production
Environmental Protection and Enhancement Goal – Preserve the environmental wealth and well-being of the Pajaro River watershed by identifying opportunities to restore and enhance natural resources of stream, watersheds, wetlands, and the Monterey Bay when developing and implementing water management strategies.	
1. Address opportunities to enhance the local environment and protect and/or restore natural resources, in cooperation with landowners, when developing water management strategies	• Number of fish passage barriers • Miles of streams restored and/or rehabilitated • Acres of wetlands protected and/or restored
2. Improve biological and cultural resources, including riparian habitats, habitats supporting sensitive plant or animal species and archaeological/historic sites when implementing strategies and projects	• Sensitive species occurrence • Stream flow • Sediment loading • Acres of culturally valuable area and/or resource acquired or preserved through conservation easements or other means
3. Address opportunities to protect, enhance, or restore habitat to support Monterey Bay National Marine Sanctuary marine life in conjunction with water management strategies	• Sediment loading • Progress toward meeting Total Maximum Daily Loads (TMDLs)
4. Address opportunities for open spaces, trails, parks along creeks or other recreational projects in the watershed that can be incorporated with water management strategies, consistent with public use and property rights	• Level of additional recreational opportunities • Miles of trails • Acres of parklands and/or access • Number of amenities • Number of visitor days • Miles of upgrades to trails • Acres of upgrades to parklands

4 Resource Management Strategies

This chapter meets the following IRWMP Standard from the Propositions 84 & 1E IRWM Program Guidelines (DWR, 2012).

> **Resource Management Strategies** – The IRWM Plan must document the range of RMS considered to meet the IRWM objectives and identify which RMS were incorporated in the IRWM Plan. The effects of climate change on the IRWM region must factor into consideration of the RMS. RMS to be considered must include the RMS found in Volume 2 of the CWP Update 2009.

The Regional Water Management Group (RWMG) considered the resource management strategies (RMS) described in Volume 2 of the California Water Plan Update 2009 (CWP) and three new strategies (sediment management, Outreach and Education, and Water and Culture) described in Volume 3 of the draft California Water Plan Update 2013. The strategies listed in Table 4-1 are a diverse set of projects, programs, and policies that can help regions meet their objectives and help mitigate and adapt to climate change. These strategies can be mixed and matched to provide multiple water and resource benefits, diversify the local water portfolio, and help the Region become more self-sufficient. The RMS and the RWMG's evaluation of how they can help achieve the region's goals and objectives are described in this chapter.

Table 4-1: Resource Management Strategies from CWP Updates 2009 and 2013

Reduce Water Demand	
• Agricultural Water Use Efficiency	• Urban Water Use Efficiency
Improve Operational Efficiency and Transfers of Water	
• Conveyance – Delta • Conveyance – Regional/Local	• System Reoperation • Water Transfers
Increase Water Supply	
• Conjunctive Management & Groundwater Storage • Desalination • Precipitation Enhancement	• Recycled Municipal Water • Surface Storage – CALFED • Surface Storage – Regional/Local
Improve Water Quality	
• Drinking Water Treatment and Distribution • Groundwater/Aquifer Remediation • Matching Quality to Use	• Pollution Prevention • Salt and Salinity Management • Urban Runoff Management
Practice Resource Stewardship	
• Agricultural Lands Stewardship • Economic Incentives • Ecosystem Restoration • Forest Management	• Land Use Planning and Management • Recharge Area Protection • Water-Dependent Recreation • Watershed Management • Sediment Management
Improve Flood Management	
• Flood Risk Management	
Other Strategies	
• Crop Idling for Water Transfers • Dewvaporation • Fog Collection • Irrigated Land Retirement	• Rainfed Agriculture • Waterbag Transport/Storage Technology • Outreach and Education • Water and Culture

4.1 Agricultural Water Use Efficiency

Agricultural water use efficiency can achieve reductions in the amount of water used for agricultural irrigation. Several strategies recommended by the CWP to achieve agricultural water savings and benefits include:

- improving irrigation system technology and management of water, both on-farm and at the district level to minimize water losses;
- adjusting irrigation schedules to decrease the amount of water applied;
- installing remote monitoring and/or improve water management and controls; and
- developing community educational conservation activities to foster water use efficiency.

This strategy could increase the Pajaro region's water savings, improve water quality, provide environmental benefits, improve flow and timing, and increase energy efficiency. This RMS supports the region's water supply, water quality, and environmental goals and is incorporated into the IRWM Plan.

4.2 Urban Water Use Efficiency

Urban water use efficiency strategies can assist in managing increasing water needs of growing populations in the region. Urban water use efficiency strategies can reduce water demand through technological and behavioral improvements by decreasing indoor and outdoor residential, commercial, institutional, and industrial water use. Several approaches recommended by the CWP to increase urban water use efficiency include:

- implementing programs such as Best Management Practices (BMPs);
- installing water efficient landscapes;
- encouraging gray water and rain water capture to increase water conservation and improve water quality;
- increasing public outreach and encouraging community involvement; and
- funding incentive programs for small districts and economically DACs.

Potential benefits of urban water use efficiency include drought preparedness, reduced demands, reduced runoff from landscapes, and reduced energy use. This RMS supports the region's water supply, water quality, and environmental goals and is incorporated into the IRWM Plan.

4.3 Conveyance – Delta

The CWP defines conveyance as, "Conveyance provides for the movement of water. Conveyance infrastructure includes natural watercourses as well as constructed facilities. Conveyance through the Delta, located at the confluence of the Sacramento and San Joaquin rivers, naturally carries water westward from the upstream water drainage basins to the bays connected to the Pacific Ocean. The Delta, however, is also a highly manipulated network of natural streams and sloughs as well as constructed channels bordered by levees to prevent flooding of adjacent islands. The Delta is a critical element of both regional and interregional (the federal Central Valley Project and State Water Project) water conveyance systems and is essential to sustaining the state's economy." The Pajaro River Watershed depends on conveyance through the Delta for its Central Valley Project (CVP) supplies. Improvements to

Delta conveyance are needed to restore the Sacramento-San Joaquin Delta ecosystem and improve water supply reliability.

The potential benefits of Delta conveyance to the Pajaro River Watershed include maintaining or increasing water supply reliability, protecting water quality, and providing operational flexibility. This RMS supports the region's water supply and water quality goals and is incorporated into the IRWM Plan.

4.4 Conveyance – Regional / Local

The region's CVP supplies are conveyed from the Delta in the Delta-Mendota Canal to San Luis Reservoir and then through Pacheco Pumping Plant and Conduit to the Santa Clara and Hollister Conduits for local use. Imported and locally developed water is conveyed to recharge facilities, treatment plants, and end users. Regional/local conveyance strategies can include improving aging infrastructure, increasing existing capacities, constructing alternative conveyance and system interties, and and/or constructing new conveyance facilities.

The potential benefits of regional/local conveyance include maintaining and increasing water supply reliability for the urban, agricultural and environmental water-use sectors; protecting water quality; augmenting current water supplies; operational flexibility; conjunctive management; and flood management. This RMS supports the region's water supply, water quality, flood management, and environmental goals and is incorporated into the IRWM Plan.

4.5 System Reoperation

System reoperation means changing existing operation and management procedures for existing reservoirs and conveyance facilities to increase water related benefits from these facilities. System reoperation may address specific needs (e.g., cold water releases), improve efficiency and water supply reliability (e.g., carrying over supplies from one year to the next), and/or anticipate future conditions (e.g., runoff patterns resulting from climate change). Reoperation is generally regarded as an alternative to construction of major new water facilities, but physical modifications to existing facilities may be needed in some cases to expand the reoperation capability.

Some of the potential benefits of system reoperation strategies include increased water supply reliability, flood management, environmental water enhancement, and water quality management. This RMS supports all of the region's goals – water supply, water quality, flood management, and environmental protection and enhancement – and is incorporated into the IRWM Plan.

4.6 Water Transfers

Water transfers are a voluntary change in the way water is distributed among water users. California Water Codes defines a water transfers as a temporary or long-term change in the point of diversion, place of use, or purpose of use due to transfer or exchange of water or water rights. Water is generally made available for transfers by transferring water from storage, pumping groundwater in lieu of using surface water and transferring the surface water rights, transferring banked groundwater, reducing existing use to make water available, and reducing irrecoverable losses. Water transfers are often linked with system reoperation, storage, conjunctive management, conveyance, water quality, and/or crop idling.

Potential benefits of water transfers include additional water supplies during droughts, operational flexibility, compensation that can fund beneficial projects/activities. This RMS supports the region's water supply goal and is incorporated into the IRWM Plan.

4.7 Conjunctive Management and Groundwater Storage

Conjunctive management refers to the coordinated and planned use and management of both surface water and groundwater resources to maximize the availability and reliability of water supplies in a region to meet various management objectives. Groundwater is stored in the groundwater basin for later use recharging the basin when excess water supply is available. Water is put into the groundwater by direct (e.g., use of recharge ponds) and in-lieu recharge (e.g., use of surface water or recycled water in-lieu of groundwater).

Potential benefits of conjunctive management are improved water supply reliability and drought protection, reduced groundwater overdraft and land subsidence, protection from salt water intrusion, water quality protection and improvement, improved flood management, and improved environmental conditions. This RMS supports all of the region's goals – water supply, water quality, flood management, and environmental protection and enhancement – and is incorporated into the IRWM Plan.

4.8 Desalination

According to the CWP, "Desalination comprises various water treatment processes for the removal of salt from water for beneficial use. Desalination is used to treat seawater as well as brackish water (water with a salinity that exceeds normally acceptable standards for municipal, domestic, and irrigation uses, but less than that of seawater). Desalination technologies are also used to treat polluted and impaired waters and as an advanced treatment of wastewater to produce high quality recycled water. In California, the principal method for desalination is reverse osmosis (RO). This process can be used to remove salt as well as specific contaminants in water such as trihalomethane precursors, volatile organic carbons, nitrates and pathogens."

Potential benefits of desalination include increased water supply, increased supply reliability during droughts, reduced reliance on imported sources, diversification of water supply sources and increased operational flexibility, improved potable water quality, and facilitation of the more recycled water use. This RMS supports the region's water supply and water quality goals and is incorporated into the IRWM Plan.

4.9 Precipitation Enhancement

Precipitation enhancement artificially stimulates clouds to produce more rainfall or snowfall than would naturally occur, increasing water supply. According to the CWP, precipitation enhancement (or cloud seeding) should not be viewed as a remedy for drought as opportunities are generally fewer in dry years. It works better in combination with surface or groundwater storage to increase average supplies. In the very wet years, when sponsors already have enough water, cloud seeding operations are usually suspended. The Santa Clara Valley Water District investigated cloud seeding from 1955 to 1965 and observed positive results on rainfall during some types of rainfall events. However, additional investigation is needed into the efficacy and precision of cloud seeding in the watershed, especially under current environmental conditions, as well as an analysis of potential adverse impacts.

Although cloud seeding has the potential to increase rainfall and water supply for the region, it is still evolving as a water management strategy in California and its utility for the Pajaro River Watershed is unclear. This RMS is not incorporated into the IRWMP.

4.10 Recycled Municipal Water

Recycled municipal water originates as wastewater from municipal treated plants, is treated to a level suitable for beneficial use. Non-potable recycled water uses include irrigation, industrial applications,

and toilet flushing. Advanced water treatment technologies can produce recycled water that is suitable for potable reuse, either indirectly through groundwater recharge or injection or through reservoir augmentation, or directly without going through groundwater or surface water body.

Potential benefits of water recycling are a drought-resistant local water source that off-sets potable water use, reduced wastewater discharges with benefits to water quality and the environment, and reduced greenhouse gas emissions. This RMS supports the region's water supply, water quality, and environmental goals and is incorporated into the IRWM Plan.

4.11 Surface Storage – CALFED

CALFED surface storage includes five potential surface water reservoirs or reservoir expansion projects. The projects are being investigated by the U.S. Bureau of Reclamation, the California Department of Water Resources, and local water interests. The five projects are spread out across the state and include north-of-Delta, in-Delta, and south-of-Delta storage options. These projects are to be designed to provide multiple benefits, including environmental and water quality benefits.

The potential benefits of CALFED surface storage in the Pajaro River Watershed are improved water supply reliability, water quality, and operational flexibility. This RMS supports the region's water supply and water quality goals and is incorporated into the IRWM Plan.

4.12 Surface Storage – Regional/Local

This RMS focuses on regional and local surface storage alternatives to expand surface storage capacity to collect water for later release and use. Surface storage can play an important role in managing natural hydrologic variations, especially when combined with other RMS such as water transfers and conjunctive management, and could help adapt to climate change. Additional surface storage capacity can be developed by constructing new dams and by enlarging, reoperating, or modifying existing reservoirs and their outlet structures.

Benefits of expanding regional/local surface storage include improved flood management, ecosystem management, water quality management, hydroelectric power generation, emergency water supply, recreation, capture of surface water runoff for water supply augmentation, and water supply reliability. This RMS supports all of the region's goals – water supply, water quality, flood management, and environmental protection and enhancement – and is incorporated into the IRWM Plan.

4.13 Drinking Water Treatment and Distribution

Providing a reliable supply of safe drinking water is critical to public health and safety. In order to meet or exceed drinking water standard, public water supplies must develop and maintain adequate water treatment and distribution facilities and protect the quality of their source waters. Most groundwater wells used for drinking water are constructed in such a manner that they capture only high quality water that does not require treatment to remove contaminants. Surface water supplies in the region do require treatment to meeting drinking water standards. Distribution systems must be operated to maintain water quality as supplies are distributed to customers. Securing funding to maintain and operate drinking water facilities can be challenging, especially for small and disadvantaged communities.

Potential benefits of this RMS are a safe supply of drinking water. This RMS supports the region's water quality goal and is incorporated into the IRWM Plan.

4.14 Groundwater and Aquifer Remediation

Contaminant concentrations above drinking water standards have been detected in portions of aquifers in the Pajaro River Watershed. In some cases, groundwater contains levels of natural constituents such as chromium VI or manganese that do not support beneficial uses. In other cases, groundwater has been contaminated by human activities resulting in concentrations of contaminants such as nitrate and perchlorate above drinking water standards. Passive groundwater remediation allows contaminants to biologically or chemically degrade or disperse in situ over time. Active groundwater remediation can involve pumping the groundwater and treating it or injecting chemicals into the contamination plume to treat the contamination. Sometimes groundwater is treated at the wellhead and used directly for potable, irrigation, or industrial uses.

Potential benefits of groundwater and aquifer remediation are additional water supply that would otherwise not be available and use of a remediate aquifer for conjunctive management. This RMS supports the region's water supply and water quality goals and is incorporated into the IRWM Plan.

4.15 Matching Quality to Use

Not all water uses require the same quality of water. A common measure of water quality is its suitability for its intended use. In other words, a water quality constituent is only contaminant if it adversely affects the intended use of the water. High quality water sources can be used for drinking water and industrial purposes because these uses benefit from higher quality water. Recycled water can be treated to a wide range of purities that can be matched to different uses and offset the use potable supplies. Instream uses are directly influenced by discharges from wastewater treatment and stormwater flows, which are hinder or help uses such as aquatic life and recreation. Matching water quality to most uses is important because, except for municipal and industrial uses, water is generally used without treatment.

Potential benefits of matching water quality to use include improved drinking water quality, reduced costs for treatment or replacing damaged fixtures, instream and ecosystem benefits, opportunities for blending sources, improved water supply reliability, and reduced greenhouse gas emissions. This RMS supports the region's water supply, water quality, and environmental goals and is incorporated into the IRWM Plan.

4.16 Pollution Prevention

Pollution prevention assists in maintaining and improving source water quality. Pollution prevention activities can include:

- developing proper land management practices that prevent sediment and pollutants from entering source waters;
- establishing drinking water source and wellhead protection programs to protect drinking water sources and groundwater recharge areas from contamination;
- identifying communities relying on groundwater contaminated by anthropogenic sources for drinking water and take appropriate regulatory action; and
- addressing improperly destroyed, sealed and abandoned wells that can serve as potential pathways for groundwater contaminants.

Potential benefits of pollution prevention include reduced water treatment requirements, enhanced habitat and natural resource conditions, protecting water quality for recreation activities, and improved water

supply reliability resulting from decreased water quality variability. This RMS supports the region's water supply, water quality, and environmental goals and is incorporated into the IRWM Plan.

4.17 Salt and Salinity Management

Salt is present to some degree in all natural water supplies because soluble salts in rocks and soil begin to dissolve as soon as water reaches them. Salts are added to soil or water as fertilizers or soil amendments, or to assist in some industrial, domestic, or other process such as food processing or water softening. Salts can also enter the Pajaro River Watershed as a result of groundwater overdraft, which can result in saltwater intrusion in coastal aquifers. Climate change and the predicted sea level rise will worsen this problem. In addition, as water is consumed through use for irrigation, domestic, or municipal and industrial supply, the majority of the salt load remains behind. Salt can also enter the watershed via the importation of water supplies. Salt and salinity management includes over-irrigating to flush salts out of the root zone, dilution with lower salinity water, treatment to remove salts from water supplies, and brine management and disposal.

The benefits of salt management include improved water quality, operational flexibility and efficiency, environmental benefits, and energy savings. This RMS supports the region's water supply, water quality, and environmental goals and is incorporated into the IRWM Plan.

4.18 Urban Runoff Management

Urban runoff management strategies seek to manage both stormwater and dry weather runoff to minimize soil erosion and sedimentation problems, reduce surface water pollution, protect natural resources, protect and augment groundwater supplies, and improve flood protection. Urban runoff management strategies include:

- coordinating efforts with agencies, stakeholders, and the public to decide how urban runoff management should be integrated into work plans;
- encouraging public outreach and education concerning funding and implementation of urban runoff measures;
- designing recharge basins to minimize physical, chemical, or biological clogging;
- working with community to identify opportunities to address urban runoff management;
- providing incentives for the installation of low impact development features on new and existing developments; and
- emphasizing source control measures and strong public education/outreach efforts as being the most effective way to manage urban runoff in this highly arid region.

The benefits of Urban Runoff Management include improved water quality, operational flexibility, reduce flood impacts, environmental benefits, energy benefits, recreational opportunities, and reduced groundwater overdraft. This RMS supports all of the region's goals – water supply, water quality, flood management, and environmental protection and enhancement – and is incorporated into the IRWM Plan.

4.19 Agricultural Lands Stewardship

Agricultural lands stewardship involves conserving and improving land for conservation purposes as well as protecting open spaces and rural communities. This can assist in protecting environmentally sensitive lands, recharging groundwater, improving water quality, providing water for wetland protection and

restoration, and increasing carbon sequestration within soil. Agricultural land stewardship strategies include:

- stabilizing streambanks to slow bank erosion and filter drainage water from the fields;
- installing windbreaks (i.e. trees and/or shrubs) along field boundaries to help control soil erosion, conserve soil moisture, improve crop protection among many other benefits;
- performing conservation tillage to increase water infiltration and soil water conservation and reduce erosion and water runoff; and
- encouraging irrigation tailwater recovery to help capture and reuse irrigation runoff water to benefit water conservation and off-site water quality.

The benefits of agricultural lands stewardship include improved drought preparedness, improved water quality, operational flexibility and efficiency, reduced flood impacts, environmental benefits, energy benefits, recreational opportunities, and reduced groundwater overdraft. This RMS supports all of the region's goals – water supply, water quality, flood management, and environmental protection and enhancement – and is incorporated into the IRWM Plan.

4.20 Economic Incentives (Loans, Grants and Water Pricing)

Economic incentives including low interest loans, grants, and water rates and rate structures can influence water management, amount of water use, time of use, wastewater volume, and source of supply. Several urban runoff management strategies identified by the CWP include:

- instituting loans and grant programs that support better regional water management;
- adopting policies that promote long-run water use efficiency;
- developing modeling tools for economic analyses of economic incentives as well as guidelines and ranking criteria for grant and loan awards; and
- exploring innovative financial incentives.

Economic incentives can help to improve drought preparedness, improve water quality, provide operational flexibility and efficiency, provide environmental benefits, and reduce groundwater overdraft. This RMS supports the region's water supply, water quality, and environmental protection and enhancement goals and is incorporated into the IRWM Plan.

4.21 Ecosystem Restoration

Ecosystem restoration strategies are key to enhancing the region's rich natural resources. Ecosystem restoration strategies identified by the CWP include:

- increasing the use of setback levees and floodwater bypasses;
- creating programs that support and funds the identification of stream flow needs;
- establishing biological reserve areas that connect or reconnect habitat patches;
- expanding riparian habitat;
- devising climate change adaptation plans that benefit ecosystems, water, and flood management;
- reproducing natural flows in streams and rivers;

- controlling non-native invasive plant and animal species; and
- filtering of pollutants and recharging aquifers.

Potential benefits of ecosystem restoration include improved drought preparedness, improved water quality, operational flexibility and efficiency, reduced flood impacts, ecosystem benefits, and reduced groundwater overdraft. This RMS supports all of the region's goals – water supply, water quality, flood management, and environmental protection and enhancement – and is incorporated into the IRWM Plan.

4.22 Forest Management

Forest management strategies focus on improving the availability and quality of water for downstream users on both publicly and privately owned forest lands. Forest management strategies identified by the CWP include:

- establishing long-term monitoring to understand hydrologic changes resulting from possible climate change effects through the installation of stream gages, precipitation stations, water-quality and sediment monitoring stations, and long-term monitoring wells;
- increasing research efforts into identifying effective BMPs for forest management and the effects of wildfires;
- assessing sediment sources and erosion processes in managed and unmanaged forested watersheds;
- increasing multi-party coordination of forest management;
- improving communication between downstream and upstream water users; and
- developing public education campaigns for water users.

Potential benefits of forest management strategies include interception of rainfall, reduction of urban runoff, increased energy-efficient shade during hot weather, reduced flooding and increased dry-season base flows, and protection from surface erosion and filtering pollutants. This RMS supports all of the region's goals – water supply, water quality, flood management, and environmental protection and enhancement – and is incorporated into the IRWM Plan.

4.23 Land Use Planning and Management

More efficient and effective land use patterns promote integrated regional water management. As the California Water Plan 2009 explains, integrated land use and water management consists of planning for the development needs of a growing population while providing for the efficient use of water, water quality, energy, and other resources. Land use decisions affect water supply and quality, flood management, and other water issues. Compact and sustainable development, often referred to as low-impact development (LID), can help manage the impacts of development on water resources and help communities adapt to impacts of climate change.

Land use planning and management can improvement drought preparedness, improve water quality reduce flood impacts, provide ecosystem benefits, provide energy benefits, and provide recreational benefits. This RMS supports all of the region's goals – water supply, water quality, flood management, and environmental protection and enhancement – and is incorporated into the IRWM Plan.

4.24 Recharge Area Protection

Recharge area protection protects recharge areas from pollution, which protects and maintains the water quality of groundwater supplies. In additional, recharge area protection that incorporates flood plain management can help manage flood impacts. Several recharge area protection strategies identified by the CWP include:

- expanding research into surface spreading and the fate of chemicals and microbes in recharge water;
- increasing funding for the identification and protection of recharge areas;
- creating education and media campaigns to increase public awareness and knowledge on the importance of recharge areas and relevancy to groundwater;
- requiring source water protection plans; and
- developing methods for analyzing the economic benefits and costs of recharge areas.

Recharge area protection improves drought preparedness, improves water quality, provide operational flexibility and efficiency, reduces flood impacts, and reduces groundwater overdraft. This RMS supports the region's water supply, water quality, and flood management goals and is incorporated into the IRWM Plan.

4.25 Water-Dependent Recreation

This strategy provides for adequate access to water-related recreation activities. Water-dependent strategies identified by the include:

- partnering with schools to provide drowning prevention programs primarily aiming at youth from urban and low income families;
- developing a procedure to incorporate climate change assessments within all infrastructure planning, budgeting, and project development;
- researching, identifying, and mitigating impacts of stream flows that prevent Native Americans from participating in their traditional cultural activities; and
- developing invasive species preventative measures.

Water-based recreation holds significant value to the residents and stakeholders in the Pajaro region. The benefits of water-based recreation include reduced flood impacts, environmental benefits, and recreational opportunities. This RMS supports the region's flood protection and environmental protection and enhancement goals and is incorporated into the IRWM Plan.

4.26 Watershed Management

Watershed management involves coordinating and integrating the management of numerous physical, chemical, and biological processes at the watershed level to generate multiple benefits. Watershed management strategies identified by the CWP include:

- creating a scientifically valid tracking and reporting method to document changes in the watershed;
- assessing the performance of projects and programs;

- providing watershed information to better inform local land use decision makers on how to maintain and improve watershed functions; and
- using watershed approaches in which all RMS strategies are coordinated.

Watershed management has been - and will continue to be – an important framework for managing the water resources in the Pajaro River Watershed. This RMS improves regional drought preparedness, improves water quality, provides operational flexibility and efficiency, reduces flood impacts, provides environmental and energy benefits, provides recreational benefits, reduces groundwater overdraft. This RMS supports all of the region's goals – water supply, water quality, flood management, and environmental protection and enhancement – and is incorporated into the IRWM Plan.

4.27 Sediment Management

Sediment, like fresh water, is limited in supply and is a valuable natural resource. However, it can be both desirable and unwanted depending on the quantity, location, and type. Sediment contributes to many positive purposes including renewal of wetlands, streams, and coastal habitats; maintaining and restoring good quality native riparian vegetation; fertile farmland; levee maintenance; construction; and beach restoration. However, excess fine-grained sediments cloud water, degrade wildlife, reduce storage capacity in reservoirs, and reduce the hydraulic capacity of stream and flood channels. In addition, toxic pollutants may be absorbed onto sediments and affect aquatic life, bioaccumulate, and impair beneficial uses of water bodies. Sediment management is achieved through source management, sediment transport management, sediment deposition management.

The benefits of sediment management include reduced flood risk, improved habitat for aquatic species, improved water quality, increased reservoir storage capacity, and improved access to shorelines. This RMS supports all of the region's goals – water supply, water quality, flood management, and environmental protection and enhancement – and is incorporated into the IRWM Plan.

4.28 Flood Risk Management

The Pajaro has a history of significant flood impacts. Flood risk management is intended to enhance flood protection and includes projects and programs that assist individuals and communities manage flood flows and to prepare for, respond to, and recover from a flood. This strategy is part of a comprehensive approach that considers land and water resources on a watershed scale and employees both structural and non-structural measures to address flood risks. Several flood risk management strategies identified by the CWP include:

- Setting back levees
- High flow diversions into adjacent lands to temporarily store flows
- Maintaining facilities to secure the long-term preservation of flood management facilities
- Floodplain function restoration to preserve and/or restore the natural ability of undeveloped floodplains to absorb, hold, and release floodwaters
- Floodplain regulation
- Development and redevelopment policies
- Housing and building codes
- Disaster Preparedness, Response, and Recovery for flood risk management.

The benefits of flood risk management include improved drought preparedness, improved water quality, reduced flood impacts, environmental benefits, energy benefits, and reduced groundwater overdraft. This RMS supports all of the region's goals – water supply, water quality, flood management, and environmental protection and enhancement – and is incorporated into the IRWM Plan.

4.29 Crop Idling for Water Transfers

Crop idling is the removal of lands from irrigation with the aim of returning the lands to irrigation at some latter time and is done to make water available for transfer. Agriculture is the foundation of the Pajaro River Watershed's society and economy and crop idling could have significant socioeconomic impacts. Further, there are limited water transfer opportunities within the Pajaro River Watershed. This RMS has been screened from further evaluation.

4.30 Dewvaporation or Atmospheric Pressure Desalination

Dewvaporation or atmospheric pressure desalination would heat brackish water until deposits of fresh water as dew are collected from the opposite side of a heat transfer wall. This strategy can provide small amounts of water remote locations but is not viable as a new source of supply for the watershed. As such, this RMS has been screened from further evaluation.

4.31 Fog Collection

Fog collection is a form of precipitation enhancement that has not yet been implemented in California. Because of its relatively small production, fog collection is limited to producing domestic water where little other viable water sources are available. This RMS is not considered feasible and has been screened from further evaluation.

4.32 Irrigated Land Retirement

Irrigated land retirement involves removing farmland from active use to increase water availability for other uses. Agricultural is a significant land use in the Pajaro River Watershed and retiring land from agriculture would significantly change the socioeconomics of the region. As such, this RMS has been screened from further evaluation.

4.33 Rainfed Agriculture

Rainfed agriculture involves performing all crop irrigation with rainfall. Some of the agriculture in the watershed is rainfed. However, rainfall quantity is difficult to predict, and rainfall is typically experienced in winter months, as opposed to during the summer growing season, which limits the expansion of rainfed agricultural As such, expansion of this RMS is considered infeasible and has been screened from further evaluation.

4.34 Waterbag Transport/Storage Technology

Waterbag transport/storage technology involves storing water from areas with unallocated freshwater supplies in large inflatable bladders, and towing them to an alternate region. This strategy is not currently being used in California and faces several issues. Therefore, this strategy is considered infeasible and has been screened from further evaluation.

4.35 Outreach and Education

Outreach and education increases awareness, influences behavior, builds support, and affects public and stakeholder actions related to water management. Outreach and education efforts may range from providing information and educating to empowering people to make decisions. The benefits of outreach and education include more informed decision making, improved relationships, increased support for water management projects and programs, and increased participation in water management activities. Outreach and education is integral to all water management strategies. In other words, the potential benefits of other water management strategies cannot be fully achieved without outreach and education. For example, most water use efficiency measures are implemented by water users, so outreach and education to those users is a necessary component of the strategy. This RMS supports all of the region's goals – water supply, water quality, flood management, and environmental protection and enhancement – and is incorporated into the IRWM Plan.

4.36 Water and Culture

The draft California Water Plan Update 2013 explains,

> "Water and culture are connected in a myriad of ways, with subtle and complex implications for water management in California. Some cultural relationships to water are so pervasive, they may be easy to overlook. Other cultural considerations are less apparent and may be difficult to recognize. Increasing the awareness of how cultural values, uses, and practices are affected by water management, and how these have an effect on water management…, will help inform policies and decisions."

Potential benefits of this RMS include using traditional knowledge to better sustain and integrate water management and better understanding perspectives that influence water management strategies. Like the Outreach and Education RMS, understanding how culture affects water management is integral to all water management strategies. This RMS supports all of the region's goals – water supply, water quality, flood management, and environmental protection and enhancement – and is incorporated into the IRWM Plan.

4.37 Strategies Selected

Table 4-2 presents the selected RMS and how they contribute to meeting each of the IRWM Plan regional goals and objectives. The RMS can be integrated to form successful projects that fulfill multiple regional goals.

Table 4-2: Comparison of Goals and Objectives and Resource Management Strategies

Goals and Objectives / Resource Management Strategies	Water Supply									Water Quality					Flood Management					Environmental			
	Meet 100% of demands in normal years	Meet 85% M&I and 75% agriculture demands in drought years	Address DAC water supply needs	Implement water conservation	Maximize recycled water	Optimize the use of groundwater and aquifer storage	Maximize conjunctive use	Optimize imported supplies	Maximize local surface water supplies	Meet water quality standards	Address DAC drinking water quality needs	Protect groundwater quality	Manage surface water quality	Meet recycled water targets	Implement flood management	Consensus on the Pajaro River Risk Reduction project	Preserve flood attenuation	Develop adaptive management	Provide community benefits	Enhance the local environment	Improve resources	Protect Montery Bay National Marine Sanctuary	Address opportunities for recreational projects
Agricultural Water Use Efficiency	X	X	X	X			X			X		X	X									X	
Urban Water Use Efficiency	X	X	X	X			X			X		X	X									X	
Conveyance-Delta	X	X					X	X															X
Conveyance – Regional/Local	X	X	X			X	X	X	X														
System Reoperation	X	X	X			X	X	X	X	X	X	X	X										
Water Transfers	X	X	X				X	X															
Conjunctive Management	X	X	X			X	X	X	X														
Desalination	X	X	X				X			X	X			X									
Recycled Municipal Water	X	X	X		X		X			X				X									
Surface Storage- CALFED	X	X						X		X													
Surface Storage – Regional/Local	X	X	X				X		X	X	X				X								X
Drinking Water Treatment and Distribution							X	X	X	X	X												
Groundwater/Aquifer Remediation	X	X	X			X	X			X	X												
Matching Quality to Use	X	X			X		X	X	X	X	X	X								X	X	X	
Pollution Prevention							X			X		X	X	X	X		X			X	X	X	X
Salt and Salinity Management	X	X	X		X	X	X	X		X	X	X		X						X	X		
Urban Runoff Management							X			X	X	X	X		X	X	X	X	X	X	X	X	
Agricultural Lands Stewardship	X	X	X	X		X	X			X	X	X	X		X	X	X		X	X	X	X	
Economic Incentives	X	X	X	X	X		X										X						
Ecosystem Restoration	X	X	X				X		X	X	X	X	X		X	X	X	X	X	X	X	X	
Forest Management	X	X	X			X			X	X	X		X		X		X		X		X		
Land Use Planning and Management	X	X	X	X	X					X	X	X	X		X	X	X	X	X	X	X	X	X
Recharge Area Protection	X	X	X		X	X	X			X	X				X	X	X		X	X	X	X	
Water-Dependent Recreation															X	X			X	X			X
Watershed Management	X	X	X			X	X		X	X	X	X	X		X	X	X		X	X	X	X	X
Sediment Management	X	X				X	X		X	X	X		X	X	X	X		X	X	X		X	X
Flood Risk Management	X	X	X				X		X						X	X	X	X	X				
Outreach and Education	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Water and Culture	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

4.38 Implementation of Resource Management Strategies as a Means to Adapt to Climate Change

Table 4-3 identifies whether or not each RMS included in the Pajaro River Watershed IRWM Plan may help mitigate climate change or help adapt to climate change impacts.

Table 4-3: RMS Relation to Climate Change Mitigation and Adaptation

Resource Management Strategy	May Help Mitigate Climate Change Impacts	May Help Adapt to Climate Change Impacts
Reduce Water Demand		
Agricultural Water Use Efficiency	✓	✓
Urban Water Use Efficiency	✓	✓
Improve Operational Efficiency and Transfers		
Conveyance – Delta		✓
Conveyance — Regional / Local		✓
System Reoperation	✓	✓
Water Transfers		✓
Increase Water Supply		
Conjunctive Management and GW Storage	✓	✓
Desalination		✓
Recycled Municipal Water	✓	✓
Surface Storage – CALFED	✓	✓
Surface Storage — Regional/Local	✓	✓
Improve Water Quality		
Drinking Water Treatment and Distribution		✓
Groundwater and Aquifer Remediation		✓
Matching Water Quality to Use	✓	✓
Pollution Prevention		✓
Salt and Salinity Management		✓
Urban Runoff Management		✓
Practice Resource Stewardship		
Agricultural Lands Stewardship		✓
Economic Incentives	✓	✓
Ecosystem Restoration		✓
Forest Management	✓	✓
Land Use Planning and Management	✓	✓
Recharge Areas Protection		✓
Water-dependent Recreation		
Watershed Management	✓	✓
Sediment Management	✓	✓

Resource Management Strategy	May Help Mitigate Climate Change Impacts	May Help Adapt to Climate Change Impacts
Improve Flood Management		
Flood Risk Management		✓
Other Strategies		
Outreach and Education	✓	✓
Water and Culture	✓	✓

5 Project Review Process and Integration

This chapter meets the following IRWMP Standards from the Propositions 84 & 1E IRWM Program Guidelines (DWR, 2012).

> **Project Review Process** – The IRWM Plan must contain a process or processes to select projects for inclusion in the IRWM Plan. The selection process(es) must include the following components:
>
> - Procedures for submitting a project to the RWMG
> - Procedures for review of projects considered for inclusion into the IRWM Plan.
> - Procedures for displaying the list(s) of selected projects
>
> **Integration –** An IRWM Plan must contain structures and processes that provide opportunities to develop and foster integration.

5.1 Background

The 2007 Pajaro River Watershed IRWM Plan included a three step project prioritization process:

- Step 1 - prioritization and weighting of the goals and objectives
- Step 2 - scoring of projects against objectives
- Step 3 - development of high, medium and low project priorities

The updated Pajaro River Watershed Project Prioritization Process must meet the 2012 IRWM guidelines. The RWMG compared the 2007 process against the new standards and identified deficiencies in the process as noted in Table 1.

The 2014 project review process is similar to the 2007 process but updated to include the new project review criteria as required in the 2012 IRWM Guidelines. The updated process is a four step process:

- Step 1 - prioritization and weighting of the goals and objectives
- Step 2 – prioritization and weighting of IRWM project review criteria
- Step 3 - scoring of projects against objectives and other project review criteria
- Step 4 - development of high, medium and low project priorities

The updated project review process was approved by the Stakeholder Steering Committee (SSC) in July 2012.

In addition to the changes to the project review process, the plan includes a documented process for submitting a project and displaying the list of selected projects.

5.2 Project Submittal Process

To be considered for inclusion in the Pajaro River Watershed IRWM Plan, project sponsors are required to submit a completed Pajaro River Watershed IRWM Project Form (Appendix B). The form requires inputting project information that addresses the guideline requirements, as listed in Table 5-1. To ensure a comprehensive list of projects, sponsors were encouraged to submit the form regardless of project status or readiness. All of the project forms are reviewed, regardless of completeness.

Table 5-1: Assessment of 2007 Prioritization Process

Guideline Requirement	Comment
How the project contributes to the IRWMP objectives	The 2007 prioritization process meets the requirement. However, the process has been modified in response to comments received from the Stakeholder Steering Committee.
How the project is related to resource management strategies selected for use in the IRWMP	The 2007 Water Management Strategies chapter meets the requirement but will have to be updated to address the newly defined resource management strategies that must be considered.
Technical feasibility of the project	Needs to be added to the project review and prioritization process.
Specific benefits to DAC water issues	The 2007 Plan and the updated Goals and Objectives consider the benefits to DACs. However, additional considerations for DAC requirements will be incorporated into the updated project review and prioritization process.
Environmental Justice considerations	This was addressed in the Statewide Priorities chapter of the 2007 Plan but was not a project review criteria. Therefore, environmental justice considerations need to be added to the project review and prioritization process.
Project costs and financing	Needs to be added to the project review and prioritization process.
Economic feasibility, including water quality and water supply benefits and other expected benefits and costs	This was partially addressed in the Impacts and Benefits chapter of the 2007 Plan but was not a project review criteria. Therefore, economic feasibility needs to be added to the project review and prioritization process.
Project status	The project status was described in the 2007 Plan but was not a project review criteria. Therefore, project status needs to be added to the project review and prioritization process.
Strategic considerations for IRWMP implementation	The 2007 Integration chapter meets the requirement but will have to be updated to demonstrate consistency with the new guidelines.
Contribution of the project in adapting to the effects of climate change in the region	Needs to be added to the project review and prioritization process.
Contribution of the project in reducing GHG emission as compared to project alternatives	Needs to be added to the project review and prioritization process.
Whether the project proponent has adopted or will adopt the IRWMP	Needs to be added to the project review and prioritization process.
How the project will help reduce dependence on the Delta for water supply	This is addressed by evaluating each project against the IRWM Plan objectives. The IRWM objectives include water conservation, recycled water use, optimizing groundwater storage, conjunctive management, sustaining and optimizing import water supplies, and optimizing the use of local supplies. Together, these objectives reduce dependence on Delta by increasing supplies without increasing the use of Delta supplies.

The RWMG issued a call for project in October 2012 and again in April 2014. The 2012 call for projects was scheduled to allow for new projects to be added to the IRWM Plan and be considered for inclusion in the Proposition 84 Round 2 Implementation Grant. As was noted in the project solicitation, all project sponsors were required to complete the new IRWM project form to be included in the IRWM Plan, regardless of desire to participate in the implementation grant. Due to the new plan standards, the 2007 project list was no longer valid. The call for projects was distributed via e-mail to all IRWM stakeholders. 35 IRWM project forms were submitted.

The 2014 call for projects was scheduled to allow for new projects developed since 2012 and to add any projects that were developed in response to the drought. As was noted in the project solicitation, all project sponsors were required to complete the IRWM project form if the project wasn't already included in the IRWM Plan. Additionally, all project sponsors were required to submit the Drought Funding Project Submittal Form (Appendix C). The drought form was required to establish project eligibility and competitiveness in the Emergency Drought Funding program. The call for projects was distributed via e-mail to all IRWM stakeholders. Five project forms were submitted.

5.3 Project Review Process

The 2007 prioritization process used a mathematical formula to assign weights to each of the goals. The formula took into account both the number of goals as well as the rank of each goal. Members of the SSC expressed concern over the emphasis placed on water supply utilizing this methodology. The RWMG agreed the weighting should be adjusted to more evenly distribute the points across the goals. After review at the July 31, 2012 meeting, the SSC recommended the following weight allocation across the four goals:

1. Water Supply = 34 points
2. Water Quality = 28 points
3. Flood Management = 22 points
4. Environmental = 16 points

The RWMG considered and accepted the weighting recommended by the SSC.

The RWMG chose to use the 2007 mathematical formula to assign weights to the objectives within the four goals. The SSC voted to support the approach for weighting the objectives. Using 100 points as the basis, the revised weights for each of the goals and objectives are shown on Table 5-2.

Table 5-2: Weighting of the Goals and Objectives

Goal / Objective	Points
Water Supply	**34**
1. Meet 100% of M&I and agriculture demands (both current and future conditions) in wet to dry years including the first year of a drought.	12.01
2. Meet 85% M&I and 75% agriculture demands (both current and future conditions) in second and subsequent years of a drought.	6.01
3. Identify and address water supply needs of disadvantaged communities in the Pajaro River Watershed.	4.00
4. Implement water conservation programs to reduce M&I and agricultural water use consistent with SBx7-7 and CVPIA.	3.00
5. Maximize the use of recycled water during the irrigation season and expand other uses of recycled water.	2.40
6. Optimize the use of groundwater and aquifer storage.	2.00
7. Maximize conjunctive use opportunities including interagency conjunctive use.	1.72
8. Optimize and sustain the use of existing import surface water entitlements from the San Felipe Unit.	1.50
9. Maximize the beneficial use of existing local water supplies while protecting existing surface water rights.	1.33
Water Quality	**28**
1. Meet or exceed all applicable groundwater, surface water, wastewater, and recycled water quality regulatory standards.	12.26
2. Identify and address the drinking water quality of disadvantaged communities in the Pajaro River Watershed.	6.13
3. Protect groundwater resources from contamination including salts and nutrients.	4.09
4. Address impacts from surface water runoff through implementation of Best Management Practices or other surface water management strategies.	3.07
5. Meet or exceed delivered water quality targets established by recycled water users.	2.45
Flood Management	**22**
1. Implement flood management strategies throughout the watershed that provide multiple benefits.	9.63
2. Reach consensus on the Pajaro River Risk Reduction Project necessary to protect existing urban areas and infrastructure from flooding and erosion from the 100-year event and to maximize opportunities to protect agricultural land uses.	4.82

3. Work with stakeholders to preserve existing flood attenuation by implementing land management and conservation strategies throughout the watershed.	3.21
4. Develop approaches for adaptive management to minimize maintenance requirements and protect quality and availability of water while preserving ecologic and stream functions.	2.41
5. Provide community benefits beyond flood protection such as public access, open space, recreation, agriculture preservation and economic development.	1.93
Environmental Protection and Enhancement	**16**
1. Address opportunities to enhance the local environment and protect and/or restore natural resources, in cooperation with landowners, when developing water management strategies.	7.68
2. Improve biological and cultural resources, including riparian habitats, habitats supporting sensitive plant or animal species and archaeological/historic sites when implementing strategies and projects.	3.84
3. Address opportunities to protect, enhance, or restore habitat to support Monterey Bay National Marine Sanctuary marine life in conjunction with water supply management strategies.	2.56
4. Address opportunities for open spaces, trails, parks along creeks and other recreational projects in the watershed that can be incorporated with water management strategies, consistent with public use and property rights.	1.92

Step 2. Prioritization and Weighting of IRWM Project Review Criteria

This is a new step in the Pajaro project review and prioritization process. The RWMG considered various approaches for incorporating the new IRWM criteria including a weighting-based approach, similar to the goals and objectives, or a pass fail criteria. The weighting-based approach was selected because it was considered a more inclusive approach that would allow projects to be considered even if the project fails to meet one or more of the new IRWM criteria.

The RWMG considered the following factors when assigning weights to the IRWM criteria:

- The regional goals and objectives should continue to be the critical factors for project prioritization and therefore should be heavily weighted in comparison to the IRWM criteria
- The IRWM criteria should be prioritized and weighted based on the priority

After considering various weighting options, the RWMG developed the scoring criteria as depicted in the Table 5-2. To address the first factor of placing emphasis on the regional goals and objectives, the goal weights established in Step 1 were multiplied by a factor of five for a maximum total score of 500 points. Another 500 points was allocated to the IRWM criteria. The SSC voted to support the approach for weighting the IRWM criteria.

As shown in Table 5-3, the RWMG grouped the new IRWM criteria into categories and assigned the following weights to each category:

1. Integration and Coordination (150 points)
    a. Integrates multiple resource management strategies (maximum 60 points, 10 points per strategy)

   b. Integrates multiple projects (maximum 40 points, 10 points per project)

   c. Improves regional coordination (maximum 50 points, 10 points per participating agency or organization, 20 points if DAC agency)

2. Environmental Considerations (100 points)

   a. Project considers the effects of climate change (Yes/No, 50 points if yes)

   b. Project reduces regional greenhouse gas emissions (maximum 50 points, 25 points if reduced GHG emissions, 25 points if improved energy efficiency)

3. Social Considerations (100 points)

   a. Project provides specific benefits to critical DAC water issues (Yes/No, 50 points if yes)

   b. Project addresses equitable distribution of environmental burdens (Yes/No, 25 points if yes)

   c. Project provides specific benefits to critical Native American tribal community water issues (Yes/No, 25 points if yes)

4. Financial Considerations (100 points)

   a. Capital project cost has been assessed and local cost share financing secured OR is a DAC project (Yes/No, 25 points if yes)

   b. Operation and Maintenance cost has been assessed and financing secured (Yes/No, 25 points if yes)

   c. Benefit Cost Analysis demonstrates B/C ratio greater than 1 or is a DAC project (Yes/No, 50 points if yes)

5. Readiness to Proceed (50 points)

   a. Feasibility study complete (Yes/No, 10 points if yes)

   b. Preliminary design and cost estimate complete (Yes/No, 10 points if yes)

   c. CEQA/NEPA complete (Yes/No, 10 points if yes)

   d. Permits complete (Yes/No, 10 points if yes)

   e. Construction documents complete (Yes/No, 10 points if yes)

Step 3. Scoring of Projects Against Objectives and IRWM Criteria

The next step in the prioritization process is the scoring of projects against objectives. This step will be implemented consistent with the approach used in the 2007 plan. A matrix will be constructed to compare each project against the updated and reprioritized IRWM goals and objectives. In this matrix, projects will receive a checkmark under each objective for which the project proponents can demonstrate that their project meets the intent. For each checkmark a project receives, it will then be credited with the full number of points associated with that objective as shown in Table 5-2, which will then be multiplied by 5 for a total possible score of 500. At this point of the project screening, a degree of benefit assessment will not be applied. By purposely not assessing the degree of benefit as part of the project scoring, it allows projects of varying magnitude and size and across a variety of water management strategies to be compared against each other. Also, it demonstrates that small projects that provide integrated benefits can be considered a high-priority.

Next, projects will be measured and scored against the IRWM criteria listed in Table 5-3. The total score for each project will be a sum of the goals and objectives score and the IRWM criteria score, with a maximum total of 1,000 points.

Step 4. Development of High, Medium, Low Project Priorities

The fourth and final step in the prioritization process is also consistent with the approach used in the 2007 plan. This step involves the development of project priorities using a three-tier system to group the projects into high, medium and low priorities. Project scores will be used to determine the project priorities. The high priority projects will be those that score above the 75th percentile. The medium priority projects will be those that score between the 25th percentile and the 75th percentile. The low priority projects will be those that score below the 25th percentile. The decision to categorize projects in this manner is driven by the desire to use the high priority designation to emphasize the most highly integrated, multi-objective projects that offer significant potential to meet the region's highest priority needs while satisfying the IRWM criteria. In contrast, the low priority projects tended to be single purpose projects that addressed lower priority issues in the region and do not fully address the IRWM criteria.

While the project prioritization process will result in a ranking of projects and the designation of high, medium and low project priorities, it is important to note that these ranks and designations will not be equivalent to implementation priorities. All the projects, regardless of project priority, will be considered further in the integration process.

Table 5-3: Project Review Matrix

Scoring Criteria		Scoring Objective	Scoring Metric(s)	Assessment Methodology & Scoring	Max Score/Weight	Notes
Regional Goals and Objectives	Addresses multiple goals and objectives	Identifies how a project contributes to meeting multiple IRWM goals and objectives	Which objectives does the project help accomplish?	Assigned points per objective met	500 points / 50%	
			How much weight is assigned to each objective met?	Sum of all objective points is total score		
Integration & Coordination	Integrates multiple resource management strategies	Identifies how a project contributes to meeting multiple RMS	Number of RMS categories (up to 6) that project addresses.	10 points per strategy Maximum 6 strategies	150 points / 15%	
	Integrates multiple projects	Encourages the integration of multiple projects and inter-agency coordination on mutually beneficial projects	Number of projects (up to 4) that were integrated to develop single proposal.	10 points per project Maximum 4 projects		
	Improves regional coordination		Number of agencies or organizations (up to 5) that are working together to implement project.	10 points per organization 20 points per DAC organization Maximum 5 organizations (less if DAC)		
Environmental Considerations/Climate Change	Climate change adaptation	Considers how a project can adapt to climate change	Does the project consider effects of climate change	Yes: 50 points	100 points / 10%	
	Reducing GHG emissions	Considers a project's ability to reduce regional GHG emissions	Does the project reduce regional GHG emissions or improve energy efficiency	Yes reduced GHG emissions: 25 points Yes improved energy efficiency: 25 points		
Social Considerations	Benefits to Disadvantaged Community water issues	Considers if project provides benefits to critical water issues for DACs	The project provides specific benefits to critical DAC water issues	Yes: 50 points	100 points / 10%	
	Environmental Justice considerations	Considers if project addresses inequitable distribution of environmental burdens	The project addresses inequitable distribution of environmental burdens	Yes: 25 points		
	Benefits to Native American tribal community water issues	Considers if project provides benefits to critical water issues for Native Americans	The project provides specific benefits to critical Native American water issues	Yes: 25 points		
Financial Considerations	Capital cost financing secured	Verifies local cost share capital cost financing has been secured	The project's capital cost financing is secured or is a DAC project	Yes: 25 points	100 points / 10%	
	O&M financing secured	Verifies Operation & Maintenance cost financing has been secured	The project's O&M financing is secured	Yes: 25 points		
	Positive B/C ratio	Verifies the benefit cost analysis demonstrates a positive B/C ratio	The project's B/C ratio is greater than 1 or is a DAC project	Yes: 50 points		
Readiness to Proceed	Feasibility study status	Confirms Feasibility Study complete	Is the project feasibility study complete	Yes: 10 points	50 points / 5%	
	Design status	Confirms preliminary design complete	Is the preliminary design complete	Yes: 10 points		
	CEQA/NEPA status	Confirms CEQA/NEPA complete	Is the CEQA/NEPA document complete	Yes: 10 points		
	Permitting status	Confirms all permits have been secured	Are all the permits secured	Yes: 10 points		
	Construction document status	Confirms plans & specs complete	Are plans & specs complete	Yes: 10 points		

Example Project Prioritization Exercise

The SSC asked that the proposed prioritization process be tested to demonstrate that the process results are reasonable and consistent with the IRWM planning priorities. The following four projects were selected to test the process for a range of alternatives:

- **Project No. 1 – Watsonville Recycled Water Treatment Facility in coordination with the Pajaro River Community Access, Recreation and Education Project**

This project was ranked as a high priority project in the 2007 IRWM Plan. The water recycling project was integrated with the river access project to provide multiple water supply, water quality and environmental benefits.

- **Project No. 2 – RCD Erosion Control, Vegetative Treatment and Riparian Restoration Project**

This project was ranked as a high priority project in the 2007 IRWM Plan. The project is made up of a series of on-farm measures designed to improve water use efficiency, protect water quality and improve habitat in and around agricultural areas.

- **Project No. 3 – Flood ALERT Station Monitoring**

This project was ranked as a low priority project in the 2007 IRWM Plan. The project is a single purpose flood management project. Through the ALERT Station Monitoring project, flood agencies would install additional flood warning stations at key locations in the Pajaro River Watershed that monitor and transmit precipitation, water level data and other parameters to provide early warning of potential flooding events. This project is assumed to provide flood protection benefits to the Disadvantaged communities of Watsonville and Pajaro.

- **Project No. 4 – Groundwater Recharge Area Protection Program**

This program was ranked as a low priority project in the 2007 IRWM Plan. This program is a single purpose groundwater quality program. The Program is a joint effort by the County of Santa Cruz and PVWMA that would protect groundwater quality by preserving areas of groundwater recharge through land acquisition, basin maintenance, sediment control, zoning and education and outreach programs.

The projects were all assumed to have equal Financial and Readiness conditions and received the maximum scoring for those IRWM criteria.

Project number 1, Watsonville Recycled, scored a total of 675 points for the following 2014 IRWM Objectives and Criteria:

- Water Supply Objectives 1, 2, 3, 5, 6 and 7 for 28.14 points (multiplied by 5 for 141 points)
- Water Quality Objectives 1, 3 and 5 for 18.80 points (multiplied by 5 for 94 points)
- Environmental Protection Objectives 1, 2, 3 and 4 for 16 points (multiplied by 5 for 80 points)
- Integration & Coordination Criteria for 130 points
- Climate Change Criteria for 30 points
- Social Considerations Criteria for 50 points
- Financial Considerations Criteria for 100 points
- Readiness to Proceed Criteria for 50 points

Project number 2, RCD Project, scored a total of 612 points for the following 2014 IRWM Objectives and Criteria:

- Water Supply Objectives 1, 2, 3, 4, 6 and 9 for 28.35 points (multiplied by 5 for 142 points)
- Water Quality Objectives 1 and 4 for 14.71 points (multiplied by 5 for 74 points)
- Flood Management Objective 3 for 3.21 points (multiplied by 5 for 16 points)
- Environmental Protection Objectives 1, 2 and 3 for 14.08 points (multiplied by 5 for 70 points)
- Integration & Coordination Criteria for 110 points
- Social Considerations Criteria for 50 points
- Financial Considerations Criteria for 100 points
- Readiness to Proceed Criteria for 50 points

Project number 3, ALERT Station, scored a total of 293 points for the following 2014 IRWM Objectives and Criteria:

- Flood Management Objective 1 and 5 for 11.56 points (multiplied by 5 for 58 points)
- Integration & Coordination Criteria for 60 points
- Social Considerations Criteria for 25 points
- Financial Considerations Criteria for 100 points
- Readiness to Proceed Criteria for 50 points

Project number 4, Groundwater Recharge Project, scored a total of 317 points for the following 2014 IRWM Objectives and Criteria:

- Water Supply Objective 6 for 2.00 points (multiplied by 5 for 10 points)
- Water Quality Objectives 1, 3 and 4 for 19.42 points (multiplied by 5 for 97 points)
- Integration & Coordination Criteria for 60 points
- Financial Considerations Criteria for 100 points
- Readiness to Proceed Criteria for 50 points

The resulting project priorities are:

1. Watsonville Recycled Water Project (675 points)
2. RCD Project (612 points)
3. Groundwater Recharge Project (317 points)
4. ALERT Station (293 points)

The results demonstrate that projects that address multiple goals and objectives will receive a higher score. The Recycled Project, with water supply as the primary goal, also delivers water quality and environmental benefits. The RCD Project, with environmental protection as the primary goal, also

delivers water supply, water quality and flood management benefits. In fact, the RCD project received more water supply points than the Recycled Water Project.

Projects 3 and 4 are single purpose projects and did not score significant points for objectives that were not the primary objective of the project. The Groundwater Project, with water quality as the primary goal, scored the lowest points even though it scored significant points for water quality benefits which are the second highest priority in the region.

The results demonstrate that the distribution in weighting of the goals and objectives maintains a process that will prioritize multi-objective projects over single objective projects even if those projects address the highest priority goals in the region.

The same projects were also evaluated using several other weighting scenarios including:

- 2007 IRWM Plan – rank weighting based on formula
    - Water Supply = 48 points
    - Water Quality = 24 points
    - Flood Management = 16 points
    - Environmental = 12 points
- RWMG proposal – slight modification of rank weighting
    - Water Supply = 38 points
    - Water Quality = 30 points
    - Flood Management = 20 points
    - Environmental = 12 points
- Environmental proposal – significant modification to reduce distribution of weighting between goals
    - Water Supply = 28 points
    - Water Quality = 26 points
    - Flood Management = 24 points
    - Environmental = 22 points

The results of the alternative scoring methods are shown in Table 5-4 below. As shown, the total points did change, but the priority ranking remained the same. Those projects offering more benefits across a variety of goals still scored better.

Table 5-4: Project Scoring Results

	Watsonville Recycled		RCD Environmental Project		Groundwater Recharge Project		Flood ALERT Station Monitoring	
	Score	Rank	Score	Rank	Score	Rank	Score	Rank
Recommended Approach	675	1	612	2	317	3	293	4
2007 IRWM Plan Approach	699	1	640	2	307	3	267	4
RWMG Draft Approach	678	1	618	2	325	3	277	4
Environmental Approach	673	1	612	2	308	3	288	4

Based on these results, the RWMG accepted the approach as recommended by the SSC.

In April 2014, the RWMG implemented an expedited project solicitation and review process for emergency drought funding. In addition to ensuring consistency with the IRWM standards as described above, the project sponsors submitted additional project information in response to the emergency drought funding criteria.

5.4 Procedures for Communicating List of Projects

Following RWMG review and prioritization of the 2012 projects, the prioritized list was e-mailed to all stakeholders. Project sponsors were allowed an opportunity to review the results and request edits or changes, if appropriate. Project sponsors were informed that the prioritized list would be included in the IRWM Plan and would be used to promote regional and integrated water resource management strategies. The 2012 prioritized list is included in Appendix D.

Following RWMG review and prioritization of the emergency drought funding projects, the prioritized list was e-mailed to all stakeholders. Project sponsors were allowed an opportunity to review the results and request edits or changes, if appropriate. Project sponsors were informed that the prioritized list would be included in the IRWM Plan regardless of inclusion in the drought grant application and would be used to promote regional and integrated water resource management strategies. The 2014 prioritized list is included in Appendix E.

5.5 Project Integration

In an effort to identify project integration opportunities and promote regional collaboration, the projects were categorized by Resource Management Strategy (RMS) categories, as shown in Table 5-5. As shown, there are watershed projects addressing each RMS category with the exception of the Other Strategies category. However, all of the RMS in this category have been screened from further evaluation as presented in the RMS Chapter. Thus, this does not represent a project gap.

As shown, there are potential integration opportunities. The Reduce Water Demand category is an excellent example of integration and regionalization opportunities. There are numerous agricultural water use efficiency programs in the watershed. The RWMG will continue to promote integration and collaboration where opportunities exist.

Table 5-5: Project Categorization by Resource Management Strategies

Reduce Water Demand	
• Agricultural Water Use Efficiency • Urban Water Use Efficiency	• Regional Mobile Lab • SBCWD Demand Management Measures • On Farm Meter Education, Installation and Implementation • Conservation Planning and On Farm Irrigation Efficiency
Improve Operational Efficiency and Transfers of Water	
• Conveyance – Delta • Conveyance – Regional/Local • System Reoperation • Water Transfers	• Pacheco Reservoir Reoperation • Main and Madrone Pipeline Repair
Increase Water Supply	
• Conjunctive Management & Groundwater Storage • Desalination • Recycled Municipal Water • Surface Storage – CALFED • Surface Storage – Regional/Local	• Watsonville Slough and North Dunes Recharge Basin • Harkins Slough Facility Recovery Optimization • Hollister Urban Area Water and Wastewater Master Plan • Integrated Aquifer Enhancement Program for the Pajaro Valley • Increased Watsonville Recycled Water Storage and Deliveries • Murphy Crossing with Recharge Basins • South County Recycled Water Pipeline • South County Recycled Water Improvements • Delivered Water Enhancement and Drought Response Irrigation Program
Improve Water Quality	
• Drinking Water Treatment and Distribution • Groundwater/Aquifer Remediation • Matching Quality to Use • Pollution Prevention • Salt and Salinity Management • Urban Runoff Management	• Corralitos Creek Water Supply and Fisheries Enhancement • Agricultural Water Quality Program • Oakridge/Via Del Sol Water System • San Justo Zebra Mussel Eradication Project
Practice Resource Stewardship	
• Agricultural Lands Stewardship • Economic Incentives • Ecosystem Restoration • Forest Management	• College Lake Watershed Management • Lee Road Watsonville Slough Flood/Habitat • Upper Pajaro River Restoration Project • Pescadero Creek Steelhead and Pajaro River

• Land-Use Planning and Management • Recharge Area Protection • Water-Dependent Recreation • Watershed Management	Baseflow • Watsonville Slough Water Quality, Public Access, and Habitat • Upper Pajaro River Uplands Conservation and Stewardship • Integrated Watershed Restoration Program • Permit Coordination • Rural Landowner Stewardship • Uvas Creek Fish Passage Improvement at UPRR Crossing
Improve Flood Management	
• Flood Risk Management	• Upper Llagas Creek Flood Protection Project • Soap Lake Floodplain Preservation Project • Pajaro River Flood Risk Reduction Project • Pajaro River Watershed Studies • Salsipuedes Creek Bench Excavation Project • Lower Llagas Creek Capacity Restoration Project • Road Raise at Pajaro River • Uvas Creek Flood Protection Project

6 Impacts and Benefits

This chapter meets the following IRWMP Standard from the Propositions 84 & 1E IRWM Program Guidelines (DWR, 2012).

> **Impact and Benefit** – The IRWM Plan must contain a discussion of potential impacts and benefits of Plan implementation. This discussion must include both impacts and benefits within the IRWM region, between regions, and those directly affecting DAC, EJ related concerns, and Native American Tribal communities.

Benefits and impacts of the IRWM Plan implementation are linked to the mission, goals, and objectives established in Chapter 3; the resource management strategies included in Chapter 4, and the projects identified in Chapter 5. This chapter describes the potential impacts and benefits that could occur through implementation of projects included in the Pajaro IRWM Plan as well as through implementation of the Plan itself. More detailed analyses of project benefits and impacts will occur as projects near implementation. For example, project-specific environmental impacts are evaluated in California Environmental Quality Act (CEQA) and / or National Environmental Policy Act (NEPA) documents prior to project construction / implementation. The status of CEQA/NEPA review varies by project and was collected and recorded during the project review process. See Chapter 5 for further information on the project review process.

This IRWM Plan consists of a planning study and basic data compilation that would not result in the disturbance of any environmental resource. These activities are exempt from the California Environmental Quality Act (CEQA) pursuant to CEQA Guidelines §15262 and §15306. As such, programmatic environmental analysis under CEQA is not required. Furthermore, implementation of each short-term priority project included in the IRWM Plan will be the responsibility of the project sponsor and any applicable project partners. If implementing a project, project sponsors bear responsibility for ensuring all regulatory requirements for the project are met.

This chapter will be reviewed and updated as necessary as projects are added and/or removed from the IRWM Plan. Updates to the project list and associated impacts and benefits are an informal information update to the plan and, as such, do not require re-adoption.

6.1 Benefits of IRWMP Process

This chapter summarizes the benefits of the IRWM in relation to regional collaboration and coordination. Regional collaboration affords many benefits associated with economies of scale and sharing of knowledge. However, collaborative processes can be time consuming and require a significant level of consensus building. Planned interregional efforts (coordination with neighboring IRWM regions) are described with a cursory discussion of benefit and impact areas.

6.1.1 Advantages of Regional Planning

The advantages of planning and implementing the integrated programs of this IRWM Plan on a regional scale, rather than each project as an individual effort, include sharing of knowledge and expertise (such as sharing information, data, reports, studies, and management strategies), identification of possible overlap or duplicative efforts and their eventual consolidation, labor resource efficiency, cost sharing, better utilization of existing facilities, and collaboration. Additionally, implementing specific programs that integrate projects to collectively achieve IRWM Plan goals and objectives will ultimately be more beneficial to the watershed as a whole.

Regional planning is advantageous for issues that span the watershed and cross jurisdictional boundaries. IRWM provides a forum for sharing experience, insights and knowledge among agencies and for developing solutions that can be effectively implemented at a regional scale.

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 for the Lower Pajaro River, where the flooding impacts occur, requires consideration of activities by multiple agencies in both the upper and lower portions of the river. The Lower Pajaro River Flood Risk Reduction Project assumes that the current flood attenuation benefits provided in the upper watershed are maintained. Without these upstream flood attenuation benefits, the levee project would have to be designed to accommodate an increased flow of 16,000 cubic feet second. The coordinated levee project with the upper watershed floodplain management project (Soap Lake) was determined to be the most cost-effective and beneficial approach to flood management in the Pajaro River Watershed through a coordinated regional planning approach.

Addressing water quality issues such as TMDLs involves concerted efforts to control point source and non-point source pollution by agencies, cities and counties. The Pajaro River crosses many jurisdictions and the source of the contaminants knows no agency boundary. Therefore a collaboration of agencies is working together to address the water quality problems in the river. High TDS concentration in groundwater is another water quality issue that requires coordinated planning and effort.

Surface water reservoirs can be operated to achieve maximum benefit only by understanding the needs and considerations of all downstream users. An agency may be able to provide additional downstream benefits to meet these needs by modifying their operations while maintaining their agency's original project objectives. For example, Pacheco Reservoir is operated by Pacheco Pass Water District for local groundwater recharge. Reoperations at Pacheco Reservoir, including improved timing of releases from the dam and potential expansion of the reservoir, offers benefits to SCVWD, SBCWD and PVWMA, as changes to the management of releases from Pacheco Reservoir may increase water available for regional use. SBCWD is also interested in reservoir reoperations to avoid increasing groundwater levels in areas where the groundwater table is already high.

There are also many water management related contrasts that exist between different areas of the watershed. This presents opportunities for regional planning to integrate efforts and utilize the attributes of one area to address deficiencies existing in another. An example is a regional water imbalance present between coastal and inland groundwater basins. In the PVWMA coastal area, there is a looming shortage of water supply because excessive groundwater pumping has led to overdraft and seawater intrusion. Conversely, inland SBCWD users have encountered the problem of high groundwater levels, which can threaten crops and infrastructure, and is partly due to a surplus of groundwater recharge. An integrated solution could involve a transfer of water from SBCWD to PVWMA that would allow a shift in groundwater pumping production to inland areas and solve both issues. Regional planning can help agencies with different capabilities identify synergistic solutions. Another example is a possible agreement for exchange of Cienega Valley water for CVP water between the City of Hollister and SBCWD. Hollister owns the Cienega Valley water rights but lacks required treatment facilities. Exchange of this water with SBCWD, which does have the treatment capability, allows this valuable local surface water resource to be made available.

Finally, a regional planning process will allow 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 recreational and public access opportunities to flood management actions, enabling fish migration as a component of water supply projects and restoring native habitat in conjunction with efforts to address water quality. Developing multiuse projects increases efficiency and public acceptance. It does require a coordinated effort between multiple stakeholders, which is best accomplished through the IRWM process.

6.1.2 Objectives Requiring Regional Planning

All objectives established for the Pajaro River Watershed will necessitate some degree of regional cooperation and collaboration if they are to be met. Generally, objectives associated with surface water and groundwater will need to be met on a regional basis as jurisdictional boundaries are crossed in the watershed. Table 6-1 summarizes the objectives for which regional cooperation and collaboration are especially critical to achieving the objectives throughout the watershed.

Table 6-1: Objectives Requiring Regional Cooperation and Collaboration

Objective	Need for Regional Solutions
Optimize and sustain use of existing import surface water entitlements from the San Felipe Division.	Optimization requires cooperation among the three San Felipe Division contractors, SBCWD, SCVWD, and PVWMA.
Optimize the use of groundwater and aquifer storage.	This watershed objective is most effectively addressed through regional cooperation. Coordination among agencies allows for conjunctive management on a regional scale, which increases storage options for the region. Additionally, in areas where agencies utilize a common groundwater basin, cooperation ensures that projects implemented locally fully consider the regional benefits and/or impacts.
Maximize the use of recycled water during the irrigation season and expand other uses of recycled water.	This recycled water objective cannot be met by a single agency. Therefore, multiple projects in various jurisdictions will need to be established.
Meet or exceed all applicable groundwater, surface water, wastewater, and recycled water quality regulatory standards.	Water quality in relation to groundwater and surface water is influenced by activities of multiple jurisdictions. Therefore, regional coordination and collaboration are necessary.
Implement flood management strategies throughout the watershed that provide multiple benefits.	Coordination between flood protection projects in multiple jurisdictions is needed to realize the maximum benefits and implement sustainable projects and strategies. Therefore, regional coordination and collaboration are necessary.
Reach consensus on the Pajaro River Risk Reduction Project necessary to protect existing urban areas and infrastructure from flooding and erosion from the 100-year event and to maximize opportunities to protect agricultural land uses.	A sustainable 100-year Pajaro River Flood Protection Project requires coordination between flood protection projects in multiple jurisdictions and land use agencies throughout the watershed to protect against watershed conditions changing in a way that increase the flows in the Pajaro River.
Address opportunities for open spaces, trails, parks along creeks and other recreational projects in the watershed that can be incorporated with water management strategies, consistent with public use and property rights	Advocates for environmental, open space and recreational interest must cross jurisdictional lines to work with water supply, water quality, land use and flood protection agencies to meet this objective. Therefore, regional coordination and collaboration are necessary.

6.2 IRWMP Implementation Benefits and Impacts

Pajaro River Watershed IRWMP partners and stakeholders recognize the importance of pursuing and integrating multiple resource management strategies to achieve the greatest amount of, and most equitable benefit for, the region. In general, the following benefits will be realized through Pajaro IRWMP implementation:

- **Reliable and high quality water supply.** Water supply projects, water transfer and banking agreements lead to enhanced water supply reliability and assist with protection of water quality. Reliable and high quality water supply is directly linked to economic and environmental wealth and well-being.
- **Protection of people and economy within a disadvantaged community.** Projects included in Pajaro IRWMP provide direct benefits to disadvantaged communities, such as flood protection, improved water supply reliability, and improved water quality.
- **Multi-beneficial projects.** Opportunities for multi-beneficial projects, which can achieve a multitude of goals and objectives for several stakeholders rather than a single entity, have increased value for stakeholders and the communities served by projects.
- **Cost effectiveness.** Integrated planning and collaboration can lead to multi-beneficial projects that achieve cost savings through cost sharing opportunities, economies of scale, and resource/staff sharing.
- **Sharing experience, resources, and facilities.** Integrated planning and collaboration facilitates sharing of experience, resources and facilities and better equips agencies to overcome future challenges.

The ultimate purpose of plan implementation is to provide watershed benefits that support and achieve the identified regional goals and objectives, described in more detail in Chapter 3. It is envisioned that the RWMG's overall mission of preserving the economic and environmental wealth and well being of the Pajaro River watershed will be accomplished through watershed stewardship and comprehensive management of water resources in a practical, cost effective and responsible manner.

The potential impacts and benefits from implementing projects included in this IRWM Plan are summarized in the following table and described in more detail in the following chapters. These are organized by the regional goals: Water Supply, Water Quality, Flood Protection, and Environmental Protection and Enhancement. Within each goal, the projects included in the Pajaro IRWMP are listed and categorized by the primary goal of the project. For each project, the potential benefits and impacts are assumed to be similar to those identified for the associated project type.

Table 6-2: Impacts and Benefits by Regional Goal Categories

Goal	Within the Pajaro Region		Interregional	
	Potential Impacts	**Potential Benefits**	**Potential Impacts**	**Potential Benefits**
Water Supply	• Water quality degradation • Habitat disturbance • Increased energy use	• Improve water supply reliability • Increase groundwater recharge / storage • Improve water quality • Improve local reservoir operation conditions • Reduce reliance on imported water supplies • Maximize use of water rights available • Provide potable water offsets • Increase flexibility of water supply delivery and water management • Improve understanding of the hydrologic and biological environment in the watershed • Provide drought protection • Provide expanded recycled water use opportunities • Reduce or prevent seawater intrusion • Provide water and energy savings • Reduce constituent loading to the Monterey Bay National Marine Sanctuary	• Water quality degradation	• Improve water supply reliability • Provide potable water offsets
Water Quality	• Habitat disturbance	• Improve groundwater quality • Improve surface water quality • Provide habitat improvements • Provide long-term bank stabilization • Reduce future erosion and sedimentation • Reduce agricultural runoff and leaching • Reduce or prevent seawater intrusion • Improve understanding of the hydrologic and biological environment of the watershed • Reduce constituent loading to the Monterey Bay National Marine Sanctuary • Promote salinity awareness and teach salinity reduction techniques	• None	• Reduce constituent loading to the Monterey Bay National Marine Sanctuary • Improve water quality
Flood Protection	• Water quality degradation • Habitat disturbance	• Reduce flood damages and losses • Reduce the threat of life during major flood events • Increase economic development • Re-establish river-floodplain hydrologic continuity • Increase public access to open space, natural areas, and rivers, and creeks • Restore and improve aquatic and terrestrial habitat • Allow for re-establishment of natural floodplain functions • Protect the percolation and natural treatment characteristics of land • Increase bank stability and provide habitat suitable for fish passage • Provide early warning of potential flood events to communities	• None	
Environmental Protection and Enhancement	• Water quality degradation • Economic impacts	• Promote habitat protection • Establish migration corridors • Re-introduce anadromous fish population to the watershed • Enhance and protect watershed forest and meadow systems • Restore and improve aquatic and terrestrial habitat • Improve water quality	• None	• Establish migration corridors

6.2.1 Water Supply

Ensuring an adequate, reliable water supply is a critical need for the Pajaro River Watershed. The ability to meet future demands is impacted by the heavy reliance on groundwater throughout the watershed, which has led to overdraft in some areas, as well as by the varying reliability of imported CVP water. Successfully meeting future water supply challenges requires the coordination of the agencies within the watershed that share these issues and that can work together to develop solutions that could not be implemented on an individual agency basis. Projects with the primary goal of water supply will provide numerous benefits to the region as a whole, with some potential impacts to the locally affected communities and adjacent areas. Water Supply projects and project elements may include, but are not limited to:

- Construction, repair and replacement of water conveyance facilities
- Urban and agricultural water use efficiency (e.g. water conservation programs or rebate programs)
- Water recycling
- Conjunctive management
- Groundwater recharge
- Reservoir reoperation
- Aquifer storage and recovery
- Water transfers
- Water storage facilities
- Well construction and/or replacement

Depending on the specific type of project and components of the project, benefits could include, but not necessarily be limited to, the following water supply-related benefits. Additionally, improved flood protection, increased recreational opportunities, and environmental benefits can sometimes be achieved from Water Supply projects.

- Improve water supply reliability – projects that diversify the Region's water supply portfolio, create new supplies, improve efficiencies of existing supplies, or offset potable water supplies will improve water supply reliability for communities in the Region and for the Region as a whole.
- Increase groundwater recharge / storage – use of groundwater has led to overdraft in the Pajaro Valley Groundwater Basin. Increasing groundwater recharge/storage in the groundwater basin could improve the condition of the basin and increase water supplies in the Region.
- Improve water supply quality – groundwater recharge projects that increase water supply can also improve water quality of groundwater basins by reducing overdraft or recharging with higher quality surface water.
- Improve local reservoir operation conditions – reoperating reservoirs can optimize operational efficiencies and improve operation conditions.
- Reduce reliance on imported water supplies – increasing local water supplies would reduce reliance on imported water supplies which would lead to other benefits,

- Maximize use of water rights available – maximizing the use of existing water rights available is key as population continues to grow in the Pajaro Region and water supplies become limited.
- Increase flexibility of water supply delivery and water management – increasing the flexibility of water supply delivery and water management can be achieved through the increase of new water supplies, operation modifications, and cooperation among multiple agencies in the Region.
- Improve understanding of the hydrologic and biological environment in the watershed – water supply studies and projects that include analyses and/or monitoring and data collection can help improve the understanding of the hydrologic and biological environmental within the Region.
- Provide drought protection – diversifying the Region's water supplies, promoting water conservation, conjunctive use, and water recycling, and efficient groundwater management will help provide drought protection and respond to potential climate change impacts in the future.
- Provide expanded recycled water use opportunities – expanding recycled water distribution system and/or upgrading wastewater treatment facilities to tertiary or advanced treatment technologies can allow for expanded recycled water use, offsetting potable water supplies and diversifying the Region's water supply portfolio.
- Reduce or prevent seawater intrusion – reducing groundwater pumping and/or groundwater recharge/storage projects can help reduce seawater intrusion, a significant issue in the coastal areas of the Pajaro Region.
- Provide water and energy savings – implementation of demand management measures (i.e. water conservation practices) for both urban and agricultural water users can reduce water use and associated energy consumption.
- Reduce constituent loading to the Monterey Bay National Marine Sanctuary – utilizing wastewater effluent for recycled water applications would reduce discharges to surface water bodies and constituent loading to the Monterey Bay National Marine Sanctuary, a federally protected marine area off the coast of Monterey.

Most potential Water Supply project impacts are temporary and would be related to construction of facilities. Other potential project impacts include alterations to stream flows, loss of land due to facility construction, impacts to groundwater quality and/or groundwater levels. If groundwater pumping increases without a commensurate increase in recharge, there is the potential to impact groundwater levels, contribute to seawater intrusion, and affect groundwater quality. A project that would increase groundwater pumping would be implemented, only after necessary groundwater modeling and studies have been conducted to ensure potential impacts would be minimized.

Implementing certain projects could increase energy use. Water treatment and conveyance that require significant amounts of power may result in increased energy consumption that can increase greenhouse gas emissions.

There are also potential interregional water supply impacts and benefits. The benefits can range from the simple sharing of data and knowledge regarding successful water supply projects and programs to the more complex opportunities involving water transfers and shared infrastructure. For example, SCVWD and SBCWD, as CVP contractors, coordinate annual and long-term water transfers with agencies outside the IRWM region to deliver water supply benefits to the Pajaro River Watershed. However, it should be noted that there may be impacts from these transfers, depending on the terms.

Table 6-3: Pajaro IRWMP Water Supply Projects

Reduce Water Demand	
• Agricultural Water Use Efficiency • Urban Water Use Efficiency	• Regional Mobile Lab • SBCWD Demand Management Measures • On Farm Meter Education, Installation and Implementation • Conservation Planning and On Farm Irrigation Efficiency
Improve Operational Efficiency and Transfers of Water	
• Conveyance – Delta • Conveyance – Regional/Local • System Reoperation • Water Transfers	• Pacheco Reservoir Reoperation • Main Avenue and Madrone Pipeline Repair
Increase Water Supply	
• Conjunctive Management & Groundwater Storage • Desalination • Recycled Municipal Water • Surface Storage – CALFED • Surface Storage – Regional/Local	• Watsonville Slough and North Dunes Recharge Basin • Harkins Slough Facility Recovery Optimization • Hollister Urban Area Water and Wastewater Master Plan • Integrated Aquifer Enhancement Program for the Pajaro Valley • Increased Watsonville Recycled Water Storage and Deliveries • Murphy Crossing with Recharge Basins • South County Recycled Water Pipeline • South County Recycled Water Improvements • Delivered Water Enhancement and Drought Response Irrigation Program

6.2.2 Water Quality

Surface water quality within the watershed is influenced strongly by the highly agricultural nature of the area. The most significant surface water quality pollutants are sediment and nutrients which are generated through agricultural activities near rivers and creeks that run through the watershed. These pollutants are eventually carried downstream and cause water quality degradation throughout the watershed drainage area. Improving surface water quality requires the cooperation of stakeholders and agencies in all parts of the watershed. Groundwater quality is also an issue throughout the region, with salinity and nitrate being the major concerns. Projects and project elements that can contribute to the Water Quality goal and objectives identified by the Region include, but are not limited to:

- Salinity management
- Upgrades to wastewater treatment plants and collection systems

- Stormwater capture and treatment
- Wetlands construction
- Contaminant removal/treatment
- Removal of invasive species
- Erosion control to reduce and/or prevent sediment and/or nutrient transportation
- TMDL implementation
- Non-point source pollution reduction
- On-farm technical assistance and/or education
- Agricultural best management practice (BMP) implementation
- Hydrogeologic investigations
- Groundwater monitoring and/or modeling

These projects can provide significant benefits to the Pajaro Region and other neighboring regions, depending on the project.

- Improve groundwater quality –Salinity management, TMDL implementation, non-point source pollution reduction, on-farm technical assistance, and agricultural BMP implementation can improve groundwater quality by reducing loading to groundwater.
- Improve surface water quality – stormwater capture and treatment, erosion control measurements, TMDL implementation, non-point source pollution reduction, on-farm technical assistance, and agricultural BMP implementation can reduce sedimentation and contamination loading into nearby surface water bodies, improving water quality.
- Provide habitat improvements – wetlands construction, contaminant removal, and removal of invasive species can all provide habitat improvements.
- Provide long-term bank stabilization – an erosion control project implemented to improve water quality may also provide long-term bank stabilization.
- Reduce future erosion and sedimentation – projects that implement erosion control measures help reduce future erosion and sedimentation into nearby surface water bodies, improving water quality.
- Reduce agricultural runoff and leaching – on-farm technical assistance and education and the implementation of agricultural BMPs will help reduce agricultural runoff and leaching, providing water quality benefits in the Region.
- Reduce or prevent seawater intrusion – salinity management can help reduce seawater intrusion, an issue in the coastal area of the Pajaro Region.
- Improve understanding of the hydrologic and biological environment of the watershed – hydrogeologic investigations, groundwater modeling and/or monitoring, and projects that include analyses and/or monitoring and data collection can help improve the understanding of the hydrologic and biological environmental within the Region.

- Reduce constituent loading to the Monterey Bay National Marine Sanctuary –reduce discharges to surface water bodies and constituent loading to the Monterey Bay National Marine Sanctuary, a federally protected marine area off the coast of Monterey.
- Promote salinity awareness and teach salinity reduction techniques – providing education and outreach to water users in the Pajaro Region can be incorporated into many projects and provide significant, long-term benefits.

Potential impacts from Water Quality projects can include temporary impacts from construction or long-term impacts such as waste discharge issues associated with brine disposal.

There are also potential interregional water quality impacts and benefits. Groundwater basins that span IRWM regions create opportunities for coordinated groundwater management. For example, seawater has intruded the groundwater basin in the coastal region of the Pajaro Valley. The seawater intrusion zone extends beyond the Pajaro IRWM region into the Greater Monterey IRWM region. This creates a regional opportunity to efficiently manage groundwater extractions and protect the basin. However, if all regions extracting from a shared groundwater basin are not coordinated, these basin management efforts may not deliver the anticipated benefits.

Additionally, four Central Coast IRWM regions have discharges to the Monterey Bay National Marine Sanctuary. To adequately protect the Sanctuary, all regions must participate in the reduction of constituent loading for the protection of the Bay and the benefit of all.

Table 6-4: Pajaro IRWMP Water Quality Projects

Improve Water Quality	
• Drinking Water Treatment and Distribution • Groundwater/Aquifer Remediation • Matching Quality to Use • Pollution Prevention • Salt and Salinity Management • Urban Runoff Management	• Corralitos Creek Water Supply and Fisheries Enhancement • Agricultural Water Quality Program • Oakridge/Via Del Sol Water System • San Justo Zebra Mussel Eradication Project

6.2.3 Flood Protection

Throughout history, the Pajaro River watershed has regularly experienced flooding, and at times, catastrophic flooding, such as that which occurred in the late 1990s, destroying communities and agricultural industry in its path. Such events have necessitated research into and implementation of various solutions to protect the people and economies of the region, as well as to honor, preserve and protect the natural environment sustained by the Pajaro River. For the past half century, several agencies have been exploring water resource management strategies to mitigate flooding impacts of the Pajaro River and its tributaries, and have identified projects to aid in this effort. Although some projects were implemented, many such efforts have conducted much refinement and restudy to identify the most feasible solution for this diverse region. Projects and project elements that have the primary goal of Flood Protection may include, but not be limited to:

- Floodplain preservation projects
- Watershed studies
- Creek excavation projects

- Creek restoration projects
- Projects that raise infrastructure, such as road, to reduce water damage and losses
- Levee improvements
- Stormwater collection, diversion and/or capture improvements

Floods can be caused by stream-side overbank flows, in areas of flat terrain with slow surface drainage, and by inundation due to structural dam failure. Implementing projects that help prevent floods will provide numerous benefits to local communities, including the DACs in the region. The projects will also contribute to local and state priorities, such as the Statewide Priority identified by DWR, Practice Integrated Flood Management. Additionally, the projects advocate support for funding mechanisms to administer and provide a cost share, work with the community to develop recreational opportunities along the river, and aid in flood warning and damage reduction to local communities.

Typically, the benefits that may be achieved by Flood Protection projects include:

- Reduce flood damages and losses – projects that enhance flood control and flood management can help reduce flood damages and losses to residential and commercial structures and transportation systems in communities affected by floods.
- Reduce the threat of life during major flood events – implementing flood protection projects can help reduce the loss of life sometimes caused by major flood events.
- Increase economic development – providing increased flood protection can allow for commercial and industrial development that will contribute to increased economic development in the Region.
- Re-establish river-floodplain hydrologic continuity – floodplain preservation projects can help re-establish river-floodplain hydrologic continuity.
- Increase public access to open space, natural areas, and rivers, and creeks – restoration projects that provide flood protection can also sometimes provide recreational opportunities and/or public access to open space, natural areas, rivers, and creeks.
- Restore and improve aquatic and terrestrial habitat – creek and floodplain preservation and/or restoration projects can help restore and improve aquatic and terrestrial habitat in the Pajaro River Watershed.
- Allow for re-establishment of natural floodplain functions - floodplain preservation projects can contribute to the re-establishment of natural floodplain functions, maximizing flood protection for the Region.
- Protect the percolation and natural treatment characteristics of land – protecting the natural percolation and treatment characteristics of land can contribute to maintaining and improving water supply, and also maintain flood attenuation.
- Increase bank stability and provide habitat suitable for fish passage – creek excavation and levee improvements can have an added benefit of not only flood protection, but also increased bank stability, reduction of erosion and sedimentation and also provide habitat suitable for fish passage.
- Provide early warning of potential flood events to communities – flood management projects that provide early warning of potential flood events can further reduce flood damages and losses and reduce the threat to life.

Potential impacts from Flood Protection projects include relocation of residences, loss of land for facility construction, and increased recreational use of water bodies that could have water quality impact implications.

The Pajaro IRWM region is based on the watershed boundary and, thus, the potential benefits and impacts of interregional coordination are limited. However, there's still an opportunity to share information and learn from implementation of successful flood protection strategies in other IRWM regions.

Table 6-5: Pajaro IRWMP Flood Protection Projects

Improve Flood Management	
• Flood Risk Management	• Upper Llagas Creek Flood Protection Project • Soap Lake Floodplain Preservation Project • Pajaro River Flood Risk Reduction Project • Pajaro River Watershed Studies • Salsipuedes Creek Bench Excavation Project • Lower Llagas Creek Capacity Restoration Project • Road Raise at Pajaro River • Uvas Creek Flood Protection Project

6.2.4 Environmental Protection and Enhancement

There are significant opportunities to address riparian habitat, open space and recreation needs in the process of meeting the other water management needs of the watershed. In addition, protecting and enhancing the environmental can contribute to preserving or increasing ecosystem services such as water supply, flood attenuation, and water quality improvement. Stakeholders have voiced the desire to make proactive lasting policies and decisions that will sensitize and educate the public about the importance of the Pajaro River Watershed and enhance the public's role as custodians of the riparian environment.

Water management policies and decisions can incorporate elements that provide for the protection, preservation and restoration of native plants, wetlands, open space, terrestrial and aquatic wildlife habitat, and riparian forest. This will require agencies involved in water supply, water quality and flood management issues in the watershed to take proactive steps to work with environmentally-focused agencies and organizations to incorporate environmental benefits to the maximum extent possible when implementing water management projects.

Examples of Environmental Protection and Enhancement projects and project elements include:

- Fish passage improvements
- River and watershed restoration projects/programs
- Land conservation
- Wetlands restoration
- Removal of invasive species
- Streamflow augmentation

Implementing these types of projects could provide the following benefits:

- Promote habitat protection – habitat protection can be implemented directly from certain projects (e.g. wetlands restoration) or promoted through public education and access.
- Establish migration corridors – projects that help establish migration corridors provide habitat improvement and enhancement and can help protect sensitive species.
- Re-introduce anadromous fish population to the watershed – fish passage improvement projects can help re-introduce anadromous fish populations to the watershed.
- Enhance and protect watershed forest and meadow systems – Environmental Protection and Enhancement projects can help protect watershed forest and meadow systems, key in adapting to potential climate change impacts.
- Restore and improve aquatic and terrestrial habitat – habitat, wetlands, and watershed restoration projects will restore and improve habitat for aquatic and/or terrestrial species.
- Improved water quality – land conservation (i.e. conservation easements) is a proven method of protecting land from conversion to other uses and protecting the environment while allowing for natural treatment and percolation of precipitation into underlying groundwater basins, improving water quality. Removal of invasive species in creeks, canals, and surface water bodies can also improve water quality.
- Improved water supply – projects that increase retention of stormwater provide water supply benefits.

Environmental Protection and Enhancement projects can sometimes include public education and/or recreation opportunities as well, providing a wide range of benefits. If the projects include recreation components, there is the potential for water quality impacts. Recreation components can have associated increased motor vehicle and foot traffic leading to increased erosion and sedimentation to adjacent water bodies. Economic impacts could occur through implementation of a land conservation project in which the land would not be used for commercial or residential purposes on the future, and therefore limit the potential for revenue.

Environmental Protection and Enhancement often requires interregional coordination. As noted in the Water Quality chapter, four Central Coast IRWM regions have discharges to the Monterey Bay National Marine Sanctuary. To adequately protect the Sanctuary, all regions must participate in the reduction of constituent loading for the protection of the Bay and the environmental habitat. Additionally, wildlife corridors span IRWM regions. The Nature Conservancy completed a Pajaro River Watershed study to increase the understanding of wildlife movement between the Hamilton and Santa Cruz ranges, which are outside of the Pajaro River Watershed IRWM region. The study was designed to identify wildlife movement and presence along a variety of habitats including riparian systems, agricultural lands, road infrastructure and ranch lands. The study has been shared with other IRWM regions to increase the understanding of the needs across regions to improve environmental habitat.

Table 6-6: Pajaro IRWMP Environmental Protection and Enhancement Projects

Practice Resource Stewardship	
• Agricultural Lands Stewardship • Economic Incentives • Ecosystem Restoration • Forest Management • Land-Use Planning and Management • Recharge Area Protection • Water-Dependent Recreation • Watershed Management	• College Lake Watershed Management • Lee Road Watsonville Slough Flood/Habitat • Upper Pajaro River Restoration Project • Pescadero Creek Steelhead and Pajaro River Baseflow • Watsonville Slough Water Quality, Public Access, and Habitat • Upper Pajaro River Uplands Conservation and Stewardship • Integrated Watershed Restoration Program • Permit Coordination • Rural Landowner Stewardship • Uvas Creek Fish Passage Improvement at UPRR Crossing

6.3 Disadvantaged Communities, EJ Concerns, and Native American Communities

Major needs of the disadvantaged communities (DACs) in the Pajaro Region can be met through implementation of the regional water management programs and projects included in the Pajaro IRWM Plan. Protection of the people and economy of DACs and Native American tribal communities in the Pajaro Region is a priority. The continuing IRWM Plan process will continue to take into account and be responsive to the needs of DACs and consider environmental justice concerns and potential impacts to DACs, as well as Native American communities. Environmental justice is addressed by ensuring all stakeholders have the potential to participate in the Pajaro IRWM planning process. Also, the IRWM planning process and individual project development attempt to eliminate disproportionately high or adverse impacts to minority or low-income communities. The IRWM planning process and individual project development attempt to respect and support the interests of local Native American tribal communities in protecting and restoring the water-related resources of historic tribal lands.

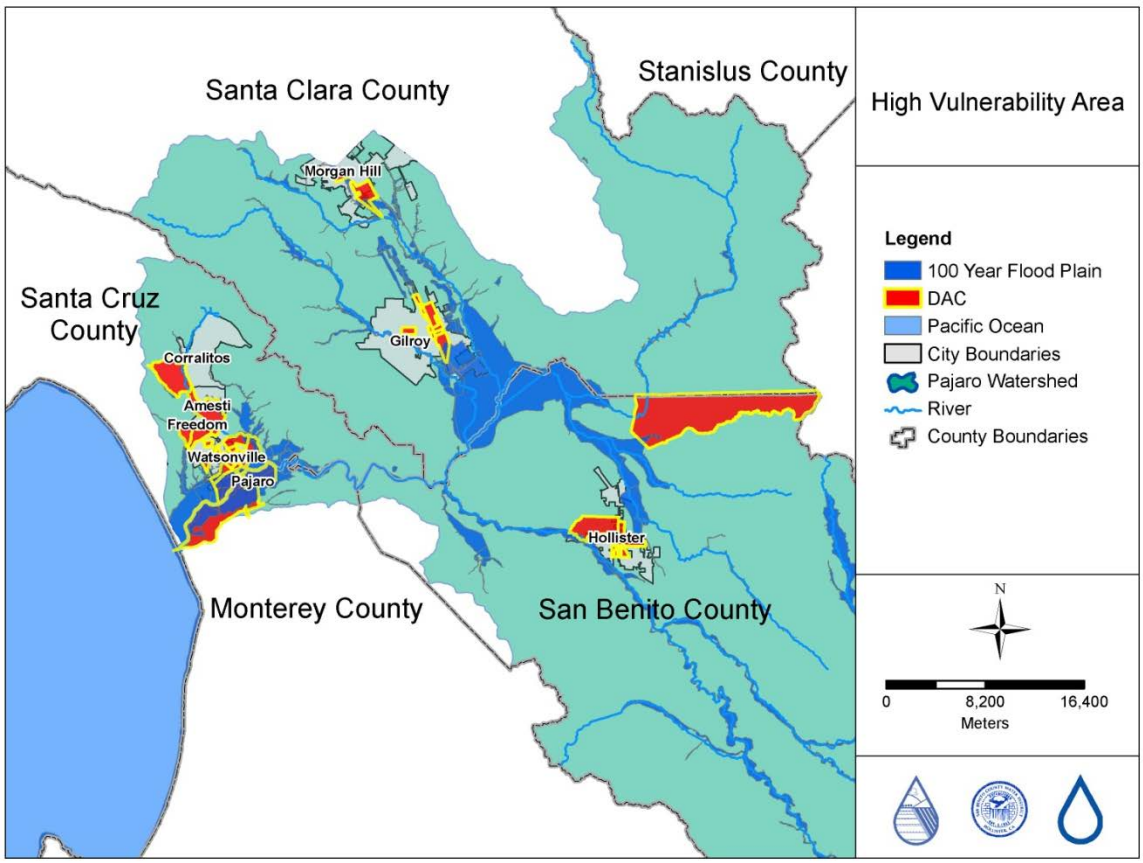
As described in Chapter 2, a DAC is defined in the California Public Resource Code as a community with an annual median household income (MHI) that is less than 80% of the statewide MHI [PRC §75005 (g)]. 2010 Census data were collected and reviewed to identify any DACs in the region. The 2010 State MHI was $60,883; therefore, communities with an average MHI of $48,706 are considered disadvantaged communities. The cities of Pajaro, Watsonville, Amesti, and Freedom were identified as DACs and there are other areas of DACs throughout the region.

The benefits to DACs will involve three main categories of benefit:

- Increased Water Supply Reliability
- Improved Water Quality
- Flood Protection

DACs are particularly vulnerable to flooding damages causing temporary and/or permanent displacement. Some of the DACs within the Pajaro region currently lie within the 100-year floodplain as shown in Figure 6-1.

Figure 6-1: Low-lying Disadvantaged Communities in Pajaro Watershed



Flood protection projects included in the IRWM Plan can increase flood management benefits to these low-lying DACs. Projects that can provide flood protection, waters supply, and water quality benefits to DACs will continue to be identified and grant monies will be sought to help offset project implementation costs. Project and Plan implementation will be conducted in such a way to ensure DACs are not being adversey affected. Ongoing coordination and public involvement will aid in preventing possible environmental justice impacts and support restoration and protection of tribal lands. Construction of project facilities will create short-term environmental impacts at neighboring communities. A preliminary analysis of areas affected by construction of project facilities will help assure that these construction impacts will not be borne predominantly, or unfairly, by any minority population or low-income group.

7 Plan Performance and Monitoring

This chapter meets the following IRWMP Standard from the Propositions 84 & 1E IRWM Program Guidelines (DWR, 2012).

> **Plan Performance and Monitoring –** The IRWM Plan shall contain performance measures and monitoring methods to ensure the objectives of the Plan are met. Therefore, the IRWM Plan must describe a method for evaluating and monitoring the RWMG's ability to meet the objectives and implement the projects in the IRWM Plan.

The intent of the Plan Performance and Monitoring chapter is to confirm that the Pajaro Region is:

- Making efficient progress toward meeting the Pajaro Plan objectives,
- Implementing projects listed in the IRWM Plan, and
- Ensuring that each project in the Pajaro Plan is monitored to comply with all applicable rules, laws, and permit requirements.

This chapter describes the general process that will be employed to track Pajaro Plan performance and to monitor progress being made to implement the projects contained in this plan.

7.1 Tracking and Reporting Pajaro Plan Performance

A Pajaro Plan Performance Review will be conducted, at a minimum, every two years (or as deemed appropriate by the RWMG) to evaluate progress made toward achieving Plan objectives. The Plan performance review will be administered by the Regional Water Management Group (RWMG) and supported by the stakeholder steering committee. The RWMG will use the measures identified Chapter 3, Table 3-1 to assess Plan performance. The extent to which the Pajaro Plan's objectives have been met will be assessed as part of each performance review, as described in the following sections.

7.1.1 Water Supply

The Pajaro Region's water supply goal is as follows:

> **Water Supply Goal -** Protect and improve regional water supply reliability, protect groundwater resources from overdraft, reduce dependence on imported water, and protect watershed communities from drought while considering climate change impacts on water supply resources and demands.

The measures used to evaluate program performance toward meeting the water supply goal and objectives are listed in Table 7-1 and will include ongoing groundwater monitoring, comparisons of the current water supply portfolios against corresponding water supply portfolios following implementation of the program, comparisons of the water supply portfolios after implementation with water demand projections, recycled water production, and stakeholder feedback. The primary monitoring system necessary for this program is already in place since each of the water management agencies already has a groundwater monitoring program that is used to collect groundwater use and level data. Additionally, all groundwater basins in the Pajaro River Watershed are being monitored in compliance with CASGEM. Additionally, potable water use and recycled water use meters for monitoring the use of delivered water are in place. Programs for surveying customers to monitor changes in behavior with respect to conservation are currently being implemented. Additional sources of information for assessing performance are Project Sponsors.

Table 7-1: Water Supply Objectives and Measures

Objectives	Measure(s)
1. Meet 100% of M&I and agricultural demands (both current and future conditions) in wet to dry years including the first year of a drought.	• Current and projected annual acre-feet of total supply by water year type
2. Meet 85% of M&I and 75% agricultural demands (both current and future conditions) in second and subsequent years of drought.	• Current and projected annual acre-feet of total supply by water year type
3. Identify and address water supply needs of disadvantaged communities in the Pajaro River Watershed	• Reliability of disadvantaged community supplies
4. Implement water conservation programs to reduce M&I and agricultural water use consistent with SBx7-7 and CVPIA	• Estimated annual water conservation savings
5. Maximize the use of recycled water during the irrigation season and expand other uses of recycled water	• Annual recycled water use
6. Optimize the use of groundwater and aquifer storage	• Sustainable yields • Operational storage
7. Maximize conjunctive use opportunities including interagency conjunctive use	• Groundwater levels
8. Optimize and sustain the use of existing import surface water entitlements from the San Felipe Unit	• Long-term average CVP deliveries
9. Maximize the beneficial use of existing local water supplies while protecting existing surface water rights	• Long-term average local surface water use

7.1.2 Water Quality

The Pajaro Region's water quality goal is as follows:

> **Water Quality Goal -** Protect and improve water quality for beneficial uses consistent with regional community interests and the RWQCB basin plan objectives through planning and implementation in cooperation with local and state agencies and regional stakeholders.

The measures used to evaluate water quality improvements are listed Table 7-2 and will include groundwater modeling; groundwater quality data; recycled water quality data; ability to meet or exceed all applicable groundwater, surface water, wastewater, and recycled water quality regulatory standards and targets; and stakeholder feedback. The main monitoring system necessary for this program is already in place, since each of the water management agencies already has a groundwater monitoring program that is used to collect water quality data. Recycled water quality monitoring is also performed. Monitoring for total maximum daily loads (TMDLs) will directly evaluate performance related to surface water loading and will provide an indirect evaluation of performance related to groundwater quality. This program will also rely on cooperative monitoring efforts developed in response to the conditional agricultural waiver requirements and information from Project Sponsors on implementation of BMPs and other actions to address impacts from surface water runoff.

In addition, Salt and Nutrient Management Plans (SNMPs) consistent with the State Water Resources Control Board Recycled Water Policy are currently being developed or have been completed for the major groundwater basins in the region: the Llagas Subbasin; the Bolsa, Hollister, and San Juan Bautista Area Subbasins; and the Pajaro Valley Groundwater Basin. These planning efforts identify sources of salt and nutrient loading, analyze assimilative capacity, and perform an anti-degradation analysis. In addition, the SNMPs include Groundwater Monitoring Plans designed to fill data gaps, monitor the salt and nutrient balance and source loading, and provide ongoing assessment of salt and nutrient issues throughout the study area.

Table 7-2: Water Quality Objectives and Measures

Objective	Measure(s)
1. Meet or exceed all applicable groundwater, surface water, wastewater, and recycled water regulatory standards	• Concentrations of constituents of concern (i.e., nitrate, chloride, pathogens, turbidity, toxins, etc)
2. Identify and address the drinking water quality of disadvantaged communities in the Pajaro River Watershed	• Exceedences of drinking water standards
3. Protect groundwater resources from contamination including salts and nutrients	• Effectiveness of groundwater protection programs • Acres of protected recharge areas • Cleanup and abatement of groundwater contamination plumes • Implementation of Salt and Nutrient Management Plans
4. Address impacts from surface water runoff through implementation of Best Management Practices or other surface water management strategies	• Acre-feet of stormwater capture • Number of LID projects • Acreage managed with approved Best Management Practice (BMP) techniques.
5. Meet or exceed delivered water quality targets established by recycled water users	• Concentrations of salts in recycled water

7.1.3 Flood Management

The Pajaro Region's flood management goal is as follows:

> **Flood Management -** Ensure flood management strategies are developed and implemented through a collaborative and watershed-wide approach and are designed to maximize opportunities for comprehensive management of water resources.

The measures used to evaluate the Pajaro Region's progress toward achieving its flood management goal are listed in Table 7-3 and will include flow and water level monitoring, and damage reports after flooding events. The monitoring protocol for flood protection would include provisions for stream gauge monitoring, measuring sediment deposition and erosion, vegetation growth or loss, and levee wear. Other monitoring measures would include the amount of damage claims and overtopping sightings experienced during wet weather events. A key measure of project success would involve removal of areas from the FEMA 100-year flood plain. For floodplain preservation, monitoring would include tracking the total

acreage acquisition of property or development rights. Data for assessing progress toward the flood management objectives will be provided by flood protection agencies and Project Sponsors.

Table 7-3: Flood Management Objectives and Measures

Objective	Measure
1. Implement flood management strategies throughout the watershed hat provide multiple benefits	• Level of flood protection • Effectiveness of flood risk reduction programs
2. Reach consensus on the Pajaro River Risk Reduction Project necessary to protect existing urban areas and infrastructure from flooding and erosion the 100-year event and to maximize opportunities to protect agricultural land uses	• Level of community and agency support
3. Work with stakeholders to preserve existing flood attenuation by implementing land management and conservation strategies throughout the watershed	• Acres of floodplain preserved
4. Develop approaches for adaptive management to minimize maintenance requirements and protect quality and availability of water while preserving ecologic and stream functions, and enhancing when appropriate	• Sediment load • Invasive species
5. Provide community benefits beyond flood protect such as public access, open space, recreation, agriculture preservation and economic development	• Level of additional recreational opportunities • Number of agricultural acres preserved • Per capita income • Value of agricultural production

7.1.4 Environmental Protection and Enhancement

The Pajaro Region's environmental protection and enhancement goal is as follows:

> **Environmental Protection and Enhancement -** Preserve the environmental wealth and well-being of the Pajaro River watershed by identifying opportunities to restore and enhance natural resources of streams, watersheds, wetlands, and the Monterey Bay when developing and implementing water management strategies.

The measures used to evaluate the Pajaro Flood Protection program progress toward achieving the environmental protection and enhancement goal and associated objectives are listed below in Table 7-4 and will include protocols to assess the extent to which habitat is protected and restored, sensitive species and cultural resources are preserved, and new recreation opportunities are provided. This data will be collected from Project Sponsors.

Table 7-4: Environmental Protection and Enhancement Objectives and Measures

Objective	Measure(s)
1. Address opportunities to enhance the local environment and protect and/or restore natural resources, in cooperation with landowners, when developing water management strategies	• Number of fish passage barriers • Miles of streams restored and/or rehabilitated • Acres of wetlands protected and/or restored
2. Improve biological and cultural resources, including riparian habitats, habitats supporting sensitive plant or animal species and archaeological/historic sites when implementing strategies and projects	• Sensitive species occurrence • Stream flow • Sediment loading • Acres of culturally valuable area and/or resource acquired or preserved through conservation easements or other means
3. Address opportunities to protect, enhance, or restore habitat to support Monterey Bay National Marine Sanctuary marine life in conjunction with water management strategies	• Sediment loading • Progress toward meeting Total Maximum Daily Loads (TMDLs)
4. Address opportunities for open spaces, trails, parks along creeks or other recreational projects in the watershed that can be incorporated with water management strategies, consistent with public use and property rights	• Level of additional recreational opportunities • Miles of trails • Acres of parklands and/or access • Number of amenities • Number of visitor days • Miles of upgrades to trails • Acres of upgrades to parklands

7.2 Tracking and Reporting Pajaro Project Performance

As part of the periodic Pajaro Plan Performance Review, progress toward implementing Plan projects will also be assessed. The RWMG will perform the assessment by reviewing project-specific monitoring results. Project Sponsors are responsible for developing and implementing project-specific monitoring plans.

Proponents of projects implemented as part of the Pajaro Region IRWM Program will be required to develop project-specific monitoring plans prior to or in conjunction with project implementation. Project proponents will be responsible for collecting the data, performing the monitoring activities, validating the data, and reporting both to the RWMG and to appropriate state databases. Data collected and analyses performed as part of the performance monitoring plans will be reported to the RWMG and appropriate statewide databases on at least an annual basis, along with required documentation and an evaluation of project performance. This will help ensure that implemented projects fulfill Pajaro Plan objectives as originally intended.

Project-specific monitoring plan requirements will vary based on the type of project being implemented, but typically required contents include, but are not limited to:

1. A table describing what is being monitored for the project (e.g. water quality, water depth, flood frequency), and effects the project may have on habitat or particular species (before and after construction).

2. Measures to remedy or react to problems encountered during monitoring.

3. Location of monitoring.
4. Monitoring frequency.
5. Monitoring protocols/methodologies and quality assurance and quality control (QA/QC) procedures, including who will perform the monitoring and how the monitoring protocols / methodologies and QA / QC procedures are consistent with requirements for applicable statewide databases including SWAMP, GAMA, and WRAMP).
6. An identified data management system (DMS) that will be used or procedures to keep track of what is monitored.
7. Procedures and a schedule for incorporating collected data into statewide database(s).
    a. Projects that involve surface water quality must meet the criteria for and be compatible with SWAMP, http://www.waterboards.ca.gov/water_issues/programs/swamp/tools.shtml).
    b. All projects that involve groundwater quality must meet the criteria for and be compatible with GAMA, http://www.waterboards.ca.gov/gama/).
    c. All projects that involve wetland restoration must meet the criteria for and be compatible with the State Wetland and Riparian Area Monitoring Plan (WRAMP, http://www.waterboards.ca.gov/mywaterquality/monitoring_council/wetland_workgroup/docs/2010/tenetsprogram.pdf).
8. Procedures and a schedule for reporting to the RWMG confirmation of data submittal to appropriate statewide database(s).
9. Procedures to ensure the monitoring schedule is maintained and that adequate funding is available to maintain monitoring of the project throughout the scheduled monitoring timeframe.

7.3 Biennial IRWM Plan Performance and Progress Report

The RWMG will monitor and evaluate plan and project implementation. Plan performance will be reported every two years through publication of a biennial IRWM progress report. The progress report will include the following information:

- List of projects implemented during previous 2 years and who was responsible,
- Progress on each project,
- Summary of monitoring and reporting based on the project-specific monitoring plans, particularly for those projects with IRWM Implementation Grant funding,
- Projects and programs implemented across the Region which help meet plan goals and objectives,
- Qualitative assessments of progress for those achievements difficult to quantify,
- Lessons learned which need to be considered for future projects, and
- Potential modifications or adaptations needed to the Pajaro IRWM Plan in general or to specific projects.

The Biennial Progress Report, and any associated links to project specific information and data, will be posted on the Pajaro River Watershed's IRWM web page.

It should be noted that it is not always possible to quantify the results of certain projects, programs and actions, and not always possible to determine an exact correlation between project outcomes and the IRWM Plan goals. In some cases the assessments will be qualitative, though when appropriate and possible, quantitative assessments will be provided and assumptions made as to how well the projects and other actions help meet the IRWM Plan goals.

The IRWM Plan is a living document which needs to be flexible to adapt to changing conditions, new information, and modifications based on lessons learned. The progress report will help identify the changes needed in subsequent updates, which will be prepared every 5 years or as needed.

8 Data Management

This chapter meets the following IRWMP Standard from the 2012 Integrated Regional Water Management (IRWM) Grant Program Guidelines.

> **Data Management** – 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 the Pajaro River Watershed IRWM, data management will serve as benefit to the RWMG, IRWM stakeholders, including neighboring IRWM regions and general public. The data categorized, curated and stored in the Data Management System demonstrates that the IRWM Region has an accessible and transparent IRWM Program and Plan.

8.1 IRWMP Data Needs, Collection and Management

The Pajaro River Watershed IRWM has a need for data related to the overall IRWM Region and the projects listed within the IRWM Plan. Data is needed in for the following purposes:

1. To derive an accurate characterization of the region's water needs and programs;
2. To provide a correct understanding and picture of the IRWM's regional water management structure and water resources;
3. To ensure that the Region is current and able to communicate with the formatting and procedural standards of the State's databases, i.e. SWAMP, GAMA, CERES, among other programs; and
4. To track and document the Region's progress toward attainment of IRWM goals and objectives, as well as project and Plan Performance.

Meeting the needs and goals of the Region requires current and accurate project level data. Moreover, correct project information ensures that there is a complete and precise assessment of Plan performance as tied to project performance. Further, data is required to chronicle and document interaction between the RWMG, SSC, Project Sponsor, and general stakeholders as it relates to RWMG meetings, public and stakeholder meetings and workshops, and project solicitations and project selections. Data on the Plan and overall IRWM implementation and programming must also be tracked, collected and stored in the Data Management System. The Data Management System will be a repository and hub for all information related to the IRWM Plan and program in the Pajaro River Watershed. Data will also be formatted in a way to communicate with other State programs.

All data that is retrieved and stored will be updated on a regular basis and will be available for viewing through an accessible online data management system. The data management system catalog and organized data topically for ease of review and reference.

Well-collected and concisely presented data will effectively encapsulate and communicate the goals, objectives, needs and successes of the region to an interested audience. The processes for data tracking, collection, storage and management is discussed in the ensuing sections of this chapter.

8.1.1 Data Tracking, Collection and Management

As discussed above, there is a need to track, collect, categorize, store and manage data on a project-specific and general IRWM basis. Data collection with be solicited on a regular basis and will be both project specific and general. The RWMG group will outreach to the Project Proponents, SSC, and other stakeholders to ensure that data is collected in a manner that allows for easy integration with existing State systems.

Links and information will also be posted on the website www.pajaroriverwatershed.org and updated on a regular basis by the RWMG. The website is currently managed by the Association of Monterey Bay Area Governments (AMBAG) but the RWMG will work with AMBAG to develop an approach that ensures all of the IRWM data tracking, collection and management needs are satisfied. This information entails details on the Pajaro River Watershed Plan status, project implementation, meeting notices, agendas materials and minutes as well as Statewide IRWM program development, process improvements and status.

Data related to background documents and other source material will also be solicited and added to the curated library and/or archive. Examples of this data include watershed management plans, UWMPs, etc.

8.1.1.1 Project Specific Data Tracking and Collection

Data will be collected from the members of the RWMG, SSC, and Project Sponsors on a regular basis. The The RWMG will enter specific project related information and upload documents, such as project-specific monitoring plans and reports, project design documents, 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 to collection and storage of data such as planning studies, feasibility studies, designs, and other technical reports, data associated with the planning, design, implementation, and monitoring of projects included in the Pajaro IRWMP may include, but is not limited to:

- Streamflow
- Surface water diversions
- Groundwater extractions
- Groundwater elevations
- Precipitation
- Water demand
- Land use
- Groundwater quality
- Surface water quality
- Stormwater quality
- Wastewater quality
- Wastewater treatment plant flows
- Locations of sensitive species' habitat
- Locations and conditions of water- and wastewater-related facilities

Data tracking and collection, review, and dissemination as described throughout this chapter will be conducted for all projects that are implemented through State grant funding and will be strongly encouraged for all projects included in the IRWM Plan. For State funded projects, Project Performance Monitoring Plans will be developed, as described in Chapter 8 about Plan Performance and Monitoring. These plans will define the types of data to be collected, methods and tools to collect the data, the frequency of collection, and the quality assurance and quality control (QA/QC) measures to be applied. The project proponent implementing the project will be responsible for preparing and implementing the Project Performance Monitoring Plan. The project proponent will collect the data in accordance with the Plan, follow the QA/QC procedures, and submit the data to the appropriate statewide databases.

8.1.1.2 General IRWM Data Tracking and Collection

Similar to the process outlined above, the RWMG will outreach to the SSC, Project Sponsors, and general stakeholders to collect information pertinent to general IRWM Plan implementation. Data tracking and collection will extend to information and complementary planning and project processes and documents, for example, watershed studies or documents as well as information on RWMG contact information, changes in water management structures and information on related programs and documents such as Urban Water Management Plans, etc.

8.1.1.3 Management of Complied Data

Once data is submitted to the system, the RWMG will ensure that data and information is organized topically and curated such that current and relevant data and information is always on the home page and easily and readily identifiable and accessible. As data and information accumulates, it will be relocated into logical locations such as accessible archives that will be searchable through a site map or site search tool.

8.1.2 Existing Data Dissemination Methods

Data generated and collected during the course of the IRWM process has been and will continue to be managed to ensure that it will be available to fulfill the needs of stakeholders, the state, and the general public. The mechanisms for data dissemination that have been employed to date are described in this chapter.

Dissemination of data to stakeholders, agencies, and the public is integrated into the IRWM process through stakeholder and Partner agency meetings, newspaper announcements, handouts, e-mail notices, and agency contacts available to provide data files to any requester. Regular stakeholder workshops have served as the main venue for distributing information to stakeholders. Data has also been shared between the three Partner agencies.. Other information and data are disseminated to agency boards and committees with the presentation of Plan components and progress given by Partner agency staff. In addition, Project Sponsor disseminate information during the planning and implementation of their projects. Lastly, California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA) processes also allow public review of data as individual projects move from planning to implementation phases.

The internet is also being utilized for data dissemination. Public meeting dates and tentative agendas are posted on the existing Partner agency websites, as well as other pertinent information. Whenever possible, reports and data are made available in electronic format. Other relevant data from this IRWMP process is provided to stakeholders online through Partner websites. The web addresses are: PVWMA (www.pvwma.dst.ca.us), SCVWD (www.valleywater.org) and SBCWD (www.sbcwd.com). Data has also been distributed via the Pajaro River Watershed Flood Prevention Authority (http://www.pajaroriverwatershed.org/) and the Pajaro Watershed Information Center (http://www.pajarowatershed.org/). The RWMG is in the process of working with AMBAG to tailor the Pajaro River Watershed Flood Prevention Authority website ((http://www.pajaroriverwatershed.org/) to meet IRWM-specific data management needs.

Because of the proactive distribution and sharing of data, to date there have not been a significant number of requests for data. The RWMG is committed to satisfying future requests for information. Information and data can be requested by stakeholders through the Partner agencies via email or written requests, and at public meetings and IRWMP stakeholder workshops.

8.1.3 Available Data Management Systems

There are a multitude of water resources data management systems (DMSs) available for use by the region. Different options to be considered include off-the-shelf project management applications that enable data sharing and customized web-based applications. The following systems were assessed for potential use in the future:

- Groundwater Analyst
- Groundwater Data Center
- HydroDaVE
- HydroDMS
- WISKI

These DMSs were assessed based on their ability to receive a variety of data from different sources, implementation and maintenance requirements and cost, and their ability to make data available to other parties. Table 10-1 provides a comparison of the features among the DMSs. The comparison was developed by reviewing marketing literature including brochures and websites, web-based demonstrations and videos, and review of publicly available installations of the system, where available. A brief technical description of each system is provided in the following chapters.

Groundwater Analyst

Developed by Aquaveo, Groundwater Analyst is a component of their Arc Hydro Groundwater (AHGW) Tools. Tools in the Groundwater Analyst help users import data into their AHGW datamodel, manage key attributes, and visualize their data. With Groundwater Analyst, users are able to import a variety of datasets (wells, time series, cross sections, volumes) into their geodatabase, manage symbology of layers in ArcMap and ArcScene, map and plot time series data, and create common products such as water level, water quality, and flow direction maps.

Groundwater Analyst is an ArcGIS-based system that is installed on the desktop and requires the user to have an ArcMap level license. The system primarily stores and manages groundwater and subsurface data. Additional tools may be purchased to store and analyze groundwater (MODFLOW) model data. Groundwater Analyst has numerous visualization tools to view data, and since it is based on the ArcGIS platform, comes with the inherent ArcGIS tools for mapping and analyzing features, as well as the standard export tools, provided the user has the ArcGIS license.

Groundwater Data Center

The Groundwater Data Center is a web-based system developed by Kennedy Jenks for San Joaquin County to capture, update, and publish groundwater data. Kennedy/Jenks customized a colorful, user-friendly Groundwater Data Center to fill the County's needs and more. Now it exists in two forms: an updatable version on the Intranet for the Water Resources Division and Flood Control District staff, and a limited version with more help functions on the County's public website.

Staff members now have at their fingertips a backlog of accessible data and history. Meanwhile, outside users – farmers, residents, staff from other agencies and irrigation districts – can instantly find a wealth of groundwater information, for whatever area and time period they are interested in, without waiting for a semiannual report. The version for the staff contains access to updatable tables on "Well Information Detail," "Water Level Data," and "Water Quality Data," the latter two sortable by year and season. This allows them to quickly add a record on the tables. The system is map-based and provides a number of interactive features. The user only needs to have a web browser installed in order to access the site.

HydroDaVE

HydroDaVE, developed by Wildermouth Synergies, is a web-enabled software tool that provides users an easy to use, secure, and reliable data management platform to efficiently manage, access, and analyze environmental data. HydroDaVE allows users to mine and explore data and improve reporting capabilities. It expands the user's ability to share data within and outside of an enterprise. Sophisticated data-analysis tools make it possible to understand seasonal and long-term trends, to evaluate data quality and errors, and to resolve conflicts. This greater visibility of data enables users to make informed management and operational-level decisions.

The system is map-based and consists of two interfaces: (1) a web-enabled data management interface (HydroDaVE Manager), and (2) a graphical user interface for data visualization (HydroDaVE Explorer). The data management interface is used to import datasets to the database, which exists on a server, while HydroDaVE Explorer is a Windows application that runs on the user's desktop and accesses the database through an Internet-connected computer. The HydroDaVE Explorer integrates GIS capabilities and supports the ESRI shapefile format.

HydroDMS

Developed by RMC Water and Environment, HydroDMS is a web-based, GIS-enabled system for storing, viewing, and analyzing hydrologic and environmental data. The HydroDMS is a comprehensive data management tool that stores data in a relational database management system that may be analyzed and viewed in a map-based Google or ArcGIS interface. HydroDMS is built upon a state-of-the art system architecture that combines the power of GIS with web technology. While hiding the complexity of the database and system architecture, the system provides a suite of easy-to-use comprehensive tools that mimic the user's workflow process while they enter and validate water related data and perform complex analysis. HydroDMS can also store and display input and output of hydrologic models that are used in IRWMPs.

The user only needs to have a web browser installed in order to access the system. Secure access to data is controlled using configurable user permissions and privacy settings. The system contains a module to import and view model data. The HydroDMS is part of RMC's Integrated Data Management (IDM) Suite of products and it can be integrated with other project management tools for tracking and reporting on project monitoring progress.

WISKI

WISKI is a water management information system developed by Kisters to manage a wide and flexible range of data types, including both time series and static data. WISKI's primary purpose is as a hydrological database solution that can manage all hydrological data in one location. Many organizations often have distributed "silos" of critical project and operational data that needs to be monitored and updated. These same organizations often routinely use cumbersome desktop spreadsheet applications, or custom built databases to manage this data with wildly varying degrees of success. WISKI helps users eliminate the chances of deleting critical data, track editing history with a complete audit trail, and finally, get access to an enterprise level system with the convenience of an easy to use desktop GUI with WISKI.

The system facilitates navigation through individual data structures and allows users to directly access graphs, tables and reports. In order to view the data in a map-based interface, the WISKI Extension for ArcGIS may be installed on a PC running ArcGIS. WISKI Web Pro allows data consumers with a direct connection to the database and tools for visualization over the Internet. The WISKI solution contains a series of fully integrated modules that can be selected based on the agency's needs.

Table 8-1: Water Resources DMS Comparison

Feature	Groundwater Analyst (Aquaveo)	Groundwater Data Center (Kennedy Jenks)	HydroDaVE (Wildermuth Synergies)	HydroDMS (RMC Water and Environment)	WISKI (Kisters)
General System Features					
Ability to:					
Access system over the Internet (web-based)		✓	✓	✓	✓
View map of features (GIS-based)	✓	✓	✓	✓	**With Extension**
Integrate with project tracking tools			✓	✓	
Link to external data sources or websites					✓
Integrate with model data	**With Additional Package**			✓	
Data Types					
Ability to store the following time series data:					
Groundwater: including elevation, water quality, and production	✓	✓	✓	✓	✓
Surface water: including streamflow, precipitation, and water quality			✓	✓	✓
Ability to store the following static types of data:					
Well information: including location, construction, and pump information	✓		✓	✓	✓
Geophysical Logs			✓	✓	✓
Lithologic Data			✓	✓	✓
Well Logs			✓	✓	✓
Data Visualization					
Ability to use the following chart and graph features:					
View time-series data in a tabular format	✓	✓	✓	✓	✓
View time series data in a graph format (hydrographs)	✓	✓	✓	✓	✓
Customize graph display parameters			✓	✓	✓
Display water quality data and maximum contamination limits (MCLs) in graph			✓	✓	
Create Piper diagrams			✓		

Feature	Groundwater Analyst (Aquaveo)	Groundwater Data Center (Kennedy Jenks)	HydroDaVE (Wildermuth Synergies)	HydroDMS (RMC Water and Environment)	WISKI (Kisters)
Ability to use the following map features:					
View well and site information on the map		✓	✓	✓	**With Extension**
Upload and view GIS shapefiles	✓		✓		**With Extension**
Use zoom, pan, and distance measuring tools	✓	✓	✓	✓	**With Extension**
Add multiple overlays on the map	✓		✓	✓	**With Extension**
Show filtered data in map	✓			✓	
Ability to view attached documents/files		✓	✓	✓	✓
Ability to access a weather report for a well location		✓			
Data Entry					
Ability to:					
Enter well information, time series data, and static data using data entry interfaces or import wizards	✓	✓	✓	✓	✓
Attach electronic files to wells or sites		✓	✓		✓
Update datasets	✓	✓	✓	✓	✓
Import metadata for datasets					✓
Link to continuous data collection systems (e.g. SCADA)					✓
Data Export					
Ability to:					
Export data to CSV or MS Excel format	✓		✓	✓	✓
Export data to PDF format	✓		✓		
Print charts, graphs, and reports	✓			✓	✓
Data Analysis					
Ability to:					
Create standard pre-defined reports			✓	✓	✓

Feature	Groundwater Analyst (Aquaveo)	Groundwater Data Center (Kennedy Jenks)	HydroDaVE (Wildermuth Synergies)	HydroDMS (RMC Water and Environment)	WISKI (Kisters)
Create custom report and ad-hoc queries on-the-fly				✓	✓
Monitor Basin Management Objectives (BMOs)				✓	
Create report for CASGEM upload			✓	✓	
Perform statistical calculations on time series data	✓			✓	✓
Query time series data to generate maps	✓			✓	**With Extension**
Create raster images	✓				
Use automatic calculations to calculate a well's water level elevation		✓		✓	
Calculate flow measurements and rating curves					✓
Create contour maps	✓			✓	
Exclude wells during contouring				✓	
Create lithologic cross section reports				✓	
Create flow direction maps	✓				
Other Features					
Ability to:					
Control user access to data and features			✓	✓	✓
Maintain data confidentiality				✓	
Validate and correct data			✓	✓	✓
Publish data and reports to the web		✓		✓	✓

The Pajaro River Watershed IRWM is committed to implementing a comprehensive, thorough and methodical approach to the tracking, collection, storage and management of data as described in this chapter. Based on the assessment, the RWMG has opted not to employ any of the data management systems in the Table. This decision was made based on judicious use of limited resources and the ability of the region to capitalize on the existing data infrastructure already in place and synergizing existing systems and project proponent involvement to meet the data management needs of the region. The potential costs of upkeep of the Data Management Systems would detract from other vital areas of Plan requirements and potentially create a duplicative and parallel process.

It has also been ascertained that given the existing network of data collection and storage within the Region, the RWMG can use the existing www.pajaroriverwatershed.org website, with modifications, to provide the necessary support to implement a system that provides for the data needs of the region and provides for making data accessible to stakeholders, neighboring IRWM regions, and State and federal agencies.

8.1.4 Future Data Dissemination and Management Methods

As discussed above, based on the evaluation of data management systems, the RWMG will enhance and maintain a Pajaro River Watershed IRWM website (www.pajaroriverwatershed.org). This will implement a more robust outreach program and institute a more regular and frequent regimen of data tracking, collection and storage. Furthermore, relevant information will be sorted, categorized topically and curated on an on-going and scheduled basis by the RWMG. Standard protocols will be adhered to in terms of type of information required, timing, updates, and data storage.

Managing the list of projects in the IRWM Plan is another component of on-going data management. Each RWMG member and project proponent will have a unique login and will be able to update existing project information or enter new project information in an on-going basis. The RWMG will request that Project Sponsors provide information described in Chapter 8 on an annual basis. As projects are added or removed from the list of projects included in the IRWM Plan, the IRWMP will be modified accordingly. The RWMG will keep track of new projects that have been submitted for inclusion in the IRWM Plan as well as projects which have been implemented or are no longer under consideration, and the RWMG will publish, on an annual basis or as needed, an updated list of projects.

8.2 Compatibility with Statewide Databases

Where opportunities for data sharing exist, the RWMG will request Project Sponsors to coordinate with state and federal monitoring and data management efforts to determine specific reporting requirements and formats. Where appropriate, Project Sponsors will manage data in a format that is compatible with these databases to facilitate efficient submission. This will include ensuring that proper quality control and quality assurance of data has been performed by the agency responsible for data collection. Table 8-1 summarizes some of the statewide databases to which IRWM-related data may be submitted.

Table 8-2: State Monitoring and Data Management Programs

Program	Program Manager	Description
California Environmental Resources Evaluation System (CERES)	California Natural Resources Agency	The goal of CERES is to improve environmental analysis and planning by integrating natural and cultural resource information from multiple contributors. It includes an environmental information catalog and a natural resources project inventory. These information systems can be accessed at the CERES website here: http://ceres.ca.gov/.
Groundwater Ambient Monitoring and Assessment (GAMA)	SWRCB	The GAMA program monitors groundwater for a broad suite of chemicals at very low detection limits. Monitoring and assessments for priority groundwater basins are to be completed every 10 years. GAMA is California's most comprehensive water quality monitoring program. It is grouped into 35 groundwater basin groups called "study units." The Pajaro Region is included multiple Study Units within the South Coast Ranges Province (http://ca.water.usgs.gov/projects/gama/Provs/SCoast.htm).

Program	Program Manager	Description
Surface Water Ambient Monitoring Program (SWAMP)	SWRCB	SWAMP is a statewide monitoring effort to assess the conditions of surface waters. In addition to monitoring conducted under the program, SWAMP also hopes to capture information collected under TMDL, Non-Point Source and Watershed Project Support systems. SWAMP provides guidance on methods and quality assurance. This guidance can be found at: http://www.waterboards.ca.gov/water_issues/programs/swamp/docs/qapp/qaprp082209.pdf.
State Wetland and Riparian Area Monitoring Plan (WRAMP)	SWRCB	WRAMP is intended to track trends in wetland extent and condition to determine the performance of wetland, stream, and riparian protection programs in California. The program defines standardized assessment methods and data management with the goal of minimizing new costs and maximizing public access to assessment information. Additional information on the WRAMP program can be found here: http://www.waterboards.ca.gov/mywaterquality/monitoring_council/docs/wramp_implementation_letter.pdf.
California Environmental Data Exchange Network (CEDEN)	SWRCB	CEDEN was designed to facilitate integration and sharing of data related to California's water bodies (e.g. streams, lakes, and rivers). Water quality data and data related to aquatic habitat and wildlife health are made available to the public through CEDEN. Templates, modeled after SWAMP, are available in Microsoft Excel format to facilitate submission of data to CEDEN (http://www.ceden.org/ceden_datatemplates.shtml).
California Statewide Groundwater Elevation Monitoring Program (CASGEM)	DWR	Senate Bill x7-6 (SBx7-6) mandated a statewide groundwater elevation monitoring program to track the seasonal and long-term trends in groundwater elevations in California's groundwater basins. The bill requires DWR collect the data, which it does through CASGEM. DWR designed CASGEM to monitor and report groundwater elevations in all or part of a groundwater basin or subbasin. DWR oversees the program and coordinates with local entities to maintain the submitted groundwater elevation data to ensure it is readily and widely available to the public. California Water Code (CWC) § 10933.7 requires any entity that manages all or part of a groundwater basin to assume responsibilities for groundwater elevation monitoring and reporting, as required by CWC § 10920 et seq. Monitoring entities can create, edit, and submit data for specific groundwater basins or subbasins through the CASGEM website: http://www.water.ca.gov/groundwater/casgem/.

Currently, each of the three Partner agencies generates an annual groundwater report that can be submitted and utilized for statewide data needs. All groundwater and surface water data reports developed as required by the Project Performance Monitoring Plans for State-funded projects will also be compatible with CERES, SWAMP, GAMA, CASGEM, CEDEN, and WRAMP reporting requirements and formats, as well as other identified, appropriate statewide databases. Project Performance Monitoring Plans will be developed for each State-funded project consistent with State requirements and compatible with State formats.

8.3 Data Gaps

Available data sets and reports have been reviewed for their applicability to the IRWM Plan and statewide data needs and for identification of data gaps. Data gaps represent areas where sufficient information to inform decision making is lacking. Because the identification of information needs can lead to the development of new projects, identifying areas where data gaps exists can be an important part of enhancing watershed understanding and IRWM planning.

An example of a data gap for the region is the need for improving understanding of how groundwater and surface water interact in the upper watershed. Filling this data gap is crucial to a obtaining a more complete understanding of the Pajaro River Watershed in the context of developing ecosystem restoration plans and assessing the impact local water management projects may have on the environmental resources in the region. In the case of the upper Pajaro River Watershed, the Groundwater Study & Biological Assessment of the Upper Pajaro River Project was implemented to gather data and clarify the groundwater-surface water interactions and the potential impacts to environmental resources.

For data gaps relating to the region's environmental or cultural resources, more information will be developed in conjunction with the CEQA and NEPA processes required during project environmental compliance processes.

Section 8.1.2 identified the protocol for including source documents as well as complementary documents that have previously been data gaps, thereby shrinking the margin of data gaps and seamlessly absorbing these documents into the data management system. These documents will be collected, topically categorized and curated for reference and for potential project development.

9 Finance

This chapter meets the following IRWMP Standards from the Propositions 84 & 1E IRWM Program Guidelines (DWR, 2012).

> **Finance** – The IRWM Plan must include a plan for implementation and financing of identified projects and programs (CWC §10541.(e)(8)). The IRWM Plan must also identify and explain potential financing for implementation of the IRWM Plan. The financing discussion must, at a minimum, include the following items:
>
> - List known, as well as, possible funding sources, programs, and grant opportunities for the development and ongoing funding of the IRWM Plan.
> - List the funding mechanisms, including water enterprise funds, rate structures, and private financing options, for projects that implement the IRWM Plan.
> - An explanation of the certainty and longevity of known or potential funding for the IRWM Plan and projects that implement the Plan.
> - An explanation of how operation and maintenance (O&M) costs for projects that implement the IRWM Plan would be covered and the certainty of operation and maintenance funding.

This chapter describes the funding/financing options for the implementation and O&M of IRWM Plan programs and projects and the ongoing funding of the IRWM Plan. Financing plans include a variety of mechanisms including state grant funding, federal grant funding, and local financing from the sale of municipal bonds, low interest loans, land assessments, water rates, and other sources.

9.1 IRWM Plan Funding

In October 2004, Pajaro Valley Water Management Agency (PVWMA), San Benito County Water District (SBCWD), and Santa Clara Valley Water District (SCVWD) entered into a Memorandum of Understanding (MOU) for the purpose of coordinating water resources planning and implementation activities watershed-wide. The MOU defined the responsibilities associated with consultant contracting, cost sharing, and information sharing. The MOU also specified the potential need for future agreements to further coordinate long-term water resources management. The three agencies were collectively known as the Pajaro River Watershed Collaborative (Collaborative). In 2005, the Collaborative applied for and was awarded a $500,000 Proposition 50 Integrated Regional Water Management (IRWM) Planning Grant to complete the Pajaro River Watershed IRWM Plan. The Collaborative led and financially supported the development of the IRWM Plan through in-kind services and matching funds. The Pajaro River Watershed IRWM Plan was completed and adopted in 2007.

In 2009, the Collaborative was recognized as the Regional Water Management Group (RWMG) for the Pajaro River Watershed IRWM effort during the California Department of Water Resources' (DWR's) Plan Review Regional Acceptance Process. In 2010, the newly recognized RWMG submitted and was awarded a $1,000,000 Proposition 84 IRWM Planning Grant to update the IRWM Plan to new standards and address data gaps in the region. Again, the Collaborative led and financially supported the development of the IRWM Plan through in-kind services and matching funds. This 2014 Pajaro River Watershed IRWM Plan is the update that was completed through that effort.

As documented in the Plan Performance and Monitoring Chapter, the RWMG is committed to monitoring and evaluating plan and project implementation. Plan performance will be reported every two years through publication of a biennial IRWM progress report. The RWMG recognizes

that the IRWM Plan is a living document, which needs to be flexible to adapt to changing conditions, new information, and modifications based on lessons learned. The IRWM progress report will help identify the changes needed in subsequent updates, which will be prepared every 5 years or as needed. The RWMG will continue to support these plan efforts through in-kind services and local funds. However, in the future, a more significant update to the plan may require additional funding. IRWM planning funds are no longer available through Propositions 50 and 84; however, a potential new water bond may include IRWM funds for additional planning efforts. This funding source is not a highly secure source given it requires a public vote but the RWMG continues to participate in efforts to support the water bond. There are limited planning funds available but two annual programs include the US Bureau of Reclamation WaterSMART Grant Program (Basin Studies) and the State Water Resources Control Board 319(h) Planning and Assessment Grant Program. Additional funding is not required at this time but maybe needed at some point in the future. At that time, the RWMG will lead the effort to identify and secure funding for the IRWM updates, as needed.

9.2 General Plan for Implementation and Financing

Securing funding for project implementation is a significant issue for IRWM Plan implementation. The Pajaro River Watershed has had success in securing funding through the IRWM Implementation Grant Program for project implementation. The RWMG attributes that success to the region's commitment to identifying and supporting projects that deliver multiple benefits and are, thus, more competitive in the funding program.

The RWMG has taken the lead in keeping the stakeholders and project sponsors informed on and involved in IRWM Implementation funding. As IRWM Implementation funding becomes available, the RWMG implements the project review process which involves a call for projects and a project review and prioritization. The projects are then evaluated against the IRWM funding criteria and a suite of projects is selected for inclusion in the grant application, if the region opts to pursue funding. Through this process, the region successfully secured a $25 million Proposition 50 grant, a $7.6 million Proposition 84 grant, and is applying for $12.3 million Proposition 84 grant through the Emergency Drought Funding program.

The RWMG's focus for funding has generally been on IRWM funding opportunities. However, given the limited and competitive nature of those funds, it is recognized that the region and the IRWM plan implementation can benefit from coordination on a broader range of funding programs. However, funding opportunities are typically focused on a specific resource management strategy or policy issue, and some stakeholders and project sponsors are not interested in receiving all funding program information. Therefore, the RWMG is considering options for disseminating project funding information only to those stakeholders interested in that particular resource management strategy. The State and Federal funding programs that may be included in the general funding information program are presented in the following sections.

Funding requirements that cannot be secured through outside sources are paid through local funding mechanisms, as described in Section 11.5.

9.3 State Funding Opportunities

Funding for IRWM project implementation may be available through numerous state programs, as presented below.

9.3.1 Proposition 84

The Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Act of 2006 (Public Resources Code § 75001, et seq.), was passed by California voters in November 2006 and

provides $5.388 billion to support various water resource needs in the State. Proposition 84 will be implemented by the California Department of Public Health (CDPH), Department of Water Resources (DWR), and the State Water Resources Control Board (SWRCB). Specific grant funding programs available under Proposition 84 are described below.

9.3.1.1 Integrated Regional Water Management

DWR offers grants for projects that assist local public agencies to meet the long-term water needs of the State including the delivery of safe drinking water and the protection of water quality and the environment. Proposition 84 allocated $1 billion to integrated regional water management planning and implementation grants; of this amount, $52 million was allocated to the Central Coast Funding Area. The Central Coast Funding Area is made up of six IRWM regions, including the Pajaro River Watershed IRWM region.

As part of Proposition 84 DWR offers two types of IRWM related grants:

1. **Planning grants**: These grants focus on activities such as IRWMP development and special studies, which include climate change plans, salt and nutrient management plans and more. Under Proposition 84 there have been two different planning grant opportunities. As previously stated, the Pajaro River Watershed IRWM region was awarded a $1 million planning grant. There are no remaining planning funds available.

2. **Implementation grants**: These grants focus on activities such as construction projects, water conservation projects, habitat restoration projects and more. Originally, three rounds of implementation grants were anticipated. However, funds originally earmarked for Round 3 were reallocated for the Emergency Drought Funding Program. As previously stated, the Pajaro River Watershed IRWM region was awarded a $7.6 million grant in Round 2 and is applying for a $12.3 million 2014 Drought Funding grant. The fourth and final round of implementation grants under Proposition 84 is anticipated in 2015 and a minimum $4.9 million will be available to the Central Coast Area. The amount available may increase depending on the 2014 Drought Funding awards.

9.3.1.2 Department of Water Resources – Local Groundwater Assistance Program

The Local Groundwater Management Assistance Act of 2000 (CWC § 10795 et seq., Assembly Bill 303) was enacted to provide grants to local public agencies to conduct groundwater studies or to carry out groundwater monitoring and management activities. Priority for grant funding is given to local public agencies that have adopted a groundwater management plan (under the terms of the Groundwater Management Planning Act, AB 3030) and demonstrate collaboration with other agencies in the management of the affected groundwater basin. Eligible applicants are public agencies with groundwater management authority. Grants up to $250,000 were available during the last solicitation in 2012 and there are currently no immediate plans or available funds for another proposal solicitation round.

9.3.1.3 Department of Public Health - Emergency and Urgent Water Protection

CDPH offers grants for projects that address emergency and urgent situations related to drinking water supplies. Eligible projects include, but are not limited to, provision of alternate water supplies, improvements to existing water systems to avoid contamination, establishment of new connections, and purchase and installation of water treatment equipment. The program is open to public water suppliers.

9.3.1.4 State Water Resources Control Board – Storm Water Grant Program

The SWRCB provides grant funds for projects designed to reduce and prevent storm water contamination of rivers, lakes, and streams. The initial budget was $82 million of which $38 million was awarded in Round 1 and the remaining $34 million was awarded in Round 2. Up to $3 million per project was available. Preference was given to projects consistent with an integrated regional water management plan and projects that promote long-term water quality. The program funding is fully allocation and there are currently no immediate plans or available funds for another proposal solicitation round.

9.3.1.5 Local Levee Assistance Program

DWR provides grants for projects that evaluate levees or other flood control structures (not part of the State Plan of Flood Control) through geotechnical studies and for the design, repair and improvement of damaged levees or other unstable flood control structures. These grants are available to local public agencies. Up to $2 million are available per levee evaluation project and up to $5 million are available per urgent repair project.

9.3.1.6 Flood Protection Corridor Program

DWR awards grant funds to public agencies and non-profit organizations for flood risk reduction projects in floodplains through primarily non-structural flood management methods (e.g., detention basins, levee removal). All projects must include wildlife habitat enhancement and/or agricultural land preservation. The maximum grant amount per eligible project is $5 million.

9.3.1.7 Flood Control Subventions Program

DWR provides financial assistance to local agencies implementing federally authorized flood control projects and watershed protection flood projects authorized by the Natural Resources Conservation Service (NRCS) and theCorps. The percentage of the state cost share for reimbursable costs ranges from 50 to 70 percent.

9.3.1.8 Urban Streams Restoration Program

DWR awards grant funds to public agencies and non-profit organizations to help local communities reduce urban flooding and erosion, restore environmental values and promote community stewardship of urban streams. Examples include creek cleanups, eradication of exotic or invasive plants, bioengineering bank stabilization projects, acquisition of parcels critical for flood management and coordination of community involvement in projects. Up to $1 million is available per project.

9.3.2 Proposition 1E

Proposition 1E, the Disaster Preparedness and Flood Protection Bond Act, encourages new investments for flood protection and storm water management programs.

9.3.2.1 Stormwater Flood Management Program

Within the Stormwater Flood Management Program, grants of up to $30 million per project are available from DWR to local entities for storm water flood management projects. These projects must be outside of the State Plan of Flood Control, be consistent with an integrated regional water management plan, and be designed to reduce flood damage. In addition, local match must be at least 50 percent of project costs. Preference is given to projects that yield multiple benefits, including recharge, water quality improvement, and ecosystem restoration. Proposals for the last round of funding through this program were due in February 2013.

9.3.2.2 Early Implementation Program

DWR provides funding under Prop 1E and Prop 84 to rehabilitate, reconstruct, or replace levees, weirs, bypasses, and facilities of the State Plan of Flood Control; or to improve or add to facilities of the State Plan of Flood Control to increase flood protection levels for urban areas. Funding is available to local and federal agencies. Funding limits are determined under program guidelines, but maximum state funding allowed is $200 million per project.

9.3.3 Proposition 50

The Water Security, Clean Drinking Water, Coastal and Beach Protection Act of 2002, Water Code §79500, et seq., was passed by California voters in the November 2002 general election. Proposition 50 authorized $3.44 billion in general obligation bonds, to be repaid from the State's General Fund, to fund a variety of water projects such as: specified CALFED Bay-Delta Program projects including urban and agricultural WUE projects; grants and loans to reduce Colorado River water use; purchasing, protecting and restoring coastal wetlands near urban areas; competitive grants for water management and water quality improvement projects; development of river parkways; improved security for state, local and regional water systems; and grants for desalination and drinking water disinfecting projects.

As previously stated, the Pajaro River Watershed IRWM region was awarded a $25 million Proposition 50 IRWM Implementation Grant. Many grant programs funded by Proposition 50 have concluded, but those funding programs still accepting applications are summarized below.

9.3.3.1 Department of Water Resources – Water Use Efficiency Grants

This grant program is intended to fund agricultural and urban WUE projects. The program focuses on funding projects that are not locally cost effective, and that provide water savings or in-stream flows that are beneficial to the Bay-Delta or the rest of the State. Consideration is also given to projects that address water quality and energy efficiency. Specific types of projects that can be funded include: WUE implementation projects providing benefits to the State; research and development projects; feasibility studies, pilot or demonstration projects; training, education or public outreach programs; and technical assistance programs related to WUE. Cities, counties, joint power authorities, public water districts, tribes, non-profit organizations (including watershed management groups), other political subdivisions of the State, regulated investor-owned utilities, incorporated mutual water companies, universities and colleges, and state and federal agencies are eligible applicants. Grants to urban water suppliers are conditioned on implementation of the Demand Management Measures described in CWC §10631.

Funding has been made available through SB 23, Proposition 13 and Proposition 50. Since inception of the Program in 2001 through 2012, $132.5 million has been allocated. The 2012 Agricultural Water Use Efficiency proposal solicitation was the last round of Prop 50 funding.

9.3.3.2 Department of Water Resources – Contaminant Removal

DWR (previously funded through CDPH) provides funds for contaminant treatment or removal technology pilot and demonstration studies for specific categories of contaminants including petroleum, perchlorate, heavy metals, pesticides, and herbicides. Grants are a minimum of $50,000, up to a maximum of $5,000,000. A 50 percent match is required, but this requirement is waived in part or in full for Disadvantaged Communities and small water systems. Public water systems and public entities are eligible for this funding program.

9.3.3.3 Department of Water Resources – UV and Ozone Disinfection

Grants to support projects using ultraviolet or ozone for disinfection of drinking water are also offered by DWR (previously funded through CDPH). A funded project must address a drinking water compliance violation, surface water treatment requirements, or other mandatory disinfection requirement. Public water systems are eligible for this funding program.

9.3.4 Other State Funding

9.3.4.1 State Revolving Fund

The Federal Safe Drinking Water Act (SDWA) Amendments of 1996 authorized the creation of a revolving fund program for public water system infrastructure needs specific to drinking water. There is similar state legislation and the Safe Drinking Water State Revolving Fund reflects the intent of federal and state laws to provide grant funding or low-interest loans to correct deficiencies in public water systems based on a prioritized system. Other programs established State Revolving Fund (SRF) programs to address clean water and other infrastructure needs. There are three different entities that provide loans and/or grants under the State Revolving Fund (SRF).

9.3.4.1.1 Safe Drinking Water SRF

Under this SRF program, CDPH provides loans to assist public water systems in achieving and maintaining compliance with the SDWA. Up to $20 million is available per project. Disadvantaged community systems can obtain a zero interest loan and may be eligible for partial grant funding. All applications to this program are initially made for loans, however financial review may determine if grant funds apply.

9.3.4.1.2 Infrastructure SRF

The California Infrastructure and Economic Development Bank, also known as I-Bank, provides financing to local municipal entities for construction and/or repair of publicly owned water supply, treatment and distribution systems, and drainage, and flood control facilities. In addition to water-related projects, loans are available for public infrastructure projects that include parks and recreational facilities and environmental mitigation.

9.3.4.1.3 Clean Water SRF

SWRCB also provides financing for wastewater treatment facility construction projects and expanded use projects that include nonpoint source and estuary projects. Funding options are available to public agencies, as well as non-profit organizations and Native American tribes, for up to $50 million per year.

9.3.4.2 State Water Resources Control Board – Federal 319 Program

This program, administered by the SWRCB, is a nonpoint source pollution control program that is focused on controlling activities that impair beneficial uses and on limiting pollutant effects caused by those activities. The program is federally funded on an annual basis. Project proposals that address Total Maximum Daily Load (TMDL) implementation and those that address problems in impaired waters are favored in the selection process. There is also a focus on implementing management activities that reduce and/or prevent release of pollutants that impair surface and ground waters. Nonprofit organizations, local government agencies including special districts, tribes, and educational institutions qualify. State or federal agencies may qualify if they are collaborating with local entities and are involved in watershed management or proposing a statewide project.

9.3.4.3 State Water Resources Control Board – Water Recycling Funding Program

This is a long-term program operated by the SWRCB that offers grants and low-interest loans for the planning, design and construction of water recycling facilities. Grants are provided for facilities planning studies to determine the feasibility of using recycled water to offset the use of fresh/potable water from state and/or local supplies. Pollution control studies, in which water recycling is an alternative, are not eligible. Planning grants are limited to 50 percent of eligible costs, up to $75,000. Construction grants are limited to 25 percent of project costs or $5,000,000, whichever is less. Only public agencies are eligible. The Water Recycling Funding Program receives funding from various sources, including Proposition 50 and the SRF. Due to the varying funding sources, preferences for funding can vary. For example, funding from Proposition 50 gives preference to those recycling projects that result in benefits to the Delta.

9.3.4.4 Department of Water Resources – New Local Water Supply Construction Loans

Under this program, DWR provides loans to local public agencies for projects. Eligible projects include canals, dams, reservoirs, desalination facilities, groundwater extraction facilities, or other construction or improvements which will remedy existing water supply problems. Loans for construction projects can be provided for up to $5 million, with an interest rate equal to those of the general obligation bonds sold to finance the program.

9.3.4.5 Department of Housing and Community Development – Community Development Block Grant

The California Department of Housing and Community Development provides grants to cities and counties with a program emphasis on creating or retaining jobs for low-income workers in rural communities. Activities may include housing rehabilitation and public improvements, which may involve among other things, water, wastewater and other infrastructure projects as well as feasibility studies.

9.3.4.6 California Energy Commission (CEC) – Energy Financing Program

The California Energy Commission provides loan financing for water and wastewater utilities for energy efficiency projects, feasibility studies, and implementing energy-saving and renewable energy measures. Eligible uses include, but are not limited to, lighting, motors or variable frequency drives, pumps, insulation, HVAC, energy generation and cogeneration.

9.4 Federal Funding Opportunities

Agencies in the Pajaro River Watershed have been awarded Federal Funding to implement water resource management projects. More recent awards have included a $7 million award to SCVWD through ARRA for the South County Recycled Water Improvement Project pipelines and a $20 million award to the City of Watsonville and PVWMA for construction of the Watsonville Recycled Water Treatment Facility. This chapter includes a discussion of funds available through various federal programs and specifies eligibility requirements.

9.4.1 Environmental Protection Agency, Source Reduction Assistance

The purpose of this program is to prevent the generation of pollutants at the source and ultimately provide an overall benefit to the environment. This program seeks projects that support source reduction, pollution prevention, and/or source conservation practices. Source reduction activities include: modifying equipment or technology; modifying processes or procedures; reformulating or redesigning products;

substituting raw materials; and generating improvements in housekeeping, maintenance, training, or inventory control. Pollution prevention activities reduce or eliminate the creation of pollutants via such procedures as: using raw materials, energy, water or other resources more efficiently; protecting natural resources through conservation; preventing pollution; and promoting the re-use of materials and/or conservation of energy and materials. Eligible organizations include units of state, local, and tribal government; independent school district governments; private or public colleges and universities; nonprofit organizations; and community-based grassroots organizations.

9.4.2 Environmental Protection Agency, Wetlands Program Development Grants

This program seeks projects that promote the coordination and acceleration of research, investigations, experiments, training, demonstrations, surveys, and studies relating to the causes, effects, extent, prevention, reduction, and elimination of water pollution. The US EPA has identified three priority areas: (1) the development of a comprehensive monitoring and assessment program; (2) the improvement of the effectiveness of compensatory mitigation; and (3) the refinement of the protection of vulnerable wetlands and aquatic resources. A 25 percent match is required. Eligible entities include states, tribes, local governments, interstate associations, intertribal consortia, and national non-profit, non-governmental organizations.

9.4.3 Environmental Protection Agency, Five Star Restoration Program

This program is a partnership among various entities, including the US EPA, U.S. Forest Service, National Association of Counties and National Fish and Wildlife Foundation. This program provides grants, technical support and opportunities for information exchange to develop community capacity to sustain local natural resources for future generations. Projects focus on elements, including on the ground restoration, meaningful environmental education, diverse partnerships, and measurable ecological and educational/social benefits. Average grant awards range from $25,000 to $35,000 and require fifty percent match.

9.4.4 Water Resources Development Act

The Water Resources Development Act is federal legislation, first passed in 1974, that enables authorization of Corps projects, including levee repair, beach management, aquatic ecosystems, flood emergency and water infrastructure projects. The Act has traditionally been reauthorized every two years, but was last enacted in 2007. Steps towards developing a Water Resources Development Act for the 112th Congress are currently underway. After the Act is passed, Congress will appropriate funding for projects in one of the annual Energy and Water Development appropriation bills.

9.4.5 National Marine Fisheries Service (NMFS), NOAA Coastal and Marine Habitat Restoration

This program provides funding for restoration projects that use a habitat-based approach to foster species recovery and increase fish production. The funding opportunity focuses on coastal habitat restoration projects that aid in recovering listed species and rebuilding sustainable fish populations or their prey. Roughly $20 million could potentially be available over the next three years (starting in 2013) to maintain selected projects, dependent upon the level of funding made available by Congress. Typical awards are anticipated to range from $500,000 to $5 million over three years. For more information see: http://www.habitat.noaa.gov/funding/coastalrestoration.html.

9.4.6 National Park Service (NPS), Rivers, Trails, and Conservation Assistance (RTCA) Program

The purpose of this program is to conserve rivers, preserve open space, and develop trails and greenways. The program provides staff assistance, but not funding, to meet this intent. Projects are evaluated on how successfully they meet the following criteria: (1) a clear anticipated outcome leading to on-the-ground success; (2) commitment, cooperation, and cost-sharing by interested public agencies and non-profit organizations; (3) opportunity for significant public involvement; (4) protection of significant natural and/or cultural resources and enhancement of outdoor recreational opportunities; and (5) consistency with the NPS mission. Eligible organizations include non-profits, community groups, tribes or tribal governments, and state or local government agencies.

9.4.7 U.S. Department of Agriculture (USDA) – Rural Development, Water and Waste Disposal Program

The Water and Waste Disposal Program provides financial assistance in the form of grants and loans for the development and rehabilitation of water, wastewater, and storm drain systems within rural communities. Funds may be used for costs associated with planning, design, and construction of new or existing water, wastewater, and storm drain systems. Eligible projects include storage, distribution systems, and water source development. There are no funding limits, but the average project size is between $3 and $5 million. Projects must benefit cities, towns, public bodies, and census-designated places with a population less than 10,000 persons. The intent of the program is to improve rural economic development and improve public health and safety.

9.4.8 U.S. Bureau of Reclamation (USBR), WaterSMART Grant Programs

This grant program is intended to fund collaborative local projects that improve water conservation and management through advanced technology and conservation markets. Through this program, federal funding is provided to irrigation and water districts for up to 50 percent of the cost of projects involving conservation, efficiency and water marketing. Eligible applicants include irrigation and water districts and state governmental entities with water management authority. Applicants must be located in the western U.S. (California is an eligible area). Applicants do not have to be part of a USBR project but proposals with a connection to USBR will receive more weight in the evaluation process. Past and proposed programs have included Basin Studies, Water and Energy Efficiency Grants, Advanced Water Treatment Pilot and Demonstration Projects, Grants to Develop Climate Analysis Tools, and Title XVI – Water Reclamation and Reuse. Funding opportunities vary depending on available program funding.

9.4.9 U.S. Fish and Wildlife Service (USFWS), North American Wetlands Conservation Act Grant

This grant program provides funds for projects that provide long-term protection of wetlands, and the fish and wildlife that depend upon wetlands. Applicants must provide local match equal to that requested. The Small Grants Program provides up to $75,000 in funding and the Standard Grants Programs averages $40 million annually for the whole U.S. and is applicable to projects exceeding $75,000. Entities that are eligible include organizations and individuals who have developed partnerships to carry out wetlands conservation projects in the U.S., Canada, and Mexico. Small Grants only apply to the U.S. Applications are continuously accepted by the USFWS for this grant.

In addition to the programs listed above, specific congressional authorizations and funding may be obtained to study, build, and construct specific projects in the Region. Potential sources include legislation and funding associated with renewal of the Clean Water Act (CWA), SDWA, and appropriations for specific agencies, such as the Corps and the US EPA.

The Water Resources Development Act (WRDA) authorizes projects and policies of the Civil Works program of the Corps. The Corps is a federal agency in the Department of Defense with military and civilian responsibilities. At the direction of Congress, the Corps plans, builds, operates, and maintains a wide range of water resources facilities in U.S. states and territories. The agency's traditional civil responsibilities have been creating and maintaining navigable channels and flood risk management. However, in the last two decades, Congress has increased the Corps' responsibilities in ecosystem restoration, municipal water and wastewater infrastructure, disaster relief, and other activities. WRDA often includes specific authorizations for federal, regional, and local projects. Inclusion in WRDA authorizes a given project but does not guarantee funding for a specific project.

Local projects can also receive authorization and federal funding as part of appropriations for the US EPA. The US EPA will enter into assistance agreements with local agencies to fund studies and projects associated with: (1) various environmental requirements (e.g., wastewater treatment); (2) identifying, developing, and/or demonstrating necessary pollution control techniques to prevent, reduce, and eliminate pollution; and/or (3) evaluating the economic and social consequences of alternative strategies and mechanisms for use by those in economic, social, governmental, and environmental management positions.

9.5 Local Funding Mechanisms

Local funds are required for construction of projects when outside funding is not secured; to meet matching fund requirements consistent with any awarded grant funding; and operations and maintenance costs. Local funding mechanisms may include water and wastewater general funds; capital improvement funds; development impact fees; and general funds from local cities, county departments, other local agencies, private organizations, member dues, etc. Local taxpayers may also fund these projects through rate increases, bond measures, and tax increases. These mechanisms are described below.

9.5.1 Capital Improvements Program Funding (Revenue Bonds, Certificates of Participation)

Water districts, as well as other government entities (e.g., counties and cities), can raise funds by issuing municipal bonds or certificates of participation. Bonds and certificates of participation are governed by an extensive system of laws and regulations. Under these systems, investors provide immediate funding for the promise of later repayment. Generally, bonds and certificates of participation are used for capital improvement projects. In the case of a water district, bonds and certificates are secured by revenues from the water system and by property taxes received by the agency.

9.5.2 Benefits/Assessments, Benefits/Assessment Zone Formation

Benefit assessments are special charges levied on property to pay for public improvements that benefit property in a predetermined district. 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, established a strict definition of special benefits, and instituted a common formation and ratification process for all benefit assessment districts.

9.5.3 User Fees

Funding for construction and operation and maintenance of water-related projects often comes from user fees, which are charges for water delivered to a home or business, or charges for wholesale water supplies. In addition to these fees, many agencies also charge "hook-up" or "connection" fees – charges for providing facilities to provide water or wastewater services to new development. These fees are also known as "facility capacity fees." Facility capacity fee revenue is difficult to forecast due to the unpredictable timing of development activity. Development activity depends on real estate demands, the regional economy, and land use planning activity. Revenue from user fees and water charges can also fluctuate with the regional economy, short-term water use reductions or restrictions, and precipitation.

10 Technical Analysis

This chapter addresses the following standard from the 2012 IRWM Grant Program Guidelines:

> **Technical Analysis** – The IRWM Plan must document the data and technical analyses that were used in the development of the Plan.

The intent of this standard is to document that the IRWM Plan is based on sound technical information, analyses, and methods. This chapter presents an overview of the technical information that was used in IRWM Plan development, lists pertinent technical analyses and methods, and identifies data gaps where additional monitoring or studies are needed.

10.1 Technical Information

The IRWM Plan documents the results of a collaborative effort between public agencies with varying water, wastewater, flood and watershed management responsibilities and numerous other interested entities. The Pajaro River Watershed was developed using data and technical analyses developed by the RWMG partners as well as other local, state, and federal agencies. The information represents the best known information on the current and projected water resource conditions in the watershed. Planning and analysis was conducted at the local, subregional, regional, and interregional levels and has been used as the basis for analysis in the IRWM Plan.

- **Local Level**. The "Local Level" refers to water resources planning that is conducted over a relatively limited geographic extent, such as an individual municipality, flood zone, or small/partial watershed. Planning and analysis occurring at the local level frequently serves as the basis for planning and analysis conducted at larger geographic scales. An example of local planning includes city and county general plans and agency specify capital improvement plans.

- **Subregional Level**. The "Subregional Level" refers to water resources planning and analysis that is conducted across a larger geographic scale than the local level, while not encompassing the entire region. Subregional-level planning includes planning across multiple municipalities, large flood zones, or large watersheds. An example of subregional planning is the Hollister Urban Area Water and Wastewater Management Plan. This type of analysis and planning frequently builds upon analyses and plans developed at the local level.

- **Regional Level.** The "Regional Level" refers to the water resources planning and analysis being conducted across the entire Pajaro River Watershed region, such as that being conducted through IRWM Plan development and the Pajaro River Watershed Flood Prevention Authority. This type of planning frequently incorporates and builds upon planning conducted at both the local level and the subregional level.

- **Interregional Level.** The "Interregional Level" refers to water resources planning that is conducted beyond the boundaries of the Pajaro River Watershed. This level of planning includes efforts such as the South Central California Coast Steelhead Recovery Plan or climate change analyses.

10.2 Technical Analyses

This section provides a description of the studies, models, and other technical methodologies that were used to develop the RWMG's and stakeholders' understanding of the water management issues in the Pajaro River Watershed. The information in Table 10-1is categorized by local, subregional, regional, and interregional studies and data sets.

Table 10-1. Technical Analyses Documents and Data Sets

Document Title/Data Type	Date	Prepared For	Description
Local Level			
City of Gilroy General Plan	June 2002	City of Gilroy	Provides list of Cities' policies, goals and actions for land use, water conservation, water reclamation, flood control, habitat protection and open space preservation
City Hollister General Plan	December 2005	City of Hollister	
City of Morgan Hill General Plan	July 2001	City of Morgan Hill	
City of Watsonville General Plan	February 2006	City of Watsonville	
City of Hollister Long-Term Wastewater Management Plan	December 2005	City of Hollister	Provides plan for wastewater treatment, effluent management and recycled water for the City of Hollister. Identifies projects and schedule of implementation.
City of Watsonville Urban Water Management Plan UWMP 2010	June 2011	City of Watsonville	Provides understanding of Watsonville urban water needs, management, and planning objectives
Salsipuedes Creek Maintenance Analysis (File #50275)	February 2005	Santa Cruz County Flood Control and Conservation District Zone 7	Provides technical understanding of Salsipuedes Creek hydrology, hydraulics, and sedimentation and further understanding of Lower Pajaro River watershed dynamics and maintenance activities
Biological Assessment Pajaro River and Salsipuedes and Corralitos Creeks Management and Restoration Plan Santa Cruz County, California	September 2001	County of Santa Cruz	Provides understanding of biological and restorative plans within the Pajaro River
Subregional Level			
Monterey County General Plan 2010	November 2010	Monterey County	Provides list of Counties' policies, goals and actions for land use, water conservation, water reclamation, flood control, habitat protection and open space preservation
San Benito County General Plan	Update in progress	San Benito County	
The Santa Clara County General Plan (1995-2010)	December 1994	Santa Clara County	
Santa Cruz County General Plan 2030	June 2012	Santa Cruz County	
County Crop Reports	Annual	Counties	Information on agricultural production and trends
Hollister Area UWMP	June 2011	Sunnyslope County Water District, City of	Provides understanding of Hollister area's urban water needs, management, and planning objectives

Document Title/Data Type	Date	Prepared For	Description
		Hollister, and SBCWD	
Hollister Urban Area Water and Wastewater Master Plan (HUAWWMP)	2008	City of Hollister, Sunnyslope County Water District, County of San Benito, and SBCWD	Provides an understanding of the water and wastewater needs of the Hollister urban area as well as a plan of implementation for meeting those needs
Coordinated Water Supply and Treatment Plan	2010	City of Hollister, Sunnyslope County Water District, County of San Benito, and SBCWD	Provides an understanding of the water and wastewater needs of the Hollister urban area as well as a plan of implementation for meeting those needs
Hollister Urban Area Water and Wastewater Master Plan and Coordinated Water Supply Treatment Plan Final PEIR	2011	City of Hollister, Sunnyslope County Water District, County of San Benito, and SBCWD	Provides an understanding of the water and wastewater needs of the Hollister urban area as well as a plan of implementation for meeting those needs
Basin Management Plan Update	February 2014	PVWMA	Provides an understanding of groundwater management conditions and needs in the Pajaro Valley, basin management objectives, and projects and programs to address the objectives
Revised Basin Management Plan	February 2002	PVWMA	Groundwater sustainable yield
SBCWD Groundwater Management Plan Update for the San Benito County Part of the Gilroy-Hollister Groundwater Basin	May 2004	SBCWD and Water Resource Association of San Benito County	Provides understanding of San Benito groundwater issues and management plans in the San Benito County portion of the Gilroy-Hollister groundwater basin
Development of a Water Quality Monitoring Program – Hollister Groundwater Basin	June 2004	SBCWD	Groundwater quality data
SCVWD UWMP	May 2011	SCVWD	Provides an understanding of Santa Clara County water needs and management strategies
2012 Groundwater Management Plan	July 2012	SCVWD	Provides an understanding of groundwater management conditions and needs in the Llagas Groundwater Subbasin, basin management objectives, and projects and programs

Document Title/Data Type	Date	Prepared For	Description
			to address the objectives
Water Supply and Infrastructure Master Plan	2012	SCVWD	Presents SCVWD's water supply strategy for providing a reliable supply of water
South County Recycled Water Master Plan	October 2004	SCRWA & SCVWD	Provides understanding of South Santa Clara County plans for recycled water availability and use
South County Water Supply Plan (SCWSP)	July 2010	SCVWD	Provides specific strategies for ensuring a reliable supply of high quality water in southern Santa Clara County; prepared in conjunction with local land use agencies
2010 Groundwater Quality Report	June 2011	SCVWD	Groundwater quality data
Upper Llagas Creek Project DEIR	January 2014	SCVWD	Upper Llagas Creek flooding history and proposed project.
San Felipe Preventive Maintenance Shutdown, Final Study/Environmental Assessment	August 2003	SCVWD	For understanding of the environmental issues surrounding San Felipe Preventative Maintenance Shutdown
Pajaro River Bench Excavation Analysis (Supplemental) & Analysis 2	2004	Santa Cruz County Flood Control and Water Conservation District	Directly related to the Lower Pajaro River Bench Excavation Project, Pajaro River Flood Protection Program
Pajaro River Stable Planform Study – Pajaro River Channel Planform and Channel Forming Discharge Analysis	July 2003	Corps	For recommendations regarding lowering bench elevations as one of four methods proposed for restoring the Pajaro River channel to its original bankfull dimensions
Lower Pajaro River Enhancement Plan: For Green Valley, Casserly, Hughes, Tynan, Coward, and Thompson Creeks	December 2002	Santa Cruz County Resource Conservation District	Directly related to Erosion Control, Vegetative Treatment, and Riparian Restoration Project, which is part of the Pajaro River Water Quality Program
Final Environmental Impact Report Pajaro River and Salsipuedes and Corralitos Creeks Management and Restoration Plan, Santa Cruz County, California	February 2002	County of Santa Cruz	For understanding of the environmental impacts of environmental and restorative plans for the Pajaro River and tributaries

Document Title/Data Type	Date	Prepared For	Description
Regional Level			
Land Use Data	2010	NOAA	Land cover maps and analysis
Groundwater Basin Boundaries	2012	DWR	Groundwater basin boundaries
Pajaro River Watershed Study Reports Phase I Phase II Phase III Phase IV	July 2002 April 2003 February 2005 March 2005	Pajaro River Watershed Flood Prevention Authority (PRWFPA)	Directly related to Soap Lake Floodplain Preservation Project, Pajaro River Flood Protection Program
Pajaro River Watershed Water Quality Management Plan	June 1999	Association of Monterey Bay Area Governments	Provides understanding of AMBAG water quality management goals
Interregional Level			
Water Quality Control Plan for Central Coastal Basin (Basin Plan)	2011	Central Coast RWQCB	Provides understanding of the surface- and groundwater quality objectives of the Central Coast RWQCB.
TMDL Reports and Web Page	Accessed July 2014	Central Coast RWQCB	Information TMDLs that have been completed or are in process
Order No. R3-2012-0011 (Conditional Waiver of Waste Discharge Requirements for Discharges from Irrigated Lands	2012	Central Coast RWQCB	RWQCB requirements for irrigated lands
2010 Integrated Report	2010	U.S. Environmental Protection Agency	Information on TMDLs and pollutants in the Pajaro River Watershed
Action Plan IV: Agriculture and Rural Lands Water Quality Protection Program	October 1999	Monterey Bay National Marine Sanctuary	Provides understanding of the MBNMS water quality protection program, which has aided in the development of the Pajaro River Water Quality Program
2011State Water Project Reliability Report Delivery Reliability Report	2012	DWR	Imported water delivery projections
Designation of Critical Habitat for the California Tiger Salamander, Central Population; Final Rule	2005	U.S. Fish and Wildlife Service	Location of the critical habitat
South-Central California Coast Steelhead Recovery	2013	National Marine Fisheries Service	Location of critical habitat and specific biological objectives

Document Title/Data Type	Date	Prepared For	Description
Plan			
U.S. Census American Community Survey	2010	U.S. Census Bureau	Median Household Incomes
California Natural Diversity Database	Regularly Updated	California Department of Fish and Wildlife	Inventories of the status and location of plants and animals in California
California Water Plan Update	2009	DWR	Resource Management Strategies, climate change impacts and adaptation strategies
Draft California Water Plan Update	2013	DWR	Resource Management Strategies
Cal-Adapt	Regularly Updated	California Energy Commission (CEC)	Climate change data and projections
Using Future Climate Projections to Support Water Decision Making in California	2009	CEC	Climate change projections, and vulnerability analysis
Best Practice Approaches for Characterizing, Communicating, and Incorporating Scientific Uncertainty in Decisionmaking	2009	U.S. Climate Change Science Program	Climate change vulnerability analyses; adaptation strategies
Adapting to the Impacts of Climate Change	2010	National Academy of Sciences	Climate change vulnerability analyses; adaptation strategies
Synthesis of Adaptation Options for Coastal Areas	2009	U.S. EPA	Climate change vulnerability analyses; adaptation strategies
State of California Sea-Level Rise Interim Guidance Document	2010	California Climate Action Team Coastal and Ocean Working Goup	Climate change projections and vulnerability analysis
Climate Change Handbook for Regional Water Planning	2011	DWR and U.S. EPA	Climate change analysis and evaluation techniques; information references; summaries of vulnerabilities
The Future is Now: An Update on Climate Change Science, Impacts, and Response Options for California	2008	CEC	Climate change impacts
2009 California Climate Adaption Strategy	2009	California Natural Resources Agency	Climate change vulnerability analysis and adaptation strategies
Simulation of Climate Change in San Francisco Bay Basins, California:	2012	U.S. Geological Survey	Climate change projections

Document Title/Data Type	Date	Prepared For	Description
Case Studies in the Russian River Valley and Santa Cruz Mountains			

10.3 Data Gaps

During the course of the preparation of this IRWM Plan, data needs were identified by stakeholders and resource specialists working on the plan. Data needs identified for the region include:

- Data on sea level rise
- Improved projections of wetland response to sea level rise
- Projections of future habitat change
- Regional hydroclimate (hydrology and weather), including projections of microclimatic change and fog
- Statewide hydroclimate data on imported water supplies that show influence of climate change
- Updated climate change projections to reflect new data, methods, and improved understanding of climate change
- Weather variability (e.g., monthly averages of maximum and minimum daily air temperatures monthly precipitation and ET, etc.) Market saturation of water efficient fixtures

11 Relation to Local Water and Land Use Planning

The Pajaro River Watershed IRWM Plan process is designed to meet the collective needs of cities, counties, water and wastewater agencies and other stakeholders in the region. These entities have been involved in many planning efforts to develop goals and plans related to 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.

The Pajaro River Watershed IRWM Plan process was borne out of collaborative discussions regarding regional needs, proposed projects, and teaming for regional effectiveness. With the recognition that multiple agencies had shared needs and similar objectives, the RWMG has worked toward developing and implementing a regional plan and programs that could bring about integrated projects for the benefit of many stakeholders. This effort is supported by the MOU described in Chapter 1 that was signed by all Partners to support regional water resources management planning. This MOU demonstrated their dedication to joint coordination of local water resources planning efforts.

The IRWM Plan was developed in coordination with local agencies and the planning documents that have been produced for the Pajaro River Watershed region. These include General Plans, Urban Water Management Plans, and other plans covering a number of areas such as recycled water, groundwater management, water resources, and environmental enhancement. The relevance of these documents to the IRWM Plan is discussed below and summarized in Table 11-1, provided at the end of this chapter. Studies, analyses and assessments which directly support these plans are also shown. Coordination and collaboration occurred through meetings, teleconferences, workshops, and personal communications (See Chapter 12 – Stakeholder Involvement) with agencies and entities identified in this table to understand their various efforts, planning goals and objectives, and proposed water management strategies. This table is not intended to be a comprehensive list of every report reviewed, but does reflect many of the documents and efforts within the Pajaro River watershed. Table 11-1 also includes some plans that are currently being prepared. In the future, local planning efforts will be incorporated into the IRWM Plan through an ongoing local planning review process that will identify additional documents, efforts, and projects throughout the implementation of the IRWM Plan.

11.1 Relation to Local Water Planning

This chapter meets the following IRWM Plan Standard from the Integrated Regional Water Management Grant Program Guidelines.

> **Relation to Local Water Planning –** The IRWM Plan must document the local water planning documents on which it is based including:
>
> - A list of local water plans used in the IRWM Plan.
> - A discussion of how the IRWM Plan relates to planning documents and programs established by local agencies.
> - A description of the dynamics between the IRWM Plan and local planning documents.

11.1.1 Local Planning Documents

The IRWM Plan is built on a foundation of local water planning documents and serves as a means to coordinate the water-related portions of these planning efforts. The IRWM Plan thus provides a means of coordinating the diverse water planning documents developed for and within the Pajaro region.

11.1.1.1 Urban Water Management Plans

The IRWM Plan has been coordinated with various Urban Water Management Plans (UWMPs) that have recently been updated in the Pajaro River Watershed to comply with State of California requirements. UWMPs take into account city and county population growth projections developed at the local level and link these directly to the assessment of water supply needs. The UWMPs rely in part on other planning documents such as general plans and land use plans to provide these projections. The projected water demands from the UWMPs are utilized in the IRWM Plan to determine regional water supply needs. UWMPs also take into account local conservation and recycled water planning and provide a greater understanding of water needs and issues faced by local water agencies and communities.

11.1.1.2 Other Plans

Other plans in the Pajaro River Watershed consist of efforts to address specific water management issues. 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 within the Pajaro River Watershed. In most cases, these are multi-agency efforts that involve the participation of a number of 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 are included in the IRWM Plan. Examples of sub-regional plans are described below.

11.1.1.2.1 Pajaro Valley Revised Basin Management Plan

Lower Pajaro River Valley issues of seawater intrusion, overdraft and water supply, and water recycling have been determined as high priority issues through the IRWM Plan process. The Revised BMP is the result of a comprehensive planning effort to determine solutions to those issues and its recommended projects are incorporated into the IRWM Plan to address the local needs identified for that area of the watershed. As an indicator of the importance of the BMP, the City of Watsonville's General Plan specifically calls for the city to participate in the BMP.

11.1.1.2.2 Groundwater Management Plan Update for the San Benito County Portion of the Gilroy-Hollister Groundwater Basin

The Groundwater Management Plan (GMP) Update addresses groundwater issues such as groundwater quality, high groundwater levels and limited wastewater effluent disposal options, which are a priority in the San Benito County area. Many of the objectives described in the GMP Update are represented in the IRWM Plan objectives. The IRWM Plan includes a number of near- and long- term projects that were drawn from the GMP Update project toolbox.

11.1.1.2.3 Hollister Urban Area Water and Wastewater Management Plan

The Hollister Urban Area Water and Wastewater Management Plan was completed in 2011 through a partnership of the City of Hollister, SBCWD, and the Sunnyslope County Water District. The plan has three main components – expanded drinking water treatment, improved water supply reliability and recycled water, and protection of the groundwater basin – and is being implemented as the Hollister Urban Area Water Project. The project elements are included in the Pajaro River Watershed IRWM Plan.

11.1.1.2.4 Santa Clara Habitat Plan

The Santa Clara Habitat Plan (Habitat Plan) is a 50-year regional plan to protect endangered species and natural resources while allowing for future development in Santa Clara County. In 2013 the Habitat Plan was adopted by all local participating agencies (including SCVWD, the County of Santa Clara, and the

cities of Morgan Hill and Gilroy) and permits were issued from the US Fish and Wildlife Service and California Department of Fish and Wildlife. It is both a habitat conservation plan and natural community conservation plan, or HCP/NCCP. This planning document:

- Helps private and public entities plan and conduct projects and activities in ways that lessen impacts on natural resources, including specific threatened and endangered species.
- Identifies regional lands—called reserves—to be preserved or restored to benefit those species.
- Describes how reserves will be managed and monitored to ensure that they benefit those species.

In providing a long-term, coordinated program for habitat restoration and conservation, the Habitat Plan aims to enhance the viability of threatened and endangered species throughout the Santa Clara Valley. Thus, the plan is consistent with many of the IRWM Plan objectives listed under the Environmental Protection and Enhancement goal.

11.1.1.2.5 South County Water Supply Planning project

SCVWD completed the South County Water Supply Planning Project in 2010 in collaboration with the cities of Morgan Hill and Gilroy and the County of Santa Clara. The recommendations of the project included:

- Repair or replace the Main Avenue and Madrone Pipelines;
- Develop additional recycled water options, including turnouts along SCRWA's South Pipeline;
- Focus on groundwater recharge and recycling in future water supply planning efforts; and
- Continue groundwater protection efforts.

These recommendations have been incorporated into the Pajaro IRWM Plan goals and objectives, resource management strategies, and projects. The IRWM Plan strives to include all possible existing local and sub-regional water plans and projects and to integrate these at the scale of the Pajaro River Watershed Region to identify additional opportunities for linkages and integration between sub-regions.

11.1.1.2.6 Central Coast RWQCB Basin Plan

The Central Coast RWQCB Basin Plan contains goals for protecting and enhancing all basin waters, allowing unrestricted use of surface waters, efficient management of wastewater, and utilization of recycled water and reducing man-made erosion. These goals are all reflected in the IRWM Plan objectives. In addition, implementation of the IRWM Plan will contribute directly towards helping meet these goals. For instance, the Pajaro Valley Basin Management Plan includes water recycling as an essential component. The Pajaro River Watershed IRWM Plan has objectives and projects that provide for TMDL implementation and NPS pollution management, which is a major water quality focus of the Central Coast RWQCB.

11.1.2 Linkages and Interaction with Local Plans

The IRWM Plan builds upon a number of previously completed and use planning documents. The role of the IRWM Plan is to consolidate the projects and programs within these documents and allow them to be considered and prioritized at a regional level through the stakeholder process. Local plans can then be updated to account for the impact of regional implementation on local planning. For instance, the City of Watsonville will need to update its General Plan as specified water supply and flood control actions become implemented through the IRWM Plan. As the Soap Lake Floodplain Preservation Project proceeds, the Counties of San Benito and Santa Clara may need to update their General Plans and add the

goal of maintaining flood attenuation benefits of the Soap Lake floodplain. Mechanisms for maintaining active stakeholder involvement will help to ensure that these updates occur as the opportunities arise.

11.1.3 Coordination of Water Management Planning Activities

The projects included in the IRWM Plan will effectively implement many of the local plans that are its foundation and serve as sources of projects. This includes the BMP, the Pajaro River Watershed Studies, the Hollister Urban Area Water and Wastewater Management Plan, the SCWSP, the Habitat Plan, the Lower Pajaro River Enhancement Plan and the Pajaro River Parkway Plan. The RWMG will continue to participate in local water planning activities and incorporate the results of those planning activities into IRWM planning and implementation.

11.2 Relation to Local Land Use Planning

This chapter meets the following IRWM Plan Standard from the Integrated Regional Water Management Grant Program Guidelines:

Relation to Local Land Use Planning – IRWM Plans must contain processes that foster communications between land use managers and RWMGs with the intent of effectively integrated water management and land use planning. IRWM Plans must document:

- Current relationship between local land use planning, regional water issues, and water management objectives.
- Future plans to further a collaborative, proactive relationship between land use planners and water managers.

General Plans for municipalities in the Pajaro region have provided critical background information and have fed into the IRWM Plan goals and objectives. The IRWM Plan projects will implement many actions called for in the cities' and counties' General Plans, such as reduction of groundwater overdraft, water conservation, water recycling, flood protection, habitat restoration and open space creation. Some examples of specific General Plan policies or actions implemented by IRWM Plan projects are placing development restrictions in flood areas (City of Gilroy), wetlands preservation and enhancement (City of Hollister), and upgrades to the Corralitos filter plant (City of Watsonville).

11.2.1 General Plans

The IRWM Plan has been coordinated with the elements of local General Plans through the stakeholder involvement of cities and counties within the Pajaro River Watershed. General Plans provide land use, environmental, economic, administrative, and other pertinent information with regard to the use, need, quantity, quality, and management of water resources within a particular jurisdiction. General Plans also chart existing and future goals and objectives to be accomplished for the communities they describe, and can provide valuable insight into the needs, priorities, and values of the local community. These elements have been considered and have helped to shape the water resources management needs identified in this IRWM Plan for the communities of the Pajaro River watershed.

To assist in development of the IRWM Plan, the General Plans of the major cities (Gilroy, Hollister, Morgan Hill and Watsonville) and all of the counties (Monterey, San Benito, Santa Clara and Santa Cruz) that comprise the region were reviewed. The IRWM Plan goals of water supply, water quality, flood protection and environmental protection and enhancement are consistent with local needs expressed in the General Plans as discussed below.

11.2.1.1 Water Supply Goal

The IRWM Plan Water Supply goal contains objectives of meeting future water demand, promoting water conservation and increasing recycled water usage. These objectives mirror planning goals as expressed in the General Plans. All General Plans 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. The expanded use of recycled water is specifically called for in the General Plans of the Cities of Gilroy, Hollister and Watsonville.

11.2.1.2 Water Quality Goal

All of the General Plans stressed the need for maintaining high levels of water quality, and this is supported through objectives contained in the IRWM Plan Water Quality Goal. One of the major water quality issues listed in the General Plans of Monterey County and the City of Watsonville is seawater intrusion, which has been brought on by overdraft of the groundwater basin. Prevention of seawater intrusion is implicit within the IRWM Plan water quality objectives, consistent with action items found in these General Plans. The IRWM Plan objective of minimizing impacts from surface water runoff through Best Management Practices is consistent with all of the cities' General Plans and many of the Counties' General Plans which specify actions such as the use of stormwater detention basins and the preservation of permeable surfaces for stormwater management.

11.2.1.3 Flood Protection Goal

Flood Mitigation is recognized as a high priority item by the City of Watsonville, Santa Cruz County and Monterey County in their General Plans, consistent with the IRWM Plan emphasis on achieving flood protection in the Lower Pajaro area of the watershed in the immediate term. Goals, actions and policies consistent with other IRWM Plan Flood Protection objectives such as protecting infrastructure from a 100- year flood; preserving and enhancing ecologic and stream functions; and providing community benefits beyond flood protection can be found in all chapters of the General Plans that discuss flood control.

11.2.1.4 Environmental Protection and Enhancement Goal

The IRWM Plan objectives under the Environmental Protection and Enhancement Goal are consistent with provisions listed in all of the General Plans regarding habitat restoration, open space and protection of the Monterey Bay. The Gilroy General Plan contains specific implementation actions to preserve and protect natural resource and habitat areas, which include both Uvas Creek and Llagas creek riparian communities, preserve greenbelts and recreational lands. Other General Plans call for actions consistent with IRWM Plan projects such as wetland restoration programs and removal of non-native plants. The IRWM Plan objective of supporting Monterey Bay marine life is consistent with a chapter in the City of Watsonville's General Plan that recognizes the Monterey Bay as a National Marine Sanctuary and calls for specific actions to protect it.

The IRWM Plan projects will also implement many actions called for in the cities' and counties' General Plans, such as reduction of groundwater overdraft, water conservation, water recycling, flood protection, habitat restoration and open space creation. Some examples of specific General Plan policies or actions implemented by IRWM Plan projects are placing development restrictions in flood areas (City of Gilroy), wetlands preservation and enhancement (City of Hollister), and upgrades to the Corralitos filter plant (City of Watsonville).

11.2.2 Current and Future Relationships with Local Land Use Agencies

Local water and land use agencies have a history of coordinating on shared topics and interests, such as planning for infrastructure for water and wastewater facilities to address unmet and future needs. As previously described, land use agencies including cities and counties have participated to varying degrees in the Pajaro IRWM planning process since its inception.

Coordination with cities and counties as well as other land use decision-makers has occurred through the stakeholder process and allowed land use considerations to be fully incorporated into the IRWM Plan while also ensuring that future land use decisions necessary for successful IRWM Plan implementation will be supported at the local level. As discussed above, coordination with land use planners and water planners has occurred through sub-regional efforts such as the Pajaro Valley Basin Management Plan, Hollister Urban Area Water and Wastewater Management Plan, the South County Water Supply Planning Project, and the Habitat Plan. The results of these efforts have been integrated into the IRWM Plan. The Pajaro River Watershed Flood Prevention Authority is a JPA of the counties in the watershed and the Monterey County Water Agency, SBCWD, SCVWD, and the Santa Cruz County Flood Control and Water Conservation District Zone 7. The counties of Santa Cruz and Monterey are the local sponsors, in coordination with the Corps, for the Pajaro River Risk Reduction Project, which is a critical IRWM Plan project.

Land use 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.

11.2.3 Plans to Further Collaboration between Land Use Planners and Water Managers

The following actions are proposed to further collaboration between land use planners and water managers in the region in the future.

- Increase the Frequency of Periodic City-County-Water Agency Planning Meetings: The RWMG will continue to encourage city and county planners and local water managers to hold joint planning meetings at regular intervals to improve communication and efficiencies. Joint planning meetings can be held at the staff level and/or by governing boards. Both options provide value in different ways, and both should be continued.

- Water Resource Planning Forum: To develop a better understanding and mutual appreciation of the issues and constraints faced by land use and water managing agencies (including the mission, priorities, and decision-making organization of these entities) the RWMG could host a forum where agency representatives present targeted information regarding their organization's mission, constraints, overlapping areas of interest, potential conflicts in priorities or objectives, and potential areas for improved coordination.

- Climate Change: Utilize climate change as a common denominator to encourage agency collaboration for integrated solutions. For example, SCVWD is part of Santa Clara County's Silicon Valley 2.0 effort to develop a climate action plan.

- Increase Land Use Agency Participation in the IRWM Process: Currently, the Pajaro River Watershed IRWM Plan Stakeholder Steering Committee includes representatives from the County of Santa Cruz and the City of Watsonville. The RWMG will continue to encourage participation from land use agency staff in Santa Clara and San Benito counties.

Through these actions, collaboration and more effective coordination between and among land use planners and water managers will be enhanced.

11.3 Conclusions

The Pajaro River Watershed 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 Plan process. Stakeholder workshops have been conducted to provide a forum for interaction and collaboration and to allow the IRWM Plan to interface with local planning efforts. Such stakeholder involvement and participation ensures that local agency planning (and their respective goals and objectives) are represented and considered in the Pajaro River Watershed IRWM Plan process. Local planning strategies are at the heart of this IRWM Plan and have played a dynamic role in its development.

Existing planning documents and current planning efforts are, and will continue to be, an integral part of the IRWM Plan process. As previously described, existing planning documents were reviewed to identify needs and issues in the region and were used to develop IRWM Plan goals, objectives, strategies, and integrated implementation programs. Together, local planning documents and stakeholder input have provided the basis to complete the IRWM Plan development effort and have provided direction to the RWMG with regard to the most feasible and beneficial water management strategies to pursue. The RWMG and its members will continue to collaborate and partner with local land use agencies to further integration and coordination of land use planning and water management.

Table 11-1: Major Planning Documents Utilized for IRWM Planning

Document Title/Description	Publication Date	Agency/Entity	Relation to IRWM Plan
General Plans			
City of Gilroy General Plan	June 2002	City of Gilroy	Provides list of Cities' policies, goals and actions for land use, water conservation, water reclamation, flood control, habitat protection and open space preservation
City Hollister General Plan	December 2005	City of Hollister	
City of Morgan Hill General Plan	July 2001	City of Morgan Hill	
City of Watsonville General Plan	February 2006	City of Watsonville	
Monterey County General Plan 2010	November 2010	Monterey County	Provides list of Counties' policies, goals and actions for land use, water conservation, water reclamation, flood control, habitat protection and open space preservation
San Benito County General Plan	Update in progress	San Benito County	
The Santa Clara County General Plan (1995-2010)	December 1994	Santa Clara County	
Santa Cruz County General Plan 2030	June 2012	Santa Cruz County	
Urban Water Management Plans			
City of Watsonville Urban Water Management Plan UWMP 2010	June 2011	City of Watsonville	Provides understanding of Watsonville urban water needs, management, and planning objectives

Document Title/Description	Publication Date	Agency/Entity	Relation to IRWM Plan
Hollister Area UWMP	June 2011	Sunnyslope County Water District, City of Hollister, and SBCWD	Provides understanding of Hollister area's urban water needs, management, and planning objectives
SCVWD UWMP	May 2011	SCVWD	Provides understanding of Santa Clara County water needs and management strategies
Other Plans			
Biological Assessment Pajaro River and Salsipuedes and Corralitos Creeks Management and Restoration Plan Santa Cruz County, California	September 2001	County of Santa Cruz	Provides understanding of biological and restorative plans within the Pajaro River
City of Hollister Long-Term Wastewater Management Plan	December 2005	City of Hollister	Provides plan for wastewater treatment, effluent management and recycled water for the City of Hollister. Identifies projects and schedule of implementation.
Hollister Urban Area Water and Wastewater Master Plan (HUAWWMP)	January 2011	City of Hollister, Sunnyslope County Water District, and SBCWD	Provides an understanding of the water and wastewater needs of the Hollister urban area as well as a plan for implementation for meeting those needs
Lower Pajaro River Enhancement Plan: For Green Valley, Casserly, Hughes, Tynan, Coward, and Thompson Creeks	December 2002	Santa Cruz County Resource Conservation District	Directly related to Erosion Control, Vegetative Treatment, and Riparian Restoration Project, which is part of the Pajaro River Water Quality Program
Pajaro River Watershed Study Reports Phase I Phase II Phase III Phase IV	 July 2002 April 2003 February 2005 March 2005	Pajaro River Watershed Flood Prevention Authority (PRWFPA)	Directly related to Soap Lake Floodplain Preservation Project, Pajaro River Flood Protection Program
Pajaro River Watershed Water Quality Management Plan	June 1999	Association of Monterey Bay Area Governments	Provides understanding of AMBAG water quality management goals
Basin Management Plan	February 2014	PVWMA	Provides an understanding of groundwater management conditions and needs in the Pajaro Valley, basin management objectives, and projects

Document Title/Description	Publication Date	Agency/Entity	Relation to IRWM Plan
			and programs to address the objectives
SBCWD Groundwater Management Plan Update for the San Benito County Part of the Gilroy-Hollister Groundwater Basin	May 2004	SBCWD and Water Resource Association of San Benito County	Provides understanding of San Benito groundwater issues and management plans in the San Benito County portion of the Gilroy-Hollister groundwater basin
SCVWD Groundwater Management Plan	2012	SCVWD	Provides an understanding of groundwater management conditions and needs in Santa Clara County, basin management objectives, and projects and programs to address the objectives
Water Supply and Infrastructure Master Plan	2012	SCVWD	Presents SCVWD's water supply strategy for providing a reliable supply of water
South County Recycled Water Master Plan	October 2004	SCRWA & SCVWD	Provides understanding of South Santa Clara County plans for recycled water availability and use
South County Water Supply Plan (SCWSP)	July 2010	SCVWD	Provides specific strategies for ensuring a reliable supply of high quality water in southern Santa Clara County; prepared in conjunction with local land use agencies
Water Quality Control Plan for Central Coastal Basin (Basin Plan)	2011	Central Coast RWQCB	Provides understanding of the surface- and groundwater quality objectives of the Central Coast RWQCB.
Analyses, Assessments, Reports and Studies			
Salsipuedes Creek Maintenance Analysis (File #50275)	February 2005	Santa Cruz County Flood Control and Conservation District Zone 7	Provides technical understanding of Salsipuedes Creek hydrology, hydraulics, and sedimentation and further understanding of Lower Pajaro River watershed dynamics and maintenance activities
Pajaro River Bench Excavation Analysis 1 (Supplemental) & Analysis 2	February 2004 October 2004	Santa Cruz County Flood Control and Conservation District Zone 7	Directly related to the Lower Pajaro River Bench Excavation Project, Pajaro River Flood Protection Program
Pajaro River Bench Excavation Project, Tree Resource Evaluation/ Sediment Excavation Impact Assessment	May 2005	Santa Cruz County Public Works Department	Directly related to the Lower Pajaro River Bench Excavation Project, Pajaro River Flood Protection Program
File #50275; Memo, RE: Pajaro River Bench	October	Santa Cruz County Flood	For technical understanding of the

Document Title/Description	Publication Date	Agency/Entity	Relation to IRWM Plan
Excavation Analysis;	2004	Control and Conservation District Zone 7	Pajaro River Bench Excavation Project
Soap Lake Floodplain Preservation Project – Draft Initial Study and Negative Declaration	September 2004	PRWFPA	Directly related the Soap Lake Floodplain Preservation Project, Pajaro River Flood Protection Program
Watsonville Area Water Recycling Project Feasibility Study	August 2004	City of Watsonville and PVWMA	Directly related to the WRWTF & CDS projects, Pajaro Valley Water Supply Program
Technical Report for an Iron and Manganese Treatment Facility at the San Juan Road Well Site for the Pleasant Acres and San Juan Road Wells	August 2004	Aromas Water District	Provides understanding of the Aromas Wellhead Treatment Project
San Benito County Regional Recycled Water Project Feasibility Study Report – Draft	May 2004	SBCWD and Water Resource Association of San Benito County	Provides understanding of San Benito County Recycled Water project plans
Pajaro River Flood Control Project Alternative Formulation Briefing Document (F4a Milestone)	April 2004	Corps, San Francisco District	Directly related to the Corps Pajaro Levee Reconstruction Project, Pajaro River Flood Protection Program
Pajaro River Bench Excavation Analysis 1 (File #50275)	January 2004	Santa Cruz County Flood Control and Conservation District Zone 7	Directly related to the Lower Pajaro River Bench Excavation Project, Pajaro River Flood Protection Program
San Felipe Preventive Maintenance Shutdown, Final Study/Environmental Assessment	August 2003	SCVWD	For understanding of the environmental issues surrounding San Felipe Preventative Maintenance Shutdown
Pajaro River Stable Planform Study – Pajaro River Channel Planform and Channel Forming Discharge Analysis	July 2003	Corps	For recommendations regarding lowering bench elevations as one of four methods proposed for restoring the Pajaro River channel to its original bankfull dimensions
SCVWD Groundwater Conditions 2002/2003	January 2005	SCVWD	For understanding of existing groundwater conditions in SCVWD jurisdiction
Final Environmental Impact Report Pajaro River and Salsipuedes and Corralitos	February 2002	County of Santa Cruz	For understanding of the environmental impacts of environmental and restorative plans for the Pajaro River

Document Title/Description	Publication Date	Agency/Entity	Relation to IRWM Plan
Creeks Management and Restoration Plan, Santa Cruz County, California			and tributaries
Action Plan IV: Agriculture and Rural Lands Water Quality Protection Program	October 1999	Monterey Bay National Marine Sanctuary	Provides understanding of the MBNMS water quality protection program, which has aided in the development of the Pajaro River Water Quality Program
Final EIR for the Long Term Wastewater Management Plan, Cities of Gilroy and Morgan Hill	May 1990	South County Regional Wastewater Authority	Provides understanding of Gilroy and Morgan Hill wastewater management plans/needs

12 Native American and Stakeholder Involvement

This chapter meets the following standard from the 2012 Integrated Regional Water Management Grant Program Guidelines.

> **Native American Tribes and Stakeholder Involvement** – The IRWM Plan must contain the following items:
>
> - A public process that provides outreach and an opportunity to participate in IRWM Plan development and implementation to the appropriate local agencies and stakeholders, as applicable to the region.
> - The process used to identify, inform, invite, and involve stakeholder groups in the IRWM process, including mechanisms and process that have been or will be used to facilitate stakeholder involvement and communication during development and implementation of the IRWM Plan.
> - A discussion on how the RWMG will endeavor to involve DACs and Native American Tribal communities in the IRWM planning effort.
> - A description of the decision making process including IRWM committees, roles, or positions that stakeholders can occupy and how a stakeholder goes about participating in those committees, roles, or positions regardless of their ability to contribute financially to the Plan.
> - A discussion regarding how stakeholders are necessary to address the objectives and resource management strategies of the IRWM Plan and are involved or are being invited to be involved in Plan activities.
> - A discussion of how collaborative processes will engage a balance of the interest groups listed above in the IRWM process regardless of their ability to contribute financially to the IRWM Plan's development or implementation.

The Pajaro River Watershed IRWM Plan process is built upon the premise that future implementation of an IRWM Plan would not be possible unless the objectives and strategies were first identified, prioritized and developed by the affected stakeholders. As a result, stakeholder involvement is a central element to the Pajaro River Watershed IRWM planning process and implementation success will necessarily involve water management strategies that address the concerns of local communities and reflect the public's interests and values within the watershed.

Stakeholder involvement is a central element to the Pajaro River Watershed IRWM planning process. With this in mind, numerous stakeholder groups throughout the Pajaro River Watershed were identified and contacted, and several public announcements were published in regional newspapers to reach the general public. These outreach efforts were successful in obtaining stakeholder input during the planning process. Stakeholders have participated through various stakeholder meetings, stakeholder steering committee meetings and regular correspondence with the RWMG to develop, influence, and complete the IRWM Plan. It is anticipated that active stakeholder involvement will continue during implementation of the IRWM Plan.

12.1 Stakeholder Identification

Stakeholders were initially identified through discussions with local agencies and organizations with jurisdiction, projects, and stakeholder experience in the Pajaro River Watershed. Throughout the IRWM planning process, the stakeholder list has continued to evolve as new organizations or individuals have

been added and, in some cases, have been removed from the list, as requested. Stakeholders identified to date include those shown in Table 12-1. The stakeholder list is expected to evolve over time; therefore, additional stakeholders are expected to be identified and contacted for their on-going participation in IRWM planning and project generation. Individuals may request to be added to the stakeholder list by e-mailing the RWMG representatives at the following addresses:

RWMG Representative	Agency	E-Mail Address
Tracy Hemmeter	SCVWD	themmeter@valleywater.org
Mary Bannister	PVWMA	bannister@pvwma.dst.ca.us
Jeff Cattaneo	SBCWD	jcattaneo@sbcwd.com

A special effort has been made to identify and involve disadvantaged communities in the region, such as residents of the City of Watsonville, and the county-level disadvantaged communities of Pajaro, Amesti and Freedom. These communities were encouraged to be actively involved in the planning process and to proactively address environmental justice concerns. Stakeholder meetings were held in locations throughout the watershed to encourage widespread participation and to accommodate stakeholders with limited resources and opportunities to travel to meetings.

The IRWM planning process has focused on identifying as broad a range of stakeholders as possible and the list includes organizations dealing with all aspects of water resource management, including water supply, water quality, flood protection and environmental protection and enhancement. Previously, stakeholder groups coalesced around project- or community-driven efforts, which tended to be more narrowly focused on specific water management strategies developed by various agencies and organizations in the watershed. There is increasing awareness that it is beneficial to integrate the efforts of these stakeholders groups. Catastrophic events, such as Pajaro River flooding, have heightened awareness of the necessity of local communities to collaborate in developing effective water management strategies throughout the region. Furthermore, stakeholders recognize the need to work together given their shared dependence on limited local water supplies in the watershed. Additionally, stakeholders are already teaming up to maintain water quality levels that meet various beneficial uses by implementing such programs as agricultural water quality and irrigation mitigation programs. Other stakeholders have demonstrated a desire to collaboratively implement environmental restoration and habitat protection in the Pajaro River Watershed. All of these efforts demonstrate willingness to pool resources and act collaboratively to develop water management strategies that provide multiple benefits to the watershed and its communities. The Pajaro River Watershed IRWM planning process has created a forum for many of these stakeholders to come together to work collaboratively on their shared and/or overlapping issues. In order to make this forum most effective, steps have been taken to identify as many of the potential stakeholders with water management interests in the Pajaro River Watershed as possible, and to make them aware of the IRWM process.

Table 12-1: Stakeholders in the Pajaro River Watershed IRWM Plan

Stakeholder	Description of Authority/Interests
Aromas Water District	Aromas Water District is located on the westerly edge of the PVWMA service area. This special district provides water treatment and supply service for approximately 750 customers.

Stakeholder	Description of Authority/Interests
Association of Monterey Bay Area Governments (AMBAG)	AMBAG was organized for the permanent establishment of a forum for planning, discussion and study of regional problems of mutual interest and concern to the counties and cities in Monterey, San Benito, and Santa Cruz Counties; and for the development of studies, plans, policies and action recommendations.
California Coastal Conservancy	The California Coastal Conservancy works with other groups to protect, conserve, restore, and enhance environmental and human-based resources of the California coast and ocean for environmentally sustainable and prudent use by current and future generations.
Central Coast Agricultural Water Quality Coalition	This coalition is a partnership of Central Coast growers organized through their respective county Farm Bureaus. Established by the California Farm Bureau, six Central Coast counties receive grant monies to fund research and monitoring of agricultural water quality effects. The Coalition is working to identify local water quality threats and learn about economically viable water quality protection practices. The various county Farm Bureau program coordinators assist watershed groups to implement these practices.
Central Coast Regional Water Quality Control Board (RWQCB) – Region 3	The Central Coast RWQCB is a regulatory extension of the State Water Resources Control Board. The Central Coast RWQCB coordinates and controls the quality of water in its region through the protection of beneficial uses, the development of water quality objectives to protect the beneficial uses, and implementation planning to accommodate the water quality objectives. This entity was established by the Porter-Cologne Water Quality Control Act (1969), which became Division Seven ("Water Quality") of the State Water Code. The State Water Code establishes the responsibilities and authorities of the nine RWQCBs (previously called Water Pollution Control Boards) and the State Water Resources Control Board (SWRCB). The federal Clean Water Act (Public Law 92-500, as amended) provides for the delegation of certain responsibilities in water quality control and water quality planning to the states. Where the Environmental Protection Agency (EPA) and the SWRCB have agreed to such delegation, the Regional Boards implement portions of the Clean Water Act, such as the National Pollutant Discharge Elimination System (NPDES) program and toxic substance control programs
Central Coast Resource Conservation & Development Council	The Central Coast Resource Conservation & Development Council serves South Santa Clara, San Benito, Santa Cruz, Monterey, San Luis Obispo, and Santa Barbara Counties. The council's activities focus on agritourism, steelhead habitat enhancement, water quality education, coordinated resource management and planning (CRMP) coordination and permit streamlining.

Stakeholder	Description of Authority/Interests
City of Gilroy	Located in South Santa Clara County, the City of Gilroy provides water service to residences and businesses. Gilroy is a South County Regional Wastewater Authority (SCRWA) Partner which provides wastewater service for the Cities of Gilroy and Morgan Hill.
City of Hollister	The City of Hollister is a major urban service area in San Benito County. The City of Hollister provides various municipal and industrial (M&I) services include wastewater collection and treatment and water supply service.
City of Morgan Hill	Located in South Santa Clara County, the City of Morgan Hill provides water service to residences and businesses. Morgan Hill is a SCRWA Partner that provides wastewater service for the Cities of Morgan Hill and Gilroy.
City of San Juan Bautista	Located in San Benito County, the City of San Juan Bautista provides wastewater and water services. San Juan Bautista is a member of the Water Resource Association of San Benito County.
City of Watsonville	The City of Watsonville is a major urban service area within PVWMA. The City provides various M&I services including wastewater collection and treatment and water supply service.
County of Monterey	The County of Monterey is a government agency with land use jurisdiction within its boundaries. The County also manages water and sanitation systems in unincorporated County Service Areas. The southern portion of the PVWMA service area is in Monterey County.
County of San Benito	The County of San Benito is a government agency with land use jurisdiction within its boundaries. A significant portion of the upper Pajaro River watershed (including the San Benito River) is within San Benito County.
County of Santa Clara	The County of Santa Clara is a government agency with land use jurisdiction within its boundaries. A portion of the upper Pajaro River watershed is within Santa Clara County.
County of Santa Cruz	The County of Santa Cruz is a government agency with land use jurisdiction within its boundaries. The County of Santa Cruz also has jurisdiction over stormwater, drainage, watershed management, water resources management and water quality protection for the unincorporated areas of Santa Cruz County. The northern portion of the PVWMA service area is in Santa Cruz County.

Stakeholder	Description of Authority/Interests
Farm Bureaus (Monterey County, San Benito County, Santa Clara County, and Santa Cruz County)	Farm Bureaus are organized on a county, state, and national level with the county Farm Bureaus serving as the core of the organization. Santa Cruz, Monterey, San Benito and Santa Clara Counties each have their own Farm Bureau. The Farm Bureau is a voluntary, nongovernmental, nonpartisan organization of farm and ranch families seeking solutions to the problems that affect their lives, both socially and economically. The Central Coast Agricultural Water Quality Coalition is the local Farm Bureau partnership that works with growers within the Pajaro River watershed.
Land Trust of Santa Cruz County	The land trust is a community-based nonprofit organization that works cooperatively with land owners, government entities, and other organizations to protect and manage lands of significant value. Their primary focuses are protecting prime agricultural lands, protecting lands with significant habitat value, and providing effective stewardship of lands already protected.
Monterey Bay National Marine Sanctuary (MBNMS)	The MBNMS mission is to understand and protect the coastal ecosystem of Central California. The MBNMS is an extension of the National Oceanic and Atmospheric Administration (NOAA) National Marine Sanctuary Program (NMSP). The NMSP mission is to serve as the trustee for the nation's system of marine protected areas, to conserve, protect, and enhance their biodiversity, ecological integrity and cultural legacy. Its goals are appropriate to the unique diversity contained within individual sites. They may include restoring and rebuilding marine habitats or ecosystems to their natural condition or monitoring and maintaining already healthy areas.
Monterey County Water Resources Agency (MCWRA)	MCWRA is a special district formed to manage, protect, and enhance the quantity and quality of water and provide specified flood control services for Monterey County, and to be a leader in efficient, innovative, and equitable water resources management for the County. As a County water agency and stakeholder, MCWRA has an interest in flood prevention and water supply management of the lower Pajaro River that falls within its jurisdiction.

Stakeholder	Description of Authority/Interests
Pajaro River Watershed Flood Prevention Authority (PRWFPA)	PRWFPA was established in 2000 by the State of California Assembly Bill 807 to identify, evaluate, fund, and implement flood prevention and control strategies in the Pajaro River watershed, on an intergovernmental basis. Since the Pajaro River watershed covers an area within four counties (Santa Clara, San Benito, Santa Cruz, and Monterey) and four water districts (Santa Clara Valley Water District; San Benito County Water District; Santa Cruz County Flood Control and Water Conservation District, Zone 7; and Monterey County Water Resources Agency), the PRWFPA is comprised of one representative from each of the eight interested agencies. The PRWFPA is a governing body through which each member organization can participate and contribute to finding a method to provide flood protection in the watershed and promote general watershed interests. A further goal is to identify and prioritize strategies and projects that will provide multiple benefits, such as water supply, groundwater recharge, or environmental restoration and protection benefits.
Pajaro/Sunny Mesa Community Services District	Pajaro/Sunny Mesa Community Services District is a water supplier for smaller communities in the Pajaro Valley and has consolidated water delivery service for a number of mutual water companies in northern Monterey County.
Pajaro Valley Chamber of Commerce	The Pajaro Valley Chamber of Commerce promotes Watsonville and surrounding community areas and is dedicated to advancing the business success of its members.
Planning and Conservation League Foundation	The Planning and Conservation League Foundation mission is to ensure that California continues to be an attractive, livable, and equitable state by engaging in cutting-edge environmental public policy research, and educating and empowering local communities to understand and participate in local and state environmental decision making processes. The Planning and Conservation League Foundation also produces publications that educate the public about environmental challenges in the areas of planning, natural resource conservation, environmental protection, clean air, clean water, sustainable energy policies, and environmental justice.
Resource Conservation Districts (RCDs)	California RCDs are special districts organized under the state Public Resources Code, Division 9. The RCDs in the Pajaro Watershed are the Santa Cruz RCD, Monterey County RCD, San Benito RCD and Loma Prieta RCD. Each district has a locally elected or appointed volunteer board of directors made up of landowners in that district. Interests of the RCDs which relate to water management include water quality, wildlife habitat restoration, soil erosion control, and conservation education. RCDs are a source of technical assistance and can provide a critical link between the goals and objectives of the IRWM Plan and the land owners and managers that are integral to implementing actions.

Stakeholder	Description of Authority/Interests
San Benito County Agricultural Land Trust	This land trust is devoted to providing financial options to landowners in order to protect the agricultural heritage of San Benito County. The land trust can protect land permanently and directly by accepting donations of conservation easements designed to meet the individual needs of landowners. As a non-profit, tax-exempt organization, the Trust is funded through membership, donations and grants.
San Benito County Chamber of Commerce	The San Benito County Chamber of Commerce is organized for the purpose of creating, promoting, and celebrating economic vitality within San Benito County by providing resources to businesses and individuals.
San Martin Neighborhood Alliance	This community alliance encompasses local topics and issues.
Santa Clara County Open Space Authority	The immediate high priorities of the Open Space Authority are preservation of open spaces and creation of greenbelts between communities, lands on the valley floor, hillsides, viewsheds and watersheds, baylands and riparian corridors. The Open Space Authority promotes land preservation to maintain the quality of life in the County and to encourage outdoor recreation and continuing agricultural activities. It promotes development and implementation of land management policies that provide proper care of open space lands and allow public access appropriate to the nature of the land for recreation.
Santa Cruz County Flood Control and Water Conservation District, Zone 7 (SCCFC&WCD)	This district is governed by the Santa Cruz County Board of Supervisors, City of Watsonville, and PVWMA. It provides flood control services to Santa Cruz County except the cities of Santa Cruz, Scotts Valley and Capitola. As a County agency and stakeholder, SCCFC&WCD has an interest in flood prevention of the lower Pajaro River that falls within its jurisdiction.
Sierra Club, Loma Prieta Chapter	This local chapter of the Sierra Club is committed to participating in the South Santa Clara County Habitat Conservation Plan/Natural Communities Conservation Plan. The planning area includes the Uvas-Llagas watershed, which is a tributary to the Pajaro River.
Sierra Club, Ventana Chapter	This local chapter of the Sierra Club is interested in preserving the Pajaro River and its watershed through environmental activism.
Silicon Valley Land Conservancy	The Silicon Valley Land Conservancy is a nonprofit entity formed to preserve and protect the remaining open space in Silicon Valley.
Soquel Creek Water District	This government agency provides water resource management for communities in mid-Santa Cruz County.
South County Regional Wastewater Authority	South County Regional Wastewater Authority is the regional wastewater authority for South Santa Clara County, primarily serving the Cities of Gilroy and Morgan Hill. SCRWA has partnered with the Santa Clara Valley Water District to expand water recycling in southern Santa Clara County.

Stakeholder	Description of Authority/Interests
South Valley Streams for Tomorrow	This organization is concerned with streams in South Santa Clara County and tributaries of the Pajaro River in Santa Clara and San Benito Counties.
Sunnyslope County Water District	Sunnyslope County Water District is a water and wastewater management district for a portion of the City of Hollister and the Ridgemark Development in San Benito County.
The Nature Conservancy (TNC)	TNC is a leading international, nonprofit organization dedicated to preserving the diversity of life on Earth. Their mission is to preserve the plants, animals and natural communities that represent the diversity of life on Earth by protecting the lands and waters they need to survive. TNC is currently working on projects within the Pajaro River watershed that promotes private lands conservation and other conservation practices. They work with landowners, communities, cooperatives and businesses to establish local groups that can protect land.
U.S. Army Corps of Engineers (Corps)	The Corps provides engineering and environmental services throughout the nation. The Corps is currently conducting a flood risk management study on the lower Pajaro River and tributaries.
Water Resources Association of San Benito County	The Water Resource Association is comprised of the SBCWD, San Benito County Government, Sunnyslope County Water District, City of Hollister, and City of San Juan Bautista.
Watsonville Wetlands Watch	The Watsonville Wetlands Watch is a nonprofit community based organization dedicated to the protection, restoration and appreciation of the wetlands of the Pajaro Valley.
Wildlands, Inc.	Wildlands, Inc. is a habitat development and land management company with projects throughout California and the western United States. Wildlands is one of the nation's first private organizations to establish mitigation banks and conservation banks that protect wildlife habitat in perpetuity.

12.2 Stakeholder Steering Committee

Since formally launching the Pajaro River Watershed IRWM Plan effort in early 2005, the RWMG has been proactive and focused on ensuring stakeholders are aware of, informed about, and participating in IRWM planning and implementation. This included formation of a Stakeholder Steering Committee (SSC) in 2005. This committee provided a forum for on-going discussion and stakeholder input, and provided review and stakeholder oversight throughout the initial IRWM Plan development process.

The SSC has historically been responsive and reactive to changing regional needs, requirements and conditions, which demonstrates the active adaptive management of the Plan. In 2009, for example, the SSC was convened to address continued IRWM planning and implementation tasks including:

- Review stakeholder engagement plan,
- Review approach and schedule for responding to new Proposition 84 IRWM guidelines,
- Provide input on the level of interest in applying for implementation grants,

- Provide input on the planning grant application, and
- Continue soliciting implementation projects.

In 2011, the Pajaro River Watershed IRWM Region was awarded a planning grant. The planning grant work plan included a task to formalize the SSC. Therefore, the RWMG went through a planning process to formalize communications and develop better and more strategic approach to identify and enjoin stakeholders in the IRWM process. As a result, a new SSC was established.

The new SSC represents the interests necessary to address the objectives and resource management strategies of the Pajaro River Watershed IRWM Plan in both the upper and lower watershed. Furthermore, consistent with California Water Code Section 10541(g), the SSC is designed to provide a balance of water management interests and geography. The RWMG invited interested watershed stakeholders to participate in the SSC and reviewed the list of interested participants to ensure adequate representation and identify potential gaps in coverage, either in resource area or geography. As gaps were identified, additional participants were solicited to ensure balanced representation in the SSC. The SSC membership list is in Table 12-2.

Table 12-2. Stakeholder Steering Committee

Committee Member	Organization	Upper Watershed	Lower Watershed
Lynn Overtree Stewardship Manager	Land Trust of Santa Cruz County		•
Matt Freeman Assistance General Manager	Santa Clara County Open Space Authority	•	
Jennifer Scheer Executive Director	Santa Clara County Farm Bureau	•	
Chris Coburn Executive Director	Resource Conservation District of Santa Cruz County		•
Susan Meyer Executive Director	Loma Prieta Resource Conservation District	•	
Don Ridenhour General Manager	Sunnyslope County Water District	•	
Ray Creech General Manager	Tres Pinos Water District	•	
Vicki Morris General Manager	Aromas Water District	•	•
Bruce Laclergue Flood Control Program Manager	County of Santa Cruz		•
John Ricker Water Resources Division Director	County of Santa Cruz		•
Robert Ketley Senior Utilities Engineer	City of Watsonville		•
Matt Keeling	Central Coast Regional Water Quality Control Board	•	•
Jim Keller	Amah Mutsun Tribal Band	•	•
Kenn Reiller	Sierra Club, Ventana Chapter	•	•
Marlene Freeland	Bolado Park Golf Course	•	

The SSC, as described above, provides advice from diverse perspectives to the RWMG. The purpose of the SSC is to reflect the concerns and issues of various stakeholders and the general public, serve as a link to the community, serve as a "sounding board" for the Partners, and comment on IRWMP documents. The RWMG will work with the SSC to ensure that SSC and public concerns and ideas are understood and considered in Partner decisions.

The SSC comprises 15 members, designed to provide a balance of water management interests and geography. The ability of the SSC to be effective relies on the roles, responsibilities and communication

among the SSC and with the RWMG. The role of the SSC is to serve as an advisory body in reviewing and providing recommendations on work items completed by RWMG staff and consultants as well as to:

1. Assist with ongoing Public Participation in the IRWM Program.
    a. Assist in receiving public input;
    b. Coordinate with other entities for areas of represented expertise;
    c. Encourage outreach/educational activities to promote the IRWM program within agencies and constituencies (i.e., website recognition, events); and
    d. Assist in outreach to disadvantaged communities (DACs) within agencies and constituencies.
2. Provide input on the project prioritization process and criteria.
    a. Provide input on the planning goals and objectives;
    b. Provide input on project screening criteria to measure a project's benefit in meeting the planning goals and objectives; and
    c. Provide input on the weighting of the criteria that emphasizes the region's priorities.
3. Assist in Preparation and Submittal of Final IRWM Plan Update (2014).
    a. Provide recommendations on chapters of Draft IRWM Plan;
    b. Assist in the development of Resolutions of Support; and
    c. Provide SSC recommendation to RWMG policymakers on IRWM Plan adoption.
4. Review and Provide Recommendations on Proposition 84 Grant Applications.
    a. Assist in coordinating and consolidating implementation projects;
    b. Provide input on criteria for selecting recommended implementation projects based on the Proposal Solicitation Package funding priorities; and
    c. Provide SSC recommendation to RWMG policymakers on grant applications.
5. Coordinate with Adjacent Planning Regions.
    a. Assist in coordinating with adjacent planning regions; and
    b. Review and recommend on a process for selecting cross-regional projects with adjacent planning regions.

SSC membership expectations include:

- Attending SSC meetings regularly;
- Articulating their interests, concerns and perspectives on the issues being addressed;
- Maintaining an open mind regarding other views;
- Focusing on the "big picture" of the IRWM Plan;
- Constructively managing conflict between SSC members;

The SSC may also form subcommittees to address major programs in the Pajaro IRWM Plan, such as water supply, salt management, agricultural water quality, and Pajaro River flood protection. The role of the subcommittees is to further evaluate the projects within their respective programs, make program recommendations and lead implementation efforts for the projects included in their recommendations. The potential responsibilities of the subcommittees include:

- Outline program implementation schedule
- Develop program financing plan
- Lead project implementation efforts
- Develop project evaluation processes including degree of benefit assessment
- Enhance project definitions in terms of regional program objectives
- Define the subcommittee's stakeholder involvement process (including disadvantaged communities) and actively engage their stakeholders, as the subcommittees serve as the primary means of stakeholder participation

The SSC members will also help provide a link with other major stakeholder engagement efforts in the region, including flood protection on the Pajaro River, groundwater charges in the Pajaro Valley, water supply reliability, and water quality management throughout the region. The RWMG will monitor SSC participation and, if needed, recommend changes to the membership to ensure the committee continues to represent the interests necessary to address the objectives and resource management strategies of the Pajaro River Watershed IRWM Plan and effort.

12.3 Stakeholder Outreach and Involvement Processes

A broad stakeholder outreach process is crucial to ensure that the IRWM Plan identifies local issues, reflects local needs, promotes the formation of partnerships, and encourages coordination with state and federal agencies.

12.3.1 Balanced Access and Opportunity for IRWM Process Participation

The primary method for participation in the IRWM process is through the SSC. As noted above, the RWMG ensured that the SSC includes a broad and balanced representation of community sectors and environmental and water resources interests. Other opportunities for participation in the IRWM process include being a Project Sponsor, signing up for the general stakeholder list, and participating in SSC subcommittees. No one is denied the opportunity to participate in the IRWM process; rather, the RWMG encourages interested parties to participate in the SSC and/or other stakeholder groups.

12.3.2 Effective Communication

The RWMG's communication plan establishes how communication flows and is managed throughout IRWM planning and implementation and provides a framework for continued engagement and communication flow. The purpose of the plan is to build a solid, inclusive and representative agency, stakeholder and DAC base that is supportive of the aims of the IRWM Plan.

This Communication Plan identifies the procedures used to manage communication. The plan focuses on formal communication elements. Other communication channels exist on informal levels and enhance those discussed within this Plan. This Plan is not intended to limit, but to enhance communication. Open, ongoing communication actively engaging stakeholders is critical to the success of the Plan and projects, ultimately the Region. The outreach strategy engages a balance of the interest groups in the IRWM

process regardless of their ability to contribute financially to the IRWM Plan's development or implementation. Stakeholders are necessary to address the objectives and resource management strategies of the IRWM Plan. Furthermore, a robust and broad stakeholder and public outreach lays a solid foundation for regional (and sub-regional) involvement as well as build overall regional (and sub-regional) capacity. It sets forth a framework to provide guidance for implementing projects and carrying on the goals of IRWM effort throughout future years. The Communication Plan outlines a process to knit together a core group of active and engaged regional and sub-regional representatives who are motivated and equipped to meet the formidable challenges involved in planning for increased water quality, groundwater protection, stormwater management, water reliability, flood management, water quality, water supply, and equitable environmental benefits. In summary, the objectives of the communication effort are to:

- Marshal many points of view
- Understand the interests and needs of the watershed
- Develop constructive relationships
- Create an understanding among collaborators about the benefits and purposes of the IRWM program and individual IRWM projects
- Maintain credibility with regulators and funding agencies
- Demonstrate responsiveness to stakeholder issues or concerns

12.3.2.1 Stakeholder Outreach Approach

As part of the Communication Plan, the RWMG, Implementation Project Sponsors, and the Stakeholder Steering Committee conduct three tiers of focused outreach activities to provide different venues for the stakeholders and the general public to voice their comments and concerns throughout the IRWM planning and implementation process. The stakeholder outreach activities are summarized in Table 12-3, and described in the subsequent chapters.

Table 12-3. Stakeholder Outreach Approach

	Tier One	Tier Two	Tier Three
Goals:	**Planning-Level Outreach**	**Project-Specific Outreach**	**IRWMP General Outreach**
Organizers:	Stakeholder Steering Committee (SSC) and Subcommittee	Implementation Project Sponsors	RWMG
Objectives:	Identify needs of the watershed, develop recommendations on project priorities/rankings	Coordinate and collaborate on project implementation, solicit community input and concerns regarding the implementation of projects	Provide oversight. Report on progress, updates, and decisions related to the IRWMP
Target Audience:	All interested parties, including stakeholders, other watershed stakeholders, other IRWM regional stakeholders	Project-specific stakeholders, residents, project beneficiaries, and agencies	Stakeholders and agencies, and all interested parties
Outreach Venues:	Stakeholder workshops/meetings, conferences, board meetings, subcommittee meetings	Workshops/meetings	Public workshops/ meetings SSC meetings
Minimum Frequency:	Quarterly or as-needed, at locations throughout the region	As-needed, at locations near the projects	Quarterly or as-needed, at locations throughout the region

12.3.2.2 Planning-Level Outreach (Tier One)

The Stakeholder Steering Committee provides forum for coordinating input from the subcommittees and making recommendations to the RWMG. The outreach activities provide the general stakeholders a forum to:

- Share their ideas and concerns regarding the IRWMP
- Identify the needs of the watershed, and potential projects that align with the goals and objectives of the respective regional water management programs
- Identify, discuss, and resolve regional conflicts associated with potential projects
- Work with other stakeholders and the general public to make recommendations on project prioritization and rankings, transfer the information to the Partners to make decisions.
- Coordinate with other activities in the Pajaro river watershed and coordinate with other IRWM regional stakeholders

12.3.2.3 Project-Specific Outreach (Tier Two)

Each of the Implementation Project Sponsors conducts project-specific outreach to interested parties related to their respective project. The outreach activities provide the general stakeholders a forum:

- To provide information to the community regarding specific projects that are being implemented. Identify, discuss, and resolve concerns from stakeholders and the general public who might be impacted by the project
- For stakeholders and general public to communicate throughout the implementation period to resolve potential conflicts

12.3.2.4 IRWMP General Outreach (Tier Three)

The RWMG conducts general IRWMP outreach to all interested parties to report on the progress, updates, and decisions made related to the IRWMP. The outreach activates provided the stakeholders and the general public a forum to:

- Discuss IRWMP progress, review key deliverables, provide comments, and gain consensus
- Continue stakeholder process allowing for IRWMP updates to reflect changes in local water management needs and priorities. Changes were also necessary to respond to updates to City and County General Plans, or other newly completed local planning documents.

12.3.2.5 Outreach Venues and Strategies

It is the intent of the RWMG is to continue to hold outreach workshops/meetings to ensure that all interested stakeholders have an opportunity to participate in the IRWM program through the life of the Plan. Meetings would be held at different locations throughout the watershed so that stakeholders from different regions would be able to attend and held at times that facilitate the best attendance.

Notification occurs at least two weeks prior to workshops/meetings via a variety of methods, including print media, letters, emails, and, potentially, agency websites. The purpose of the meetings is to inform stakeholders of IRWM efforts, solicit feedback on key IRWM deliverables, and solicit projects to be considered in the IRWMP as well as to update the project list and be responsive to solicitations and/or other topics and issues related to IRWM. Following each workshop, the Partners prepare and distribute a brief summary of stakeholder input and how the Partners plan to address the input.

The RWMG will also continue to engage stakeholders through related workshops, board meetings, and other venues that include audiences with potential interest in the Pajaro River Watershed IRWM effort. These venues have previously included the Pajaro River Watershed Council, South County Regional Wastewater Authority TAC, Water Resources Association of San Benito County Board, Santa Clara Valley Water District Board Advisory Committees, and Santa Cruz County Board of Supervisors. The Partners will also continue to conduct outreach with their own Boards.

Stakeholders and the general public who are interested in the development and implementation of IRWMP but are unable to participate at a more significant level (such as being a member of the SSC or a subcommittee), would be able to provide their comments through multiple outreach activities conducted by the RWMG, SSC, and Implementation Project Sponsors and shape the development and implementation of the IRWMP.

12.3.3 Effective Decision Making

All the RWMG's decisions are made by consensus. The decisions are informed by input from the SSC, Project Sponsors, general stakeholders, and the RWMG's Boards' policies. By incorporating all the sources of input, the RWMG's decisions reflect the interests and priorities of the entire Pajaro River Watershed. Making decisions on a consensus basis ensures all decisions are completely supported by the RWMG.

12.4 Pajaro River Watershed Regional Coordination

A number of regional coordination activities are occurring to improve the understanding of and conditions within the watershed. These activities involve agricultural associations, land trusts, business associations, environmental, and community groups among others. A goal of the RWMG is to provide a forum for these stakeholders to identify additional opportunities to coordinate and improve the watershed. A few examples of the ongoing coordination are presented below.

The RWMG has been working with the Pajaro River Watershed Flood Prevention Authority (FPA), an eight-agency Joint Powers Authority spanning the four counties and four water districts of the Pajaro River Watershed. Two of the RWMG partners, SCVWD and SBCWD, are members of the FPA. This organization was established to provide flood protection and promote general watershed interests such as identifying and prioritizing strategies and projects that will provide multiple benefits with regard to water supply, groundwater recharge, and environmental restoration and protection benefits. The FPA is another key working group that has assisted the IRWM planning effort in developing water management strategies that meet multiple stakeholders' goals and objectives and is implementing the Soap Lake Floodplain Preservation Project. Through the project implementation, the FPA has coordinated with land preservation organizations like The Nature Conservancy, Santa Clara County Open Space Authority, and the Land Trust of Santa Cruz County.

Another partnership formed during IRWM Plan development was the integration of the Resource Conservation Districts (RCDs). The RCDs previously developed water management strategies for implementation within the Pajaro River Watershed with support mainly from the Natural Resources Conservation Service (NRCS). The RCD has now joined the efforts of the RWMG and the SSC to implement those strategies on a broader scale as part of the integrated programs developed through the IRWM process. It was important to the RWMG and all stakeholders that RCD needs were heard and their water management strategies considered.

The Central Coast Agricultural Water Quality Coalition (CCAWQC) has been an active stakeholder in the Pajaro River Watershed IRWM planning effort. The mission of the Coalition is to represent farmers and ranchers in the development and implementation of voluntary, cost-effective, producer-directed programs to protect water quality on the Central Coast. A demonstration of the benefits of coordination through the IRWM is the integration of the CCAWQC and RCD agricultural irrigation efficiency program with the PVWMA recycled water expanded delivery project. Due the integrated nature of the project, it received a high score in the IRWM project prioritization process and was selected for inclusion in the Drought Emergency Grant Application.

Another example of regional coordination to implement IRWM projects is the Hollister Urban Area (HUA) Water Program. The HUA Program was developed in partnership by the City of Hollister (COH), San Benito County (SBC), SBCWD, and Sunnyslope County Water District (SSCWD) to address water supply, water quality, and wastewater discharge requirements through an integrated and comprehensive approach across agency boundaries and throughout the HUA. A Memorandum of Understanding (MOU) was executed in 2004 by the COH, SBC, SBCWD, and later amended to include SSCWD. The MOU established the goals and institutional framework for regional water and wastewater master planning. The MOU described the principles, objectives, and assumptions that ultimately formed the institutional

framework and basis of the 2008 HUA Water and Wastewater Master Plan. The project and delivery of benefits will be delivered across agency boundaries on a regional scale, demonstrating the benefits of regional planning.

The RWMG will continue to encourage and support regional coordination to enhance the implementation of the Pajaro River Watershed IRWM Plan.

12.5 Collaborative Process Used to Establish Plan Objectives

A consensus-based approach was used to develop the Pajaro River Watershed IRWM goals and objectives for the 2007 IRWM Plan. During the development of the 2007 goals and objectives, the RWMG considered both the needs and issues identified for the region and the statewide priorities. The goals and objectives were presented to stakeholders and then refined based on stakeholder input and consensus. The same process was used to update the goals and objectives for the 2014 IRWM Plan, with the addition of consideration of Basin Plan Objectives, 20x2020 water efficiency goals, and requirements of California Water Code §10540(c). Specifically, the RWMG reviewed the goals and objectives, presented proposed revised goals and objectives to the SSC, met with the SSC to obtain input on the goals and objectives, reviewed SSC input, and incorporated all the SSC input into the goals and objectives in Chapter 2.

12.6 Consensus Building

The major obstacles that could hinder implementation of the IRWMP are opposition from the various stakeholders throughout the watershed and from permitting agencies that have authority within the region. To minimize these obstacles, the Collaborative has adopted a consensus building approach. All stakeholders – from local interest groups to regulatory agencies – have been invited to participate in the IRWM planning process. Providing a forum to address stakeholder concerns during the development of the IRWM Plan reduces the potential for conflicts during the implementation phase.

Consensus building will be integral to implementation of the Flood Protection goals because a local cost share is needed to pay for construction and on-going operations and maintenance of the Pajaro River Flood Risk Reduction Project. Establishing local funding for flood protection projects requires a vote of property owners and local voters to institute a self-imposed tax and this will require achieving community consensus on a locally preferred plan. The Community Consensus, Benefit Assessment Vote and Local Governance subtask of the Flood Risk Reduction Project focuses on gaining the public involvement and agreement critical obtaining voter approval for funding and ensuring that the Flood Project can move forward.

Where project impacts are identified, mitigation measures will be necessary. The measures which could be required in order to obtain regulatory approval for projects may serve as obstacles to plan implementation. To minimize regulatory obstacles, the RWMG will coordinate with local, state and federal regulatory agencies early in the process to determine necessary, corrective actions. Further discussion of agency coordination is provided in Chapter 13 Coordination.

12.7 Disadvantaged Community Involvement

As described in Chapter 2, a DAC is defined in the California Public Resource Code as a community with an annual median household income (MHI) that is less than 80% of the statewide MHI [PRC §75005 (g)]. 2010 Census data were collected and reviewed to identify any DACs in the region. The 2010 State MHI was $60,883; therefore, communities with an average MHI of $48,706 are considered disadvantaged communities. The cities of Pajaro, Watsonville, Amesti, and Freedom were identified as DACs and there

are other areas of DACs throughout the region. Protection of the people and economy of DACs in the Pajaro Region is a priority.

The City of Watsonville is a stakeholder in the IRWM planning process and is actively involved in the planning and implementation of the integrated water management strategies, which ensured that the needs and concerns of its residents were represented in the decision-making process. Since Watsonville's economy is tightly linked to local agricultural activities, which are threatened by seawater intrusion, groundwater basin water supply imbalance and flooding, the development of a sustainable water supply and flood mitigation projects will aid in the sustainability of the local economy and well-being of the community in the future.

Representatives from the other DACs, though not actively involved in the IRWMP development, were invited to participate in the process. However, the RWMG is committed to ensuring the DACs are adequately represented in the IRWM process. This is reflected in the region's DAC targeted objectives:

- Water Supply Goal – Identify and address water supply needs of disadvantaged communities in the Pajaro River Watershed.
- Water Quality Goal - Identify and address the drinking water quality of disadvantaged communities in the Pajaro River Watershed.

The commitment is also demonstrated by the inclusion of DAC projects in each of the regions IRWM grant applications including water supply and water quality projects for the City of Watsonville and the community of Pajaro.

12.8 Tribal Communities

As described in Chapter 2, the Pajaro River watershed is rich with cultural resources including various Native American and historic-period cultural sites, historic buildings and landmarks, and sites of traditional and historic significance. Generally, areas within a quarter mile of rivers and creeks have a moderate to high potential for archeological sensitivity.

Cultural resources that have been identified throughout the Pajaro River watershed are:

- Prehistoric archeological sites – Places where Native Americans lived or carried out activities during the prehistoric period before 1769 AD;
- Historic archaeological sites – Places where human activities were carried out during the historic period between 1769 AD and 50 years ago;
- Traditional cultural properties – Places associated with the cultural practices or beliefs of a living community that are rooted in that community's history and are important in maintaining the continuing cultural identity of the community;
- Historic structures – Houses, outbuildings, stores, offices, factories, barns, corrals, mines, dams, bridges, roads, and other facilities that served residential, commercial, industrial, agricultural, transportation, and other functions during the historic periods (more than 50 years ago); and
- Paleontological resources – Fossilized remains of animals and plants, typically found in sedimentary rock units that provide information about the evolution of life on earth over the past 500 million years or more.

Within the scope of the IRWMP, further research to compile and document the cultural resources within the Pajaro Watershed will be performed in conjunction with environmental evaluations on a project-

specific basis. Due to the sensitivity of cultural resources, specific details about the location and nature of identified cultural resources are kept confidential.

The continuing IRWM process will continue to take into account and be responsive to the needs of and potential impacts to Native American communities. Environmental justice is addressed by ensuring all stakeholders have the potential to participate in the Pajaro IRWM planning process. The IRWM planning process and individual project development attempt to respect and support the interests of local Native American tribal communities in protecting and restoring the water-related resources of historic tribal lands. A representative of the Amah Mutsun Tribal Band participates in the SSC which ensures that the needs and concerns of its community were represented in the decision-making process. The RWMG will continue to reach out to the Native American community and encourage IRWM participation.

13 Coordination

This chapter addresses the following standard from the 2012 IRWM Grant Program Guidelines:

Coordination – The IRWM Plan must include:

- Identification of a process to coordinate water management projects and activities of participating local agencies and local stakeholders to avoid conflicts and take advantage of efficiencies (CWC §10541.(e)(13)).
- Identification of other neighboring IRWM efforts and the way cooperation or coordination with these other efforts will be accomplished and a discussion of any ongoing water management conflicts with adjacent IRWM efforts.
- Identification of areas where a State agency or other agencies may be able to assist in communication, cooperation, or implementation of IRWM Plan components, processes, and projects, or where State or Federal regulatory decisions are required before implementing the projects.

In order to adequately plan and implement the integrated water management strategies recommended herein, it is vital to the success of this IRWM Plan effort that stakeholders and the appropriate federal, state, and local regulatory and jurisdictional agencies be actively involved. Traditionally, participation of the stakeholders and agencies occurred on a project-specific basis, depending on the requirements and needs of each effort. In the integrated planning process, however the role of the stakeholder's agencies was identified proactively and the potential involvement of each stakeholder and agency during IRWM Plan implementation was determined. The first form of involvement is to help coordinate and/or communicate the IRWM Plan to other stakeholders and agencies 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, which applies only to agencies, is through granting of necessary regulatory approvals. In many cases, a given stakeholder or agency can be involved in IRWM Plan implementation in all of these ways. This chapter describes the state, federal and local agencies active in the Pajaro River Watershed and identifies opportunities for their involvement and assistance in IRWM Plan implementation through coordination, communication, project implementation, and regulatory approval.

13.1 Coordination within Pajaro River Watershed

13.1.1 Coordination with Stakeholders

Coordination with stakeholders on water management projects and activities was discussed in Chapter 1 – Governance and Chapter 12 - Stakeholder Involvement. In summary, the IRWM Plan process invites active public participation of all interested stakeholders. The main forums for IRWM planning and implementation are the Stakeholder Steering Committee (SSC), the SSC subcommittees, and general stakeholder meetings. In addition to SSC and SSC subcommittee meetings, the RWMG conducts general stakeholder meetings or updates around major milestones such as updates to the IRWM Plan goals and objectives, project solicitation and review, and project selection for grant applications. The SSC, the SSC subcommittees meetings, and general stakeholder meetings provide an opportunity to identify synergies and avoid conflicts between projects.

13.1.2 Local Agency Coordination

Local water and land use agencies have a history of coordinating on shared topics and interests, such as planning for infrastructure for water and wastewater facilities to address unmet and future needs. As identified in Table 13-1, there are several local agencies with statutory authority over water supply or water management in the Pajaro River Watershed region. The table also provides the basis and nature of that statutory authority. As previously described in Chapter 11, land use agencies including cities and counties have participated to varying degrees in the Pajaro IRWM planning process since its inception. Coordination with cities and counties as well as other land use decision-makers has occurred through the stakeholder process and allowed land use considerations to be fully incorporated into the IRWM Plan while also ensuring that future land and water use decisions will be supported at the local level and will help avoid conflict.

Coordination within the watershed has occurred through sub-regional efforts such as the Pajaro Valley Basin Management Plan, Hollister Urban Area Water and Wastewater Management Plan, the South County Water Supply Planning Project, and the Habitat Plan. The results of these efforts have been integrated into the IRWM Plan. The Pajaro River Watershed Flood Prevention Authority is a JPA of the counties in the watershed and the Monterey County Water Agency, SBCWD, SCVWD, and the Santa Cruz County Flood Control and Water Conservation District Zone 7. The counties of Santa Cruz and Monterey are the local sponsors, in coordination with the Corps, for the Pajaro River Risk Reduction Project, which is a critical IRWM Plan project.

The following actions are proposed to further agency coordination within the region:

- Increase the Frequency of Periodic City-County-Water Agency Planning Meetings: The RWMG will continue to encourage city and county planners and local water managers to hold joint planning meetings at regular intervals to improve communication and efficiencies. Joint planning meetings can be held at the staff level and/or by governing boards. Both options provide value in different ways, and both should be continued.

- Water Resource Planning Forum: To develop a better understanding and mutual appreciation of the issues and constraints faced by land use and water managing agencies (including the mission, priorities, and decision-making organization of these entities) the RWMG could host a forum where agency representatives present targeted information regarding their organization's mission, constraints, overlapping areas of interest, potential conflicts in priorities or objectives, and potential areas for improved coordination.

- Climate Change: Utilize climate change as a common denominator to encourage agency collaboration for integrated solutions. For example, SCVWD is part of Santa Clara County's Silicon Valley 2.0 effort to develop a climate action plan.

- Increase Land Use Agency Participation in the IRWM Process: Currently, the Pajaro River Watershed IRWM Plan Stakeholder Steering Committee includes representatives from the County of Santa Cruz and the City of Watsonville. The RWMG will continue to encourage participation from land use agency staff in Santa Clara and San Benito counties.

Through these actions, and the stakeholder involvement efforts described in Chapter 12, coordination of water management projects and activities of participating local agencies and local stakeholders will help avoid conflicts and take advantage of efficiencies.

Table 13-1: Local Agencies in the Pajaro Watershed

Local Agency	Basis of Authority
Aromas Water District	Aromas Water District is located on the westerly edge of the PVWMA service area. This special district provides water treatment and supply service for approximately 750 customers.
Central Coast Regional Water Quality Control Board (RWQCB) – Region 3	The Central Coast RWQCB is a regulatory extension of the State Water Resources Control Board. The Central Coast RWQCB coordinates and controls the quality of water in its region through the protection of beneficial uses, the development of water quality objectives to protect the beneficial uses, and implementation planning to accommodate the water quality objectives. This entity was established by the Porter-Cologne Water Quality Control Act (1969), which became Division Seven ("Water Quality") of the State Water Code. The State Water Code establishes the responsibilities and authorities of the nine RWQCBs (previously called Water Pollution Control Boards) and the State Water Resources Control Board (SWRCB). The federal Clean Water Act (Public Law 92-500, as amended) provides for the delegation of certain responsibilities in water quality control and water quality planning to the states. Where the Environmental Protection Agency (EPA) and the SWRCB have agreed to such delegation, the Regional Boards implement portions of the Clean Water Act, such as the National Pollutant Discharge Elimination System (NPDES) program and toxic substance control programs
City of Gilroy	Located in South Santa Clara County, the City of Gilroy provides water service to residences and businesses. Gilroy is a South County Regional Wastewater Authority (SCRWA) Partner which provides wastewater service for the Cities of Gilroy and Morgan Hill.
City of Hollister	The City of Hollister is a major urban service area in San Benito County. The City of Hollister provides various municipal and industrial (M&I) services include wastewater collection and treatment and water supply service.
City of Morgan Hill	Located in South Santa Clara County, the City of Morgan Hill provides water service to residences and businesses. Morgan Hill is a SCRWA Partner that provides wastewater service for the Cities of Morgan Hill and Gilroy.
City of San Juan Bautista	Located in San Benito County, the City of San Juan Bautista provides wastewater and water services. San Juan Bautista is a member of the Water Resource Association of San Benito County.
City of Watsonville	The City of Watsonville is a major urban service area within PVWMA. The City provides various M&I services including wastewater collection and treatment and water supply service.

Local Agency	Basis of Authority
County of Monterey	The County of Monterey is a government agency with land use jurisdiction within its boundaries. The County also manages water and sanitation systems in unincorporated County Service Areas. The southern portion of the PVWMA service area is in Monterey County.
County of San Benito	The County of San Benito is a government agency with land use jurisdiction within its boundaries. A significant portion of the upper Pajaro River watershed (including the San Benito River) is within San Benito County.
County of Santa Clara	The County of Santa Clara is a government agency with land use jurisdiction within its boundaries. A portion of the upper Pajaro River watershed is within Santa Clara County.
County of Santa Cruz	The County of Santa Cruz is a government agency with land use jurisdiction within its boundaries. The County of Santa Cruz also has jurisdiction over stormwater, drainage, watershed management, water resources management and water quality protection for the unincorporated areas of Santa Cruz County. The northern portion of the PVWMA service area is in Santa Cruz County.
Monterey County Water Resources Agency (MCWRA)	MCWRA is a special district formed to manage, protect, and enhance the quantity and quality of water and provide specified flood control services for Monterey County, and to be a leader in efficient, innovative, and equitable water resources management for the County. As a County water agency and stakeholder, MCWRA has an interest in flood prevention and water supply management of the lower Pajaro River that falls within its jurisdiction.
Pacheco Pass Water District (PPWD)	PPWD owns and operates Pacheco Dam and Reservoir on Pacheco Creek for local water supply benefits.
Pajaro River Watershed Flood Prevention Authority (PRWFPA)	PRWFPA was established in 2000 by the State of California Assembly Bill 807 to identify, evaluate, fund, and implement flood prevention and control strategies in the Pajaro River watershed, on an intergovernmental basis. Since the Pajaro River watershed covers an area within four counties (Santa Clara, San Benito, Santa Cruz, and Monterey) and four water districts (Santa Clara Valley Water District; San Benito County Water District; Santa Cruz County Flood Control and Water Conservation District, Zone 7; and Monterey County Water Resources Agency), the PRWFPA is comprised of one representative from each of the eight interested agencies. The PRWFPA is a governing body through which each member organization can participate and contribute to finding a method to provide flood protection in the watershed and promote general watershed interests. A further goal is to identify and prioritize strategies and projects that will provide multiple benefits, such as water supply, groundwater recharge, or environmental restoration and protection benefits.

Local Agency	Basis of Authority
Pajaro/Sunny Mesa Community Services District	Pajaro/Sunny Mesa Community Services District is a water supplier for smaller communities in the Pajaro Valley and has consolidated water delivery service for a number of mutual water companies in northern Monterey County.
Resource Conservation Districts (RCDs)	California RCDs are special districts organized under the state Public Resources Code, Division 9. The RCDs in the Pajaro Watershed are the Santa Cruz RCD, Monterey County RCD, San Benito RCD and Loma Prieta RCD. Each district has a locally elected or appointed volunteer board of directors made up of landowners in that district. Interests of the RCDs which relate to water management include water quality, wildlife habitat restoration, soil erosion control, and conservation education.
Santa Cruz County Flood Control and Water Conservation District, Zone 7 (SCCFC&WCD)	This district is governed by the Santa Cruz County Board of Supervisors, City of Watsonville, and PVWMA. It provides flood control services to Santa Cruz County except the cities of Santa Cruz, Scotts Valley and Capitola. As a County agency and stakeholder, SCCFC&WCD has an interest in flood prevention of the lower Pajaro River that falls within its jurisdiction.
Soquel Creek Water District	This government agency provides water resource management for communities in mid-Santa Cruz County.
South County Regional Wastewater Authority	South County Regional Wastewater Authority is the regional wastewater authority for South Santa Clara County, primarily serving the Cities of Gilroy and Morgan Hill. SCRWA has partnered with the Santa Clara Valley Water District to expand water recycling in southern Santa Clara County.
Sunnyslope County Water District	Sunnyslope County Water District is a water and wastewater management district for a portion of the City of Hollister and the Ridgemark Development in San Benito County.
U.S. Army Corps of Engineers (Corps)	The Corps provides engineering and environmental services throughout the nation. The Corps is currently conducting a flood risk management study on the lower Pajaro River and tributaries.

13.2 Neighboring IRWM Coordination

The Pajaro River Watershed IRWM region is one of six IRWM regions in the DWR designated Central Coast Funding Area. The Pajaro River Watershed IRWM RWMG is coordinating with the five other IRWM regions. In 2005, three agencies – Monterey County Water Resources Agency, Monterey Peninsula Water Management District, and PVWMA took the lead in developing and enacting a Memorandum of Understanding (MOU) for IRWM in the Monterey Bay area. The goal of the Monterey Bay MOU was to more effectively manage resources and costs, and to better serve the public with regard to water resources management across the entire Monterey Bay region.

The Pajaro River Watershed IRWMP is one of four detailed IRWM planning efforts in the greater Monterey Bay region. All IRWMP efforts originate within four Monterey Bay regions, which can generally be described as (1) the Santa Cruz County Region which includes northern Santa Cruz County through and including Aptos Creek, San Andreas and the Watsonville Sloughs watershed, (2) the Pajaro River Watershed which includes parts of Santa Clara, San Benito, Santa Cruz, and Monterey Counties,

(3) the Greater Monterey County Region which includes the majority of Monterey County, and (4) Monterey Peninsula, Carmel Bay, and South Monterey Bay Region which includes the Carmel River watershed and Seaside groundwater basin in Monterey County. Collaborative efforts have been undertaken with representatives from each of the other three IRWMP regional groups to ensure overlapping areas and projects are understood and coordinated. All other Monterey Bay area IRWMP efforts considered their delineations to be appropriate.

In February 2007, in response to the State's definition of the Central Coast as a funding area for future IRWM grant programs, all six IRWM planning regions within the Central Coast began discussions regarding regional cooperation within the framework of the IRWM process pursuant to Propositions 50 and 84. The six IRWMP efforts within the Central Coast are the four Monterey Bay IRWMPs, the San Luis Obispo County IRWMP and the Santa Barbara County IRWMP. Some of these IRWM planning regions have common, overlapping water interests, but most water issues are more effectively managed within the six individual regions. Water management interests 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 and drought protection. An additional area of coordination among the regions will be to address the geographic areas within the Central Coast region that are not currently covered by an IRWMP. There are no identified conflicts with neighboring IRWM regions.

SCVWD is also participating in the San Francisco Bay Area IRWMP. The SCVWD service area can be divided into two regions – South County and North County, which drain to Monterey Bay and San Francisco Bay, respectively. In addition to falling within different watersheds, South County and North County have fairly distinct land uses and social, cultural and economic compositions. Because South County is more aligned with the make-up of PVWMA and SBCWD and is in the same watershed, SCVWD determined that coordination with these agencies provided the best opportunity to address water management issues within its South County region, while the Bay Area IRWMP could best address issues within the Santa Clara North County region.

13.3 State and Federal Agency Coordination

As discussed in the Stakeholder Involvement Chapter, state and federal agencies have been engaged through a variety of stakeholder activities. These activities have included stakeholder meetings, workshops, Board presentations, and personal communications (via email and telephone).

Table 13-2 identifies agencies that will be central to implementing the IRWM Plan. The table focuses mainly on agencies with regulatory jurisdiction; however select non-regulatory agencies that were formed from State and Federal legislation have also been identified. The table describes the jurisdictional authority or interest of each agency as well as coordination efforts that have been either completed or planned. Coordination and involvement of these agencies with the IRWM Plan effort will continue throughout implementation.

Table 13-2: Federal and State Agencies

Agency	Jurisdiction/Interest	Completed or Planned Coordination/Interaction
Federal		
U.S. Army Corps of Engineers (Corps)	Protection, preservation, and enhancement of waters of the U.S.	Collaboration through Pajaro River Watershed Study and federal sponsor of the Levee Reconstruction Project.

Agency	Jurisdiction/Interest	Completed or Planned Coordination/Interaction
NOAA National Marine Fisheries Service	Protection, preservation, and enhancement of fisheries, endangered species and habitat	Participation through APV stakeholder process and permitting coordination through the Levee Reconstruction Project, PVWMA Revised Basin Management Plan (BMP), Corralitos Creek Surface Fisheries Enhancement Project, South County Resources Management Plan (SCRMP), Santa Clara Habitat Conservation Plan (HCP) and Natural Communities Conservation Plan (NCCP)
U.S. Fish and Wildlife Service	Protection, preservation, and enhancement of fisheries, endangered species and habitat	Participation through APV stakeholder process and permitting coordination through the Levee Reconstruction Project, BMP, SCRMP, HCP and NCCP.
U.S. Bureau of Reclamation (USBR)	Manage, develop, and protect water and related resources in an environmentally and economically sound manner.	Permitting coordination through BMP and funding coordination through Watsonville Recycled Water Treatment Facilities and Coastal Distribution System; CVP water transfers within the San Felipe Division
U.S. Environmental Protection Agency	Responsible for protecting human health and the environment. Develops and enforces regulations, provides funding assistance, performs environmental research and education. Manages Superfund program and cleanup of contaminated sites.	Administering federal grant funded work for perchlorate cleanup that impacts water supply, Main Avenue and Coyote-Madrone Pipeline Repair.
Monterey Bay National Marine Sanctuary	Resource protection, research, education, and public use of the Federally protected 276 miles of marine area offshore of California's central coast, stretching from Marin to Cambria	Invitation to participate in IRWMP process and coordination through permitting of near-term water supply projects.
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)	Participation through technical support provided to the RCDs.

Agency	Jurisdiction/Interest	Completed or Planned Coordination/Interaction
State		
SWRCB	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	Meetings and planned collaboration on SWAMP and GAMA, permitting and financing coordination through BMP and permitting coordination through Corralitos Creek Fisheries Enhancement Project; Regional Mobile Lab; grant funding of South County Recycled Water Program expansion
DWR	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 Pajaro River Levee Reconstruction Project, BMP Proposition 13 grant, and Proposition 50 Planning and Implementation Grants
Central Coast RWQCB	Protection and management of surface water and groundwater.	Invitation to participate in IRWMP process and coordination on the Farm and Range Water Quality Management Program. Oversight on perchlorate management.
California Coastal Commission	Protection, preservation, and management of the California Coast and resources.	Participation through APV stakeholder process and permitting coordination through Levee Reconstruction Project and BMP.
California Department of Fish and Game	Protection, preservation, and enhancement of endangered species and habitat.	Participation through APV stakeholder process and permitting coordination through Levee Reconstruction Project and BMP, HCP and NCCP
Resource Conservation Districts (RCDs)	Interest in water management including water quality, wildlife habitat restoration, soil erosion control, and conservation education. (Non-regulatory agencies representing Monterey, San Benito, Santa Clara, and Santa Cruz Counties)	Workshop participation and overall participant in IRWMP process.

State and federal agencies can actively assist in communication and coordination of IRWM Plan efforts that fall under areas of their jurisdictional authority. The involvement of state and federal agencies is also critical in facilitating IRWM Plan implementation, which can be done through endorsement of projects, participating in regional working groups and through direct project funding and implementation. This chapter discusses the participation of active state and federal agencies in the Region and describes how their future involvement will assist in implementation of the IRWM Plan.

13.3.1 U.S. Army Corps of Engineers

The Corps has been heavily involved over the last 40 years in developing flood risk management strategies for the Lower Pajaro River. The Pajaro River Flood Risk Reduction Project is the culmination of the planning that was conducted and the project is now being implemented as part of the IRWM Plan. The Corps coordinated this project with the Pajaro River Watershed Study, which focused on developing floodplain management strategies for the Upper Pajaro River. Because flood projects in the Upper and Lower Pajaro are linked, the continued cooperation of the Corps is essential for success of the Pajaro River Flood Protection Program. Additionally, the Corps has conducted public meetings on the project. Continuing these public forums will be critical to provide ongoing communication about the project itself and to convey the additional benefits that are gained from implementation of the project within the context of integrated regional planning. Also, Corps funding of 65% of the project costs is critical for the implementation of the Levee Reconstruction Project. FEMA is another federal agency for which coordination is necessary as it defines the floodplain for the Pajaro River Watershed.

13.3.2 U.S. Bureau of Reclamation

USBR is responsible for managing the CVP system and allocation and fulfillment of CVP contracts. Coordination with the Mid-Pacific Region of USBR will be vital for any projects in the watershed related to imported water such as the Coastal Distribution System. USBR will play a key role in the CVP water transfers within the San Felipe Division, and will be important in communicating with the agencies involved in explaining the transfer agreements and maintaining proper accounting so that a fair, transparent and efficient market based system can be achieved. The USBR is also involved in the Watsonville Recycled Water Treatment Facility and Coastal Distribution System and the South County Recycled Water Improvements.

13.3.3 Resource Conservation Districts

The four RCDs are special districts created under state law. In the Pajaro River Watershed, they have been active in dealing with issues in the areas of water quality, wildlife habitat restoration, soil erosion control and conservation. RCDs have developed working relationships with a diverse array of stakeholders in the Region (including other state and federal agencies), and thus have served as an important resource for stakeholder coordination and communication. An example is the SCCRCD, which has relationships with:

- Farm Bureau
- California Department of Conservation
- California Department of Forestry and Fire Protection
- California Department of Parks and Recreation
- U.S. Environmental Protection Agency
- Department of Water Resources

- State Water Resources Control Board
- Regional Water Quality Control Board
- Coastal Conservancy
- California Department of Fish and Game
- The Nature Conservancy
- Santa Cruz Land Trust
- Bureau of Land Management
- California State University at Monterey Bay
- Local community colleges
- United States Department of Agriculture Natural Resources Conservation Service
- UCCE Farm Advisors

Because of these relationships, the RCDs can serve as a center of coordination for these other agencies on IRWM Plan issues related to resource conservation. The RCDs can also assist in implementation of the IRWM Plan through projects and are the lead agencies on several projects in the IRWM Plan.

13.3.4 Central Coast Basin RWQCB

The Central Coast Basin RWQCB is responsible for communicating the requirements for the conditional agricultural waivers to growers and for explaining the water quality benefits of meeting the waiver requirements to the public. As the RWQCB is the primary regulatory agency for water quality, the stakeholders will rely on it to sanction the solutions, partnerships and methods in the IRWM Plan that are proposed for addressing issues such as NPS pollution and TMDL compliance. This will include most of the water quality projects in the IRWM Plan.

13.3.5 NOAA National Fisheries Marine Service, U.S. Fish and Wildlife Service and the Monterey Bay National Marine Sanctuary

The participation of the NOAA National Fisheries Marine Service, the U.S. Fish and Wildlife Service and the Monterey Bay National Marine Sanctuary in the watershed is necessary because these agencies are responsible for protecting fisheries and marine life, which can suffer from the unintended negative effects of water management projects. Coordination with these agencies is important for the flood and surface water projects in the IRWM Plan.

13.3.6 Other State and Federal Agencies

State and Federal agencies can also assist in implementation by providing funding opportunities as listed in the Finance Chapter. SWRCB, DWR, USEPA and USBR are the federal and state agencies that provide the most significant funding opportunities for the Pajaro River Watershed and close coordination should be maintained with these agencies to identify future funds for implementation.

The State and Federal agencies in the Pajaro River Watershed that can assist in the implementation of this IRWM Plan have been identified. Proactive coordination with the appropriate agencies will ensure that projects receive endorsement and support and can prevent issues from arising later that can block implementation.

13.4 Regulatory Support

Regulatory and jurisdictional agency involvement is vital to the eventual implementation of the water management programs, projects and integrated water management strategies identified in this plan. Many of the projects will require some level of regulatory approval or oversight and will fall under the purview of one or more of the agencies listed in this chapter. The on-going IRWM Plan effort will continue to communicate, coordinate, and collaborate at all steps of the process with the appropriate local, State, and Federal agencies in their regulatory roles where necessary. Participation by these agencies at an early stage will streamline the regulatory process, and ensure that the implementation of projects will not be unnecessarily delayed.

There are a number of IRWM Plan projects that illustrate the advantages of such participation:

- Corralitos Creek Surface Fisheries Enhancement, which is subject to NOAA National Marine Fisheries oversight, has obtained a scientific assessment from that agency which will guide the implementation of the project so that the project can meet the requirements for constructing proper fish diversion structures.
- The Corps is both an active participant in the Pajaro River Flood Risk Reduction Project as well as an approving agency for the project through its jurisdiction over projects that impact waters of the United States, which includes the Pajaro River. Its participation will greatly facilitate federal approval.
- The Permit Coordination Program is an excellent example of an effort to streamline the regulatory process at a watershed level. It was designed to address the fact that implementing certain habitat restoration projects such as streambank restoration can often require going through as many as eight different environmental regulation processes administered by a variety of agencies, which presents an ironic obstacle. The program provides landowners and agricultural growers access to a single coordinated process of regulatory approval for permitting restoration related BMPs.
- Regulatory coordination with DHS will be necessary for projects that involve drinking water standards or adherence to Title 22 reclaimed water standards such as Watsonville Recycled Water Treatment Facility, Hollister Urban Area Mater Water and Wastewater Plan, and South County Recycled Water Projects.

Several actions can be taken to streamline regulatory and permitting processes for the IRWM Plan components. These may include preliminary consultations with individual regulatory agencies and joint workshops between the appropriate regulatory representatives and Pajaro River Watershed IRWM Plan stakeholders. Such coordination would facilitate the permitting and regulatory decision process by identifying action items to be addressed by stakeholders. Such involvement by federal, state, and local agencies will assist the IRWM Plan effort to be more efficient during overall program implementation.

Table 13-3 lists the range of potential permits and approvals that will be needed, are in the process of being obtained, or have been obtained from the appropriate regulatory and jurisdictional agencies for Pajaro River Watershed IRWM Plan implementation projects. Several of the project teams are already working with the appropriate regulatory agencies and working through the permitting and/or approval process. Depending on the specific action required, certain permits and approvals will be pursued by each implementing party/stakeholder for their respective projects; for success, this process will necessitate clear communication, collaboration, and close coordination with the regulatory agencies.

Table 13-3: Potential Permits and/or Approvals Needed for IRWM Plan Strategies Implementation

Agency/Organization	Permit or Approval	Action Requiring Permit/Consultation
Federal		
U.S. Army Corps of Engineers	Section 404 Permit	Impacts to wetlands and/or waters of the United States
U.S. Bureau of Reclamation	Acquire additional CVP supplies, compliance with National Environmental Policy Act	CVP water deliveries, Connection to Santa Clara Conduit, CVP water transfers; O&M
U.S. Fish and Wildlife Service; National Marine Fisheries Service	Consultation and Coordination under Endangered Species Act	Construction in wetland and upland areas where federally listed species may be present, operations of some facilities
State		
California Coastal Commission	Coastal Development Permits	Projects within local Coastal Commission jurisdiction
California Department of Fish and Game	1601 Streambed Alteration Agreement	Alteration of streambeds during construction
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 Comments on Title 22 Report	Potential for water quality impairment from sediment discharge to waterways during construction, dewatering and disposal at construction sites, consultation with DHS on Title 22 Report, water recycling, desalination
State Water Resources Control Board	National Pollutant Discharge Elimination System (NPDES) General Permit Storm Water Pollution Prevention (SWPP); Change in Place of Use; water rights permitting.	Construction and grading of areas greater than 1 acre, authorization for use of CVP water in the PVWMA service area, and authorization to divert Harkins Slough and Corralitos Creek surface waters.
Local		

Agency/Organization	Permit or Approval	Action Requiring Permit/Consultation
Cities of Gilroy, Hollister, Morgan Hill, San Juan Batista and Watsonville; Monterey County, San Benito County, Santa Clara County, and Santa Cruz County	Development Permit	Construction projects within City and County limits
County Flood Control and/or Public Works	Encroachment Permit Approval	Construction affecting levees and drainage ditches
County Health Services, SCVWD (for Santa Clara County)	Well Drilling Permit, Grading Permit, Development and Coastal Development Permits, Riparian Exclusion Permit, Encroachment Permit	New well construction or decommissioning and construction projects within County jurisdiction and local coastal zone.
Private Industry		
PG&E	Infrastructure Review; Encroachment Permit	Construction within right-of-way for overhead electrical wires and potentially under buried pipelines
Telecommunications & Cable Companies	Infrastructure Review; Prior Notification to Construction	Construction near or crossing buried lines
Union Pacific Railroad/Southern Pacific Railroad	License Agreement or Easement; Right of Entry	Cross railroad tracks, parallel tracks; conduct surveys, enter the railroad right-of-way

14 Climate Change

This chapter addresses the following 2012 IRWM Plan Standard:

> **Climate Change -** The IRWM Plan must address both adaptation to the effects of climate change and mitigation of GHG emissions. The IRWM Plan must include the following items:
>
> - A discussion of the potential effects of climate change on the IRWM region, including an evaluation of the IRWM region's vulnerabilities to the effects of climate change and potential adaptation responses to these vulnerabilities.
> - A process that considers GHG emissions when choosing between projects alternatives.
> - The IRWM Plan must include a list of prioritized vulnerabilities based on the vulnerability assessment and the IRWM's decision making process.
> - The IRWM Plan must contain a plan, program, or methodology for further data gathering and analysis of the prioritized vulnerabilities.

There is mounting scientific evidence that global climate conditions are changing and will continue to change as a result of the continued build-up of greenhouse gases (GHGs) in the Earth's atmosphere. Changes in climate can affect municipal water supplies through modifications in the timing, amount, and form of precipitation, as well as water demands and the quality of surface runoff. These changes can affect all elements of water supply systems, from watersheds to reservoirs, conveyance systems, and treatment plants. Climate change can also affect flooding potential, riparian and aquatic habitat and ecosystems, and seawater intrusion.

Planning for and adapting to anticipated changes in climate will be essential to ensuring water supply reliability for all users and to protecting sensitive infrastructure against more frequent and extreme precipitation and wildfire events. This chapter summarizes anticipated climate change impacts on the State of California and the Pajaro River Watershed Integrated Regional Water Management (IRWM) region, evaluates the impacts of those changes with regards to water resource management, assesses the vulnerabilities to anticipated climate change impacts, and provides recommended adaptation and mitigation strategies to address uncertainty and reduce GHG emissions. In addition, a plan for ongoing data collection to fill data gaps and monitor the frequency and magnitude of local hydrologic and atmospheric changes is provided.

14.1 The Science of Climate Change

The Earth's weather patterns have fluctuated throughout history, and these changes are generally well-documented and accepted by the scientific community. Based on current knowledge, the relatively rapid changes in the Earth's climate that have been observed since the mid-20th century are projected to continue and may lead to some global climate patterns that fall outside of the range of historic variability, such as rising average temperatures and changes to snow cover (IPCC, 2007). These changes may significantly impact our ability to meet future water management objectives in areas such as water supply reliability, water quality, flood control, stormwater management, and habitat protection.

Certain gases, referred to as greenhouse gases (GHGs), have the ability to absorb heat that originated from solar radiation. GHGs play an important role in maintaining the temperature of the Earth's atmosphere. As the sun's energy reflects off of ground and water surfaces, GHGs trap a portion of this energy and create conditions warm enough for all life forms that reside in the biosphere. The phenomenon is commonly known as the greenhouse effect (USEPA, 2012). Scientists have observed a statistically significant increase in GHG concentrations in the Earth's atmosphere in the past century. Increasing GHG

concentrations expand the atmosphere's capacity to retain heat, and decrease the amount of solar energy reflected back into space. This process is illustrated in Figure 14-1.

Figure 14-1: The Greenhouse Effect

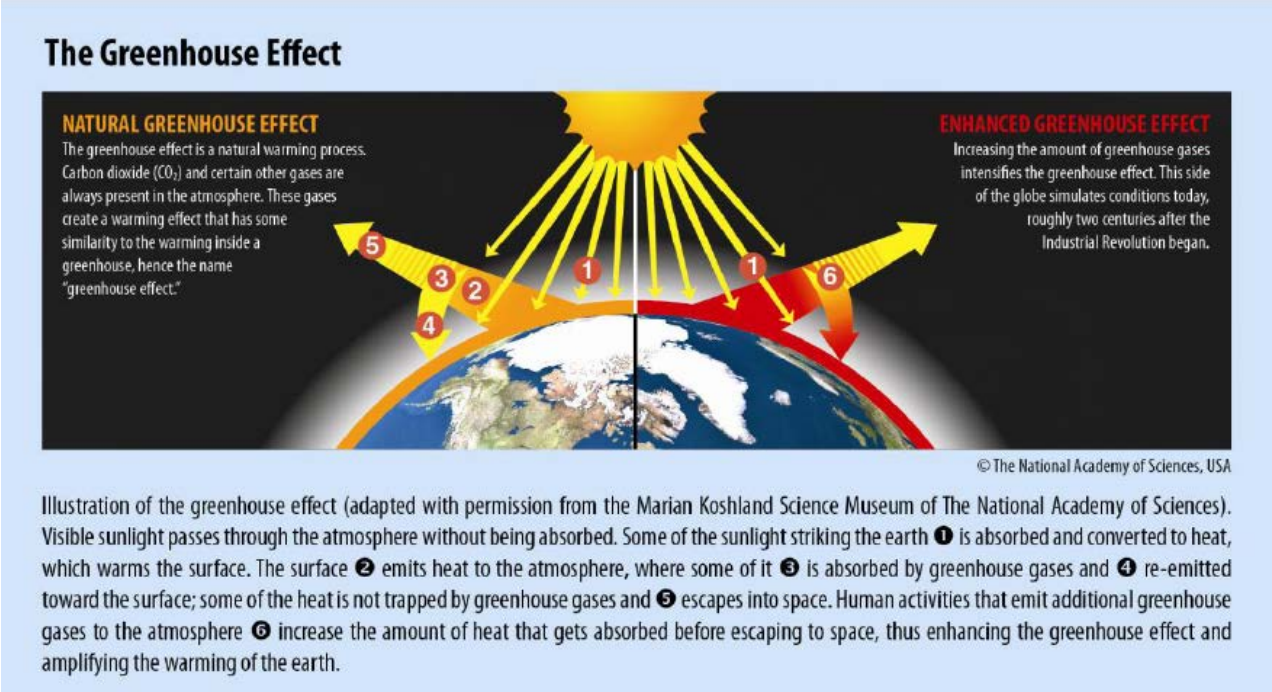


Illustration of the greenhouse effect (adapted with permission from the Marian Koshland Science Museum of The National Academy of Sciences). Visible sunlight passes through the atmosphere without being absorbed. Some of the sunlight striking the earth ❶ is absorbed and converted to heat, which warms the surface. The surface ❷ emits heat to the atmosphere, where some of it ❸ is absorbed by greenhouse gases and ❹ re-emitted toward the surface; some of the heat is not trapped by greenhouse gases and ❺ escapes into space. Human activities that emit additional greenhouse gases to the atmosphere ❻ increase the amount of heat that gets absorbed before escaping to space, thus enhancing the greenhouse effect and amplifying the warming of the earth.

(Pew Center, 2011)

There is near unanimous consensus among the scientific community that there is a significant correlation between increased atmospheric GHG concentrations and observed warming trends. According to the Intergovernmental Panel on Climate Change (IPCC), "Most of the observed increases in global average temperatures since the mid-20th century are very likely due to the observed increase in anthropogenic GHG concentrations," (IPCC, 2007b). The most recent IPCC report states that the minimum global average surface warming is predicted to be 1.5 degrees Celsius (C) by 2030, and rising temperatures thus far have already begun to impact the presence of ice, atmospheric and oceanic circulation patterns, and the severity and variability of weather events (IPCC, 2007a).

Reducing GHG emissions is the primary method for mitigating extreme or catastrophic climate change. However, because current GHG emissions are expected to continue to affect climate into the future, even under aggressive GHG reduction scenarios, it is prudent to begin identifying strategies needed to adapt to future climate conditions. Before strategies can be identified, water resource managers must first understand future climate projections and uncertainties associated with these projections.

14.2 Statewide Observations and Projections

Climate change may potentially have significant impacts on California's water resources, due to rising sea levels, decreased snowpack, and increased water and air temperatures. In addition, extreme conditions, including droughts and floods, are expected to become more frequent and severe. Multiple models are available to simulate climate processes and project potential climate scenarios for variables such as temperature and precipitation. The results from these models vary, due to the different assumptions made. The following sections discuss the range of climate impacts projected for California based on a range of assumptions.

14.2.1 Temperature Changes

Historic records show that California's average temperatures have increased by 1 degree F in the last hundred years. However, this increase has not been uniform throughout the state. The Central Valley has experienced a slight cooling trend in the summer, likely due to an increase in irrigation (California Energy Commission [CEC], 2008). Higher elevations have experienced the greatest temperature increases (DWR, 2008).

GCMs project that in the first 30 years of the 21st century, overall summertime temperatures in California will increase by 0.9 to 3.6 degrees F (CAT, 2009). By the end of the 21st century, average temperatures in California are expected to increase by 3.6 to 10.8 degrees F (Cayan et al, 2006). Increases in temperature are unlikely to be felt uniformly throughout the State. Model projections generally conclude that warming will be greater in California in summer months than in winter months (CAT, 2009) and inland areas will experience more extreme warming than coastal areas (California Natural Resources Agency [CNRA], 2009). These non-uniform warming trends reinforce the importance of implementing local and regional approaches to addressing climate change.

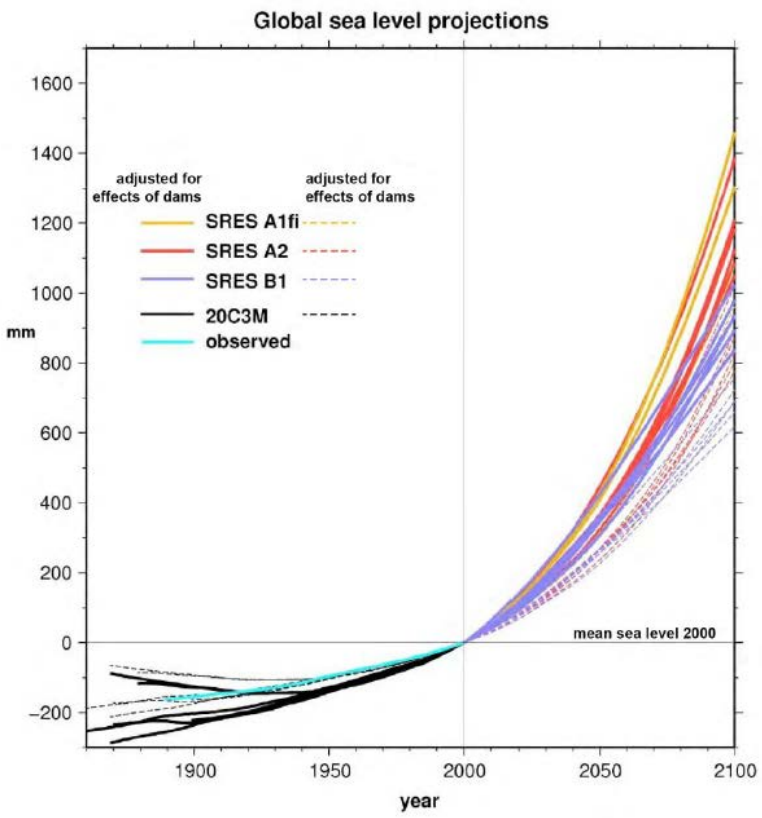
14.2.2 Precipitation Changes

While temperature projections exhibit high levels of agreement across various models and emissions scenarios, projected changes in precipitation are more varied. Taken together, downscaled GCM results show little, if any change in average precipitation for California before 2050 (DWR, 2006), with a drying trend emerging after 2050 (BOR, 2011a and CCSP, 2009). Individual GCM results vary considerably and therefore climate projections imply an increase in the uncertainty of future precipitation conditions.

14.2.3 Sea-level Rise

In the last century, the California coast has recorded a sea level rise of seven inches (DWR, 2008). There are several approaches to estimating the extent of sea level rise due to climate change. The Coastal and Ocean Working Group of the California Climate Action Team (CO-CAT) has taken the IPCC's modeling scenarios and used them to create more California-specific estimates of climate change impacts. CO-CAT estimates sea levels will rise between 10 and 17 inches by 2050, and between 31 and 69 inches by the end of the century (CO-CAT 2010). This projection has been adopted by the California Ocean Protection Council (OPC) in a resolution on sea-level rise (OPC, 2010).

Figure 14-2: Sea Level Rise Projection by CO-CAT

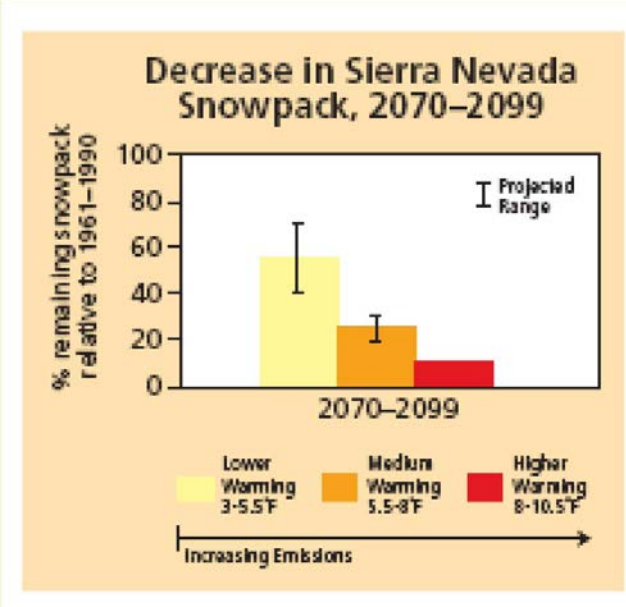


Rising sea levels threaten levees, particularly in the Sacramento – San Joaquin Delta, which is the source of much of California's water supply. Sea level rise increases the risk of storm surges and the flooding of coastal residences and infrastructure. Increasing salinity resulting from sea-level rise may impact the quality of vulnerable water supplies throughout California. Sea-level rise and changing precipitation patterns will also impact ecosystems in coastal areas that rely on a balance between freshwater and salt water, and may increase saline intrusion into coastal aquifers.

14.2.4 Snowpack Reduction

The average April 1 snowpack in the Sierra Nevada region (a primary storage mechanism for California's water supply) has decreased in the last half century (Howat and Tulaczyk, 2005 and CCSP, 2008). As the climate warms, the Sierra Nevada's snowpack is anticipated to continue to shrink. Based on simulations conducted to date, Sierra Nevada snowpack is projected to shrink by 30% between 2070 and 2099 (Figure 14-3), with drier, higher warming scenarios putting that number as high as 80% (Kahrl and Roland-Holst 2008).

Figure 14-3: Projected Snowpack Changes in the Sierra Nevada



Source: Hopmans et al. 2008

14.2.5 Extreme Events

As the climate warms, extreme events, including wildfires, floods, droughts, and heat waves, are expected to become more frequent. In contrast, freezing spells are expected to decrease in frequency over most of California (CNRA, 2009). While GCM projections may indicate little if any change in average precipitation in the future, extreme precipitation events are expected to become more common (Congressional Budget Office [CBO], 2009). Atmospheric rivers, sometimes called "pineapple express storms," have historically been responsible for creating the heaviest storms in California. These storms are characterized by long, thin bands of air with a high water vapor content that occasionally stretch over California from the Pacific Ocean. Years with several atmospheric river events could become more frequent over the next century (Dettinger, 2011).

In addition to atmospheric river events, droughts and heat waves are expected to become more frequent, longer, and more spatially-extensive (CNRA, 2009). The combination of drier and warmer weather compounds expected impacts on water supplies and ecosystems (CCSP, 2009). Wildfires are becoming more frequent, longer, and more wide-spread (Sierra Nevada Alliance [SNA], 2010 and CCSP, 2008) and are expected to continue to increase in frequency and severity (CCSP, 2009 and SNA, 2010).

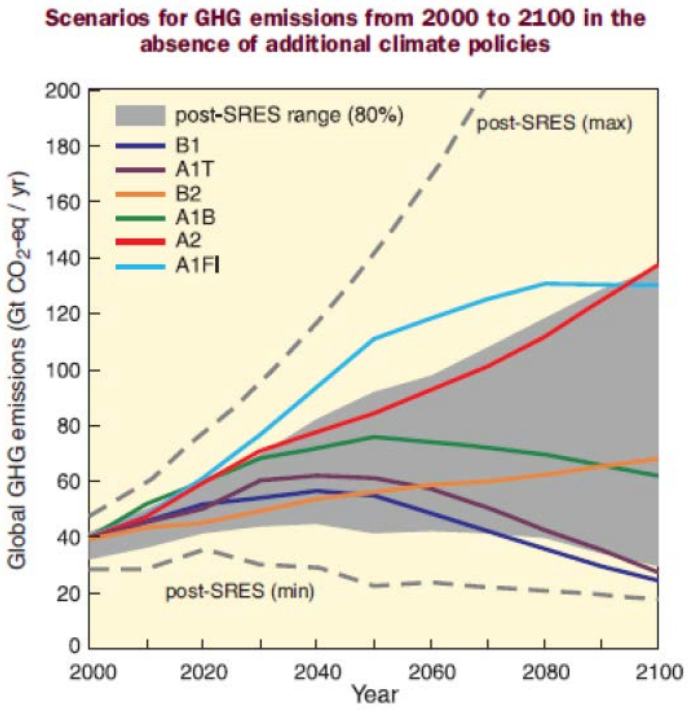
14.3 Regional Climate Change Projections

14.3.1 Climate Change Models and Scenarios

Due to the dynamic nature of climate change, historic climate records may not be accurate predictors of future trends. For this reason, several global circulation models (GCMs) were developed as part of the 2009 Scenarios Project to represent the international community's best understanding of the Earth's atmosphere and oceans over time (Cal-Adapt Strategy, 2009) and to predict temperature and precipitation trends for use in other analyses. For the purposes of planning efforts in California, these GCMs are capable of providing climate change projections only at a large spatial scale. The CEC has developed a set of tools, known as Cal-Adapt, which uses projections from four different GCMs and scales them down to provide regional data for California. The four GCMs used in Cal-Adapt are:

- National Oceanic and Atmospheric Administration (NOAA) Geophysical Fluid Dynamics Laboratory (GFDL) model
- The National Center for Atmospheric Research Parallel Climate Model (PCM)
- The Community Climate System Model (CCSM) Version 3.0
- Centre de Recherches Meteorologiques (CNRM)

Figure 14-4: Climate Change Scenarios from



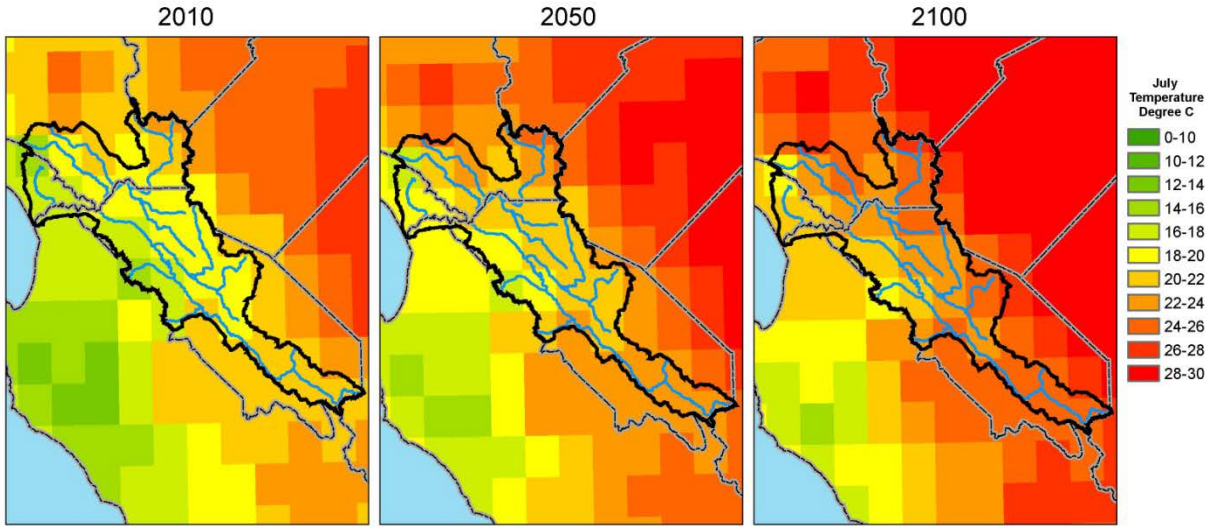
These models have all been run on two of the potential emissions scenarios described by the IPCC: a medium-high (A1) and lower (B1) emissions scenario. In addition, Cal-Adapt uses the most current data and tools whenever possible, including recent data on temperature, precipitation, snowpack, and sea level rise. In addition to being California-specific, Cal-Adapt has the advantage of being an accessible web-based tool (thus expected to be widely used across the state) that functions to identify potential climate change risks and vulnerabilities in specific areas. Cal-Adapt does not provide forecasts or predictions, but rather potential future scenarios based on downscaled IPCC models. These scenarios can serve as a starting point for planning for climate change adaptation.

14.3.2 Temperature

According to Cal-Adapt, the average monthly temperature in the Pajaro River watershed is projected to increase by 3 to 4 degrees F by mid-century and 5 to 6 degrees F by late-century, depending on future

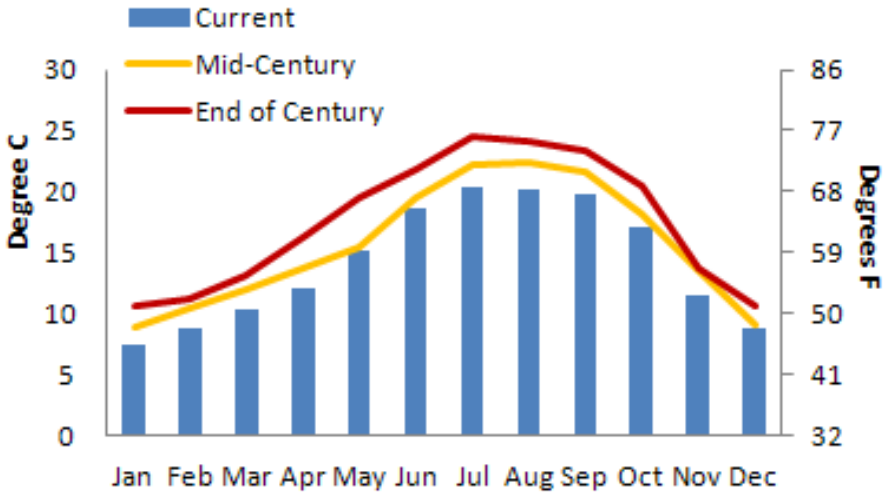
GHG emission levels. Figure 14-5 is adapted from Cal-Adapt to illustrate the overall projected average monthly summer temperature change in the watershed. Temperatures for other times of the year are also going to increase in smaller magnitude as compared to summertime.

Figure 14-5: Projected Summer Temperature Increase in Pajaro Watershed



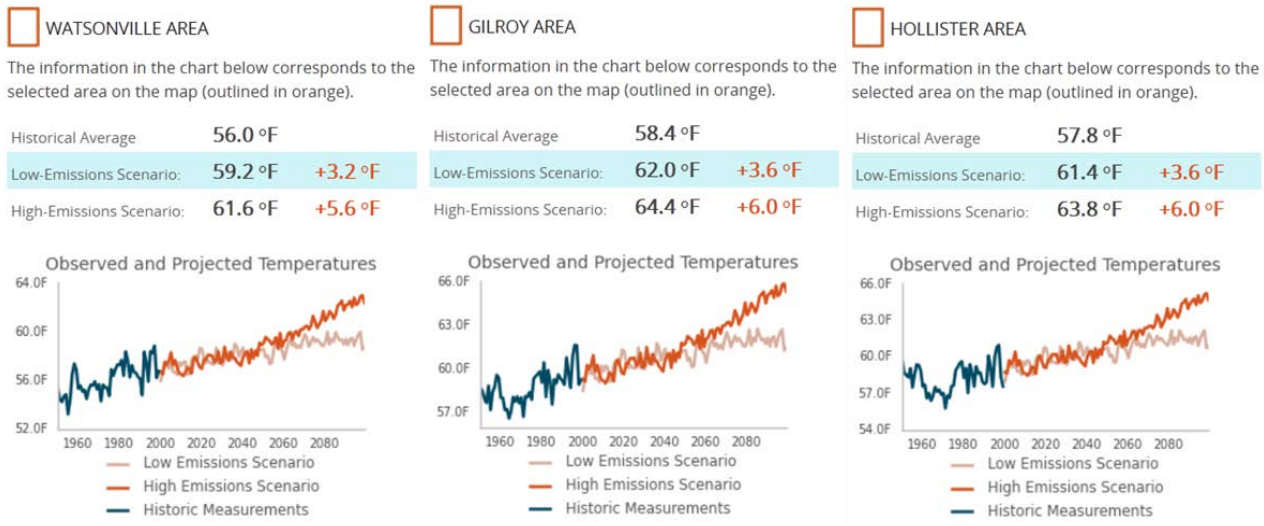
Temperatures for other times of the year are also going to increase in smaller magnitude as compared to summertime. Figure 14-6 shows mean temperature increases for the high emissions scenario from the four GCMs used in Cal-Adapt.

Figure 14-6: Average Monthly Temperature Projection in Pajaro Watershed



As previously described, temperature increases are not expected to be uniform throughout California. Higher temperature increases are expected to occur in inland areas without irrigated agriculture, with less severe temperature increases in irrigated areas and coastal areas. Projected temperature patterns for major cities in the Pajaro River watershed are illustrated in Figure 14-7. As shown in this figure, cities closer to the coast generally have lower projected temperature increases, while inland regions are projected to experience greater climate change-related temperature increases.

Figure 14-7: Monthly Average Temperature Projection in Different Locations in the Watershed



14.3.3 Precipitation

Although different GCMs generally predict that temperature will increase in the following century, the projected impact of climate change on precipitation patterns is highly variable as demonstrated in Table 14-1. Climate models show less consistency in projecting the amount and timing of precipitation. Out of the four GCMs used in Cal-Adapt, two of the models (GFDL and CNRM3) project shift in peak precipitation from December to January in mid-century, and to February by the end of this century. Both of these models also project higher winter runoff in response to increased precipitation projection. On the contrary, PCM and CCSM model did not show significant shift in rainfall pattern, but exhibited a decline in both precipitation and overall runoff volume. All models show that by the end of century, the total annual runoff volume will decrease by 20 to 30 percent.

Table 14-1: Annual Change in Precipitation as Compared to 2010 Baseline for Pajaro Watershed from Four GCMs in Cal-Adapt

A2 Scenario	CCSM	CNRM3	GFDL	PCM
2010-2030	1.0%	-4.5%	-6.5%	2.2%
2040-2060	0.2%	-42.1%	-19.6%	-13.6%
2070-2090	4.3%	-48.9%	-44.3%	-11.7%
B1 Scenario	**CCSM3**	**CNRM**	**GFDL**	**PCM**
2010-2030	21.3%	-5.2%	-20.5%	16.6%
2040-2060	25.6%	-16.5%	-21.1%	-18.5%
2070-2090	28.1%	-33.1%	-38.6%	-13.9%

Both of the models (GFDL and PCM) in the recent UGSG study projected a shift in peak precipitation from January to February in Santa Cruz Mountains, and large decreases in the fall. The two models that were selected show distinct projections for precipitation, and consequently, available runoff. The GFDL

model projects a decrease in March precipitation and runoff, while the PCM model shows a much greater increase in runoff in March.

Additionally, with rising temperatures in the future, more precipitation will fall as rain rather than snow. Although precipitation in the form of snowfall is not directly relevant to the Pajaro River watershed area, the region heavily relies on the CVP for its irrigation and urban water use. It is thus important to understand the snowpack reduction projected for the Sierra-Nevada mountain range. With rising temperatures in the future and more rain than snow there will be increased challenges to store the water for dry season while protecting downstream areas from flood waters during the wet season (CNRA, 2009).

A recent study conducted by the USGS projected, towards the end of this century, peak flow in Santa Cruz Mountain range to increase by 20 to 30 percent in high emission (A2) scenario using GFDL model, and lower low flows than historical values. The study also projects drought to occur nearly twice as frequently in the future (USGS, 2012).

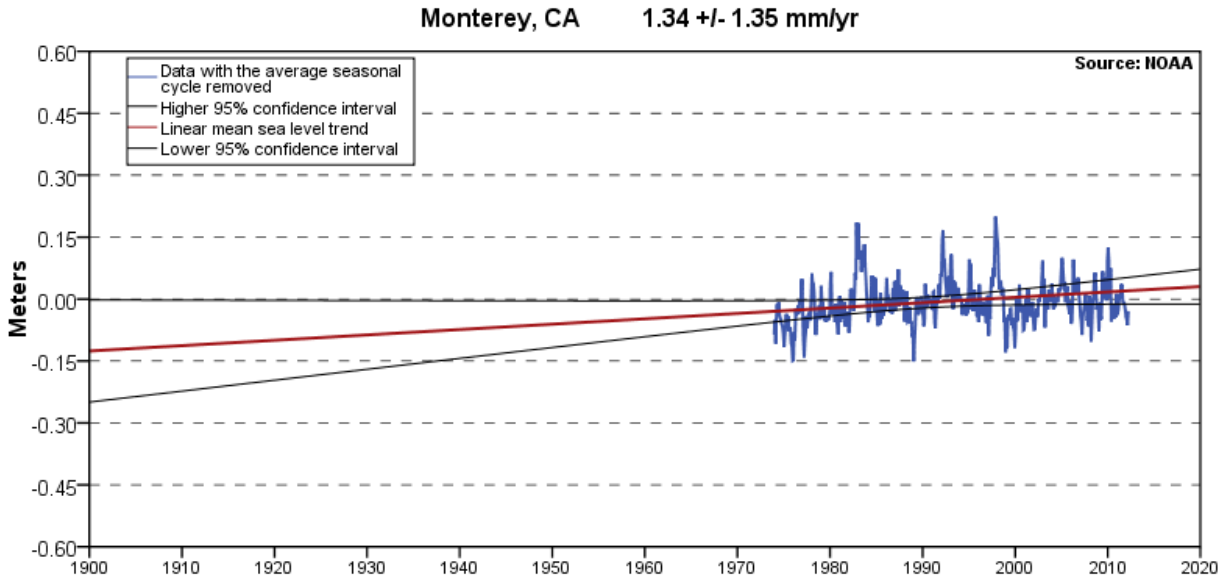
14.3.4 Extreme Weather Conditions

The intensity and frequency of extreme weather conditions are expected to increase as temperatures increase and rainfall patterns shift. Flood, drought and heat waves will occur more frequently, and storm and runoff will be more intense. For example, the 2009 Scenarios Project revealed current 100-year heat waves are likely to become 10-year events under the lower emission (B1) scenario, and even more frequent, approaching annually, in the high emissions (A2) scenario. In general, it is predicted summers will be longer and drier in the future, resulting in longer dry spells or droughts than has been experienced in recent history. While the frequency of large coastal storms and heavy precipitation would not change significantly over this century, increased storm intensity, coupled with sea-level rise may cause higher storm surges, more intense inland flooding, and increased erosion along the state's coastline (CNRA, 2009).

14.3.5 Sea-Level Rise

As previously described and displayed in Figure 14-2, CO-CAT estimates sea levels will rise between 10 and 17 inches by 2050, and between 31 and 69 inches by the end of the century (CO-CAT 2010). In the Pajaro region, which relies heavily on water from the impacted CVP, the additional impact of sea-level rise and the potential for saline intrusion into groundwater resources could have a serious effect on freshwater resources in the region. According to the IRWMP climate change handbook (CDM, 2011), regional sea level rise may be higher or lower than state projections. Local tidal gauge data at Monterey Bay was obtained from NOAA's Tides and Currents monitoring site. The mean sea level data shows that the equivalent sea-level change is 0.48 feet in 100 years, or 1.34 mm per year. As shown in Figure 14-8, this projection uses linear trend, which is different from the hyperbolic shape projected by CO-CAT. The linear trend is likely to give a more accurate local projection for near-term estimation, but for long-term planning purpose, CO-CAT projection should be considered until more accurate data becomes available.

Figure 14-8: Local Sea Level Rise Projection by NOAA

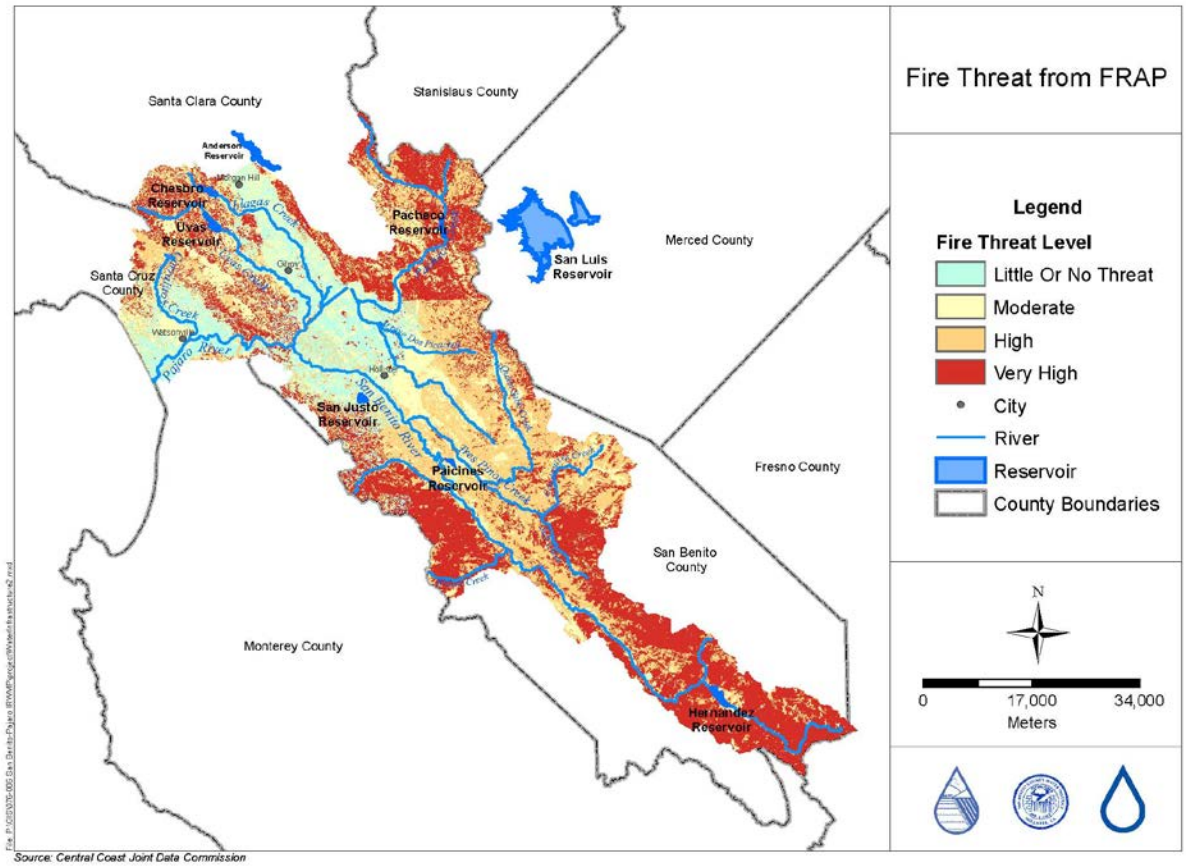


The mean sea level trend is 1.34 millimeters/year with a 95% confidence interval of +/- 1.35 mm/yr based on monthly mean sea level data from 1973 to 2006 which is equivalent to a change of 0.44 feet in 100 years.

14.3.6 Wildfire

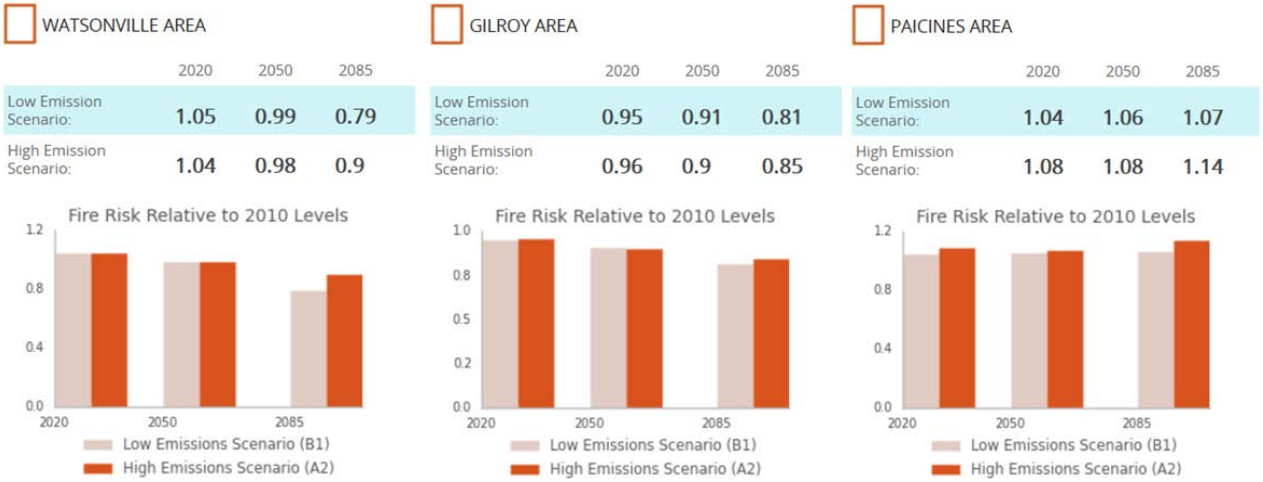
The California Department of Forestry and Fire Protection conducted a fire threat study in 2004, which determined fire threat by counting fire frequency and behavior. Fire threat can be used to estimate the potential for impacts, with higher threat classes indicating higher likelihood and/or increase severity of wildfires. The majority of land cover in Pajaro River watershed is forest and shrub land. These areas are highly susceptible to wildfire, whereas developed areas and agricultural lands typically have adequate water infrastructure to prevent wildfires from spreading. As such, these areas are characterized as lower threats. The overall fire threat distribution is presented in Figure 14-9 .

Figure 14-9: Fire Threats in Pajaro Watershed



The probability of wildfire is projected to slightly increase as a result of projected temperature increases. Based on Cal-Adapt projections, inland shrub lands are expected to experience a 7 to 14 percent increase in potential burned area, compared to a 10 to 20 percent reduction in potential burned area for coastal and irrigated agricultural areas, due to increased water use for irrigation and increased risks of flooding.

Figure 14-10: Fire Risk Projections in Different Locations in Pajaro River Watershed



14.4 Regional Water Resource Vulnerability

The RWMG conducted a vulnerability assessment using the DWR Climate Change Handbook for Regional Water Planning. Based on the assessment, vulnerabilities were identified in the following areas: water demand, water supply, water quality, sea level rise, flooding, and ecosystem and habitat. Projected climate change impacts to water resources in the Pajaro River watershed and watershed vulnerabilities are summarized in the following sections.

14.4.1 Water Demand

Existing water demands were compiled from various planning documents developed by SBCWD, PVWMA and SCVWD for inclusion in the Region Description chapter of this Plan. Major uses in the watershed include agricultural irrigation and municipal and industrial (M&I) use, with approximately 75% of water use meeting agricultural demands and 25% of water use meeting M&I demands.

while the relative agricultural and M&I usage percentages are expected to remain relatively constant over the next 20 years, the proportion of agriculture usage in the SBCWD service area is expected to grow by 2-3% per year, due to a projected increase in irrigated acreage of approximately 17,000 acres by 2022. In addition, the PVWMA service area has observed a significant shift in the types of crops grown, moving from lower to higher water-use crops such as nursery, strawberry, and vine crops. It is assumed that approximately 2,000 acres of deciduous crops will be converted to berry crops by 2040, equally distributed between strawberry and raspberry crops.

Water Demand Vulnerabilities

- *Increased agricultural irrigation demands*
- *Increased landscape irrigation demands*
- *Increased cooling demands*
- *Increased environmental demands*

The seasonal variability of water demands is projected to increase with climate change as droughts become more common and more severe (DWR, 2008). In addition, warmer temperatures will increase evapotranspiration rates while extending the length of growing seasons, resulting in an overall increase in agricultural water demands (CNRA, 2009). In addition, fruit crops are more climate-sensitive and may require additional water as the climate warms. Therefore, more water may be necessary to maintain yield and quality in future years.

Other seasonal uses such as landscape irrigation and cooling demands are also expected to increase as a result of climate change (DWR, 2008 and CNRA, 2009). Identification of industrial cooling towers and similar facilities will help the region gain better understanding of the potential increases in seasonal demands.

Streamflow needed to support habitat (environmental water demand) in the region may also be impacted by increased temperatures. PVWMA is currently considering surface water supply projects. The estimated yield from the projects is impacted by the amount of flow required to remain in the waterway to support habitat. The minimum habitat flow requirements will have to consider projected climate change impacts and be designed accordingly.

14.4.2 Water Supply

The region's water supplies include groundwater, local surface water, imported surface water from the Central Valley Project (CVP), and recycled water. All but recycled water could be affected by the climate change impacts previously described. Potential climate change impacts on water supply include:

- Snowpack quantity is expected to decrease overall as snowlines recede (DWR 2008; CNRA, 2009).
- Snowmelt runoff timing is expected to shift as flows increase in the winter and decrease in the late spring/early summer (DWR 2008). This could result in shifted timing of flood-control dam functionality and changes in reservoir storage throughout the year.
- While precipitation projections are less definitive than other climate variables, there is general consensus that precipitation in the Southwestern US will decline over the second half of the 21st Century (CCSP 2009).
- CVP supplies are expected to be subject to environmental flow restrictions and other flow limitations (DWR 2008, Chung et al 2009) which may become more difficult to meet as climate changes.
- Coastal aquifers will be subject to seawater intrusion, especially in aquifers with high pumping rates (DWR 2008).
- Droughts are expected to be more severe and potentially more frequent (DWR, 2008; CNRA, 2009).

Water Supply Vulnerabilities

- *Reduced imported water supplies*
- *Increased groundwater overdraft*
- *Increased seawater intrusion*
- *Reduced drought reliability*

Because the Region relies on imported supplies, any reduction or change in the timing or availability of those supplies could have negative impacts on the Region. Reductions in imported water supplies would lead to increased reliance on local groundwater, recycled water, desalination, or other sources of supplies if demand was not reduced. Changes in local hydrology could affect surface storage of water and natural recharge to the local groundwater and the quantity of groundwater that could be pumped in a sustainable manner. Additional overdraft could exacerbate seawater intrusion in the Pajaro Valley. In general, the region could become less drought tolerant.

14.4.3 Water Quality

Existing water quality issues in the Pajaro River Watershed include seawater intrusion, salinity and nitrates in groundwater, groundwater contamination from spills and leaks including MTBE and perchlorate, and numerous surface water bodies that suffer significant water quality impairments (nutrients, sediment, fecal coliform, mercury, chloride, pH, low dissolved oxygen and pesticide pollutants/stressors). Climate change impacts may affect water quality in a multitude of ways, including:

- Eutrophication is expected to occur more often in surface water as water temperatures increase (DWR 2008).
- Water quality can be impacted by both extreme increases and decreases in precipitation. Increases in storm event severity may result in increased turbidity in surface water supplies while decreases in summertime precipitation may leave contaminants more concentrated in stream flows (DWR 2008).
- Higher water temperatures may exacerbate reservoir water quality issues associated with dissolved oxygen levels and increased algal blooms (DWR 2008).
- Increased salinity intrusion into estuaries and brackish environments as seasonal freshwater flows decrease and sea levels rise (DWR, 2008).
- Pollutant loads may increase with more intense storms (DWR 2008).

Water Quality Vulnerabilities

- *Increased pollutant concentrations in surface water*
- *Increased frequency of eutrophication and algae blooms*
- *Increased turbidity and sedimentation*
- *Increased seawater intrusion*

CVP water is vulnerable to potential effects of climate change at the source in the Delta. Sea-level rise could increase the intrusion of salinity into the Delta and its exported water. This would increase chloride and bromide (a DBP precursor that is also a component of sea water) concentrations CVP imported water. In addition, decreased freshwater flows into the Delta could increase the concentration of organic matter, which contribute to potentially higher DBP formation concentrations.

Water quality impacts to surface waters due to climate change include increased temperature, more frequent heavy rainfall events, and longer periods of low natural stream flow due to decreased annual precipitation. Increased water temperature generally reduces dissolved oxygen and can promote algal blooms if nutrients are available in the source. The storm events can transport sediments and other pollutants along the river, while long periods of low flow can increase concentrations of pollutants from wastewater plant and non-point discharges. Increased wildfires that contribute to high erosion rates in subsequent storms may also contribute to the turbidity events.

Increased salinity intrusion into the local sloughs in Watsonville could affect their viability for agricultural production and impact habitats. Groundwater quality could be affected as a result of recharge with poorer quality surface water.

14.4.4 Sea Level Rise

The majority of the region will not be direct impacted by sea level rise, but it could have significant impacts in the lower Pajaro River Watershed along the coast. Potential sea level rise impacts include:

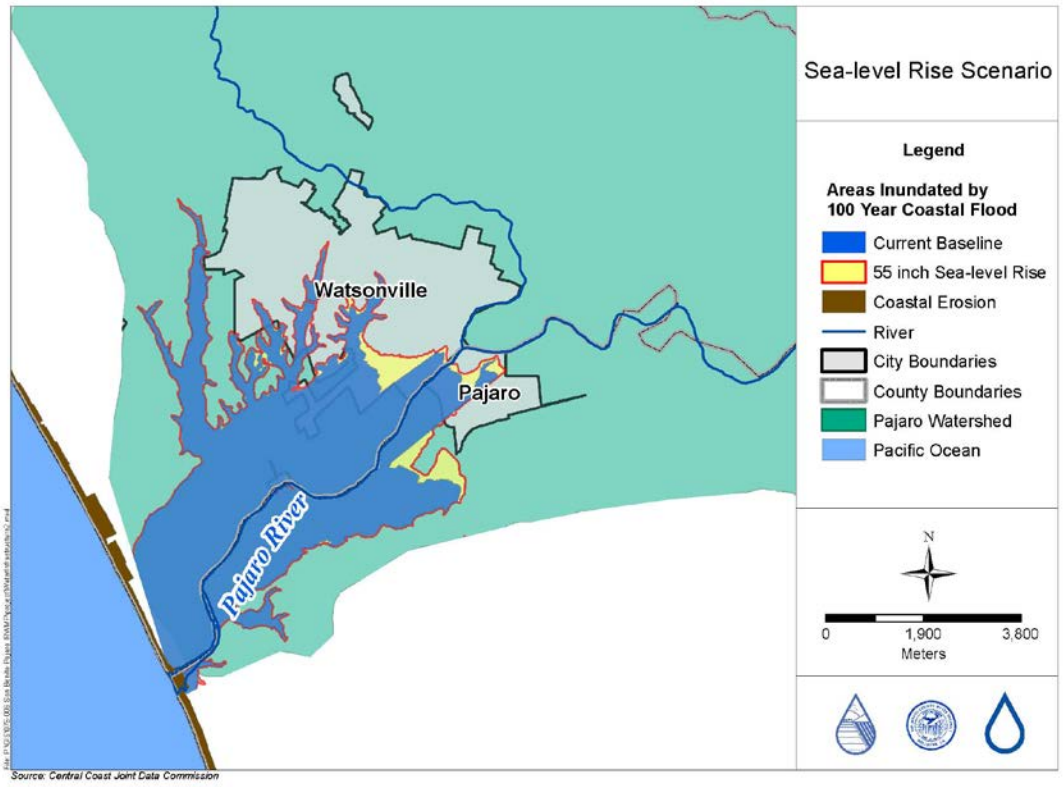
- Coastal structures, especially earthen levees, are placed under additional stress and are more likely to fail as sea level rises (DWR, 2008; CNRA, 2009).
- Coastal flooding is more likely to inundate coastal infrastructure as base sea levels increase (DWR 2008). Areas within the tidal reach may also be more susceptible to flooding.

Coastal flooding is projected to be more severe in the future, due to sea-level rise. According to Cal-Adapt projections, the area inundated by future coastal flooding will increase by 11% in the Pajaro Watershed. Under existing conditions, the cities of Watsonville and Pajaro and surrounding agricultural areas are subject to flooding during the 100-year coastal flood. Critical water infrastructure, such as the Watsonville Wastewater Treatment Plant, face potential inundation. Small coastal communities that depend on tourism will also be disrupted. Assuming a 55-inch rise in sea level, which was developed by the USGS and Pacific Institute and represents a conservative project for sea level rise, Figure 14-11 shows the areas that would be inundated by a 100-year coastal flood.

Sea Level Rise Vulnerabilities

- *Increased coastal flooding*
- *Reduced habitat quality*
- *Increased damage to existing infrastrastructure*

Figure 14-11: Increased Future Coastal Flood Threat with 55-inch Sea-level Rise



Other vulnerabilities to sea level rise include existing levees and roads that may not be designed to withstand higher mean sea levels and reduced habitat quality as a result of salt water/freshwater balance changes.

14.4.5 Flood Management

Flood management is an issue throughout the watershed. Flooding on the lower Pajaro River has been an issue since the 1950s. The existing channel capacity in the lower reaches of Pajaro River is approximately 22,000 cubic feet per second (cfs), well below the expected 100-year flood event of approximately 42,000 cfs (see Figure 14-12). Flooding has also been issue on Llagas Creek. Potential climate change impacts on flooding include:

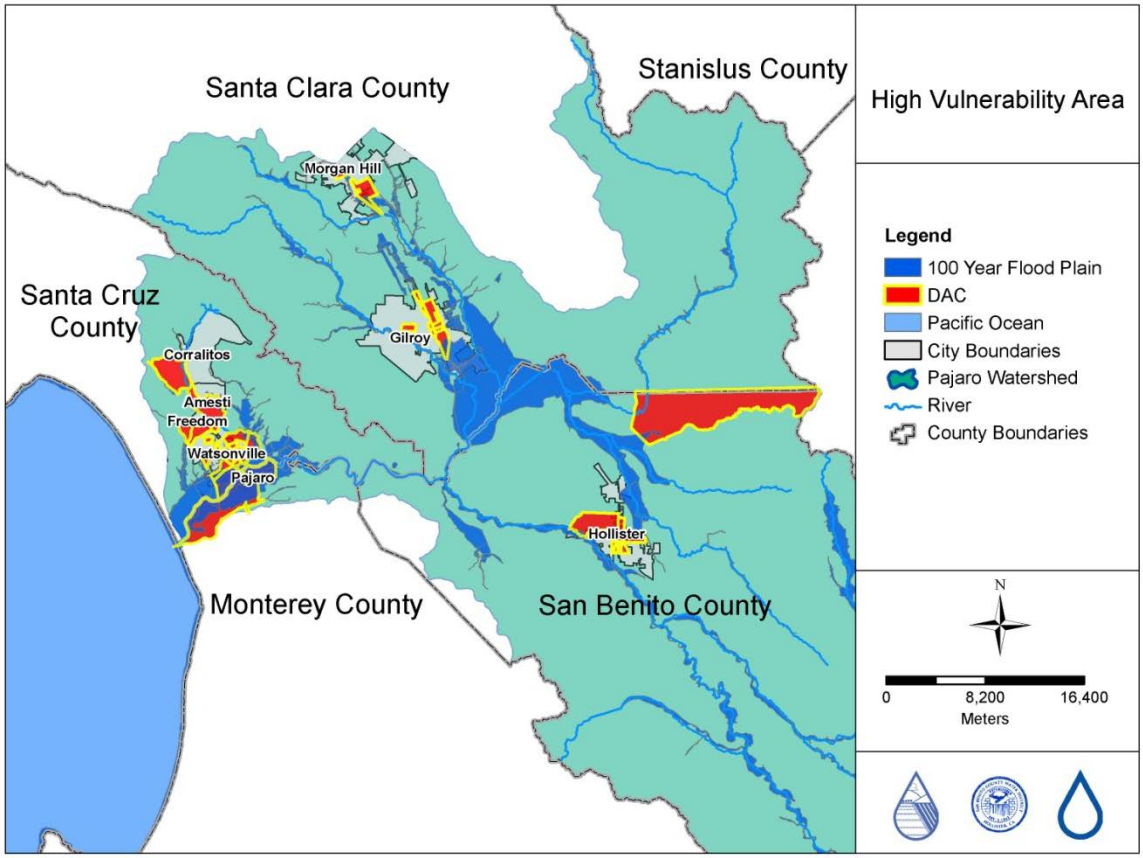
- Delta levee breeches may occur, causing damage and reducing reliability of CVP supplies (DWR, 2008).
- Storms are expected to increase in intensity. The 2009 California Water Plan recommends that no new critical facilities (e.g., fire stations, hospitals, schools, emergency shelters) be built within a 200-year flood plain (DWR, 2008; DWR, 2009; CNRA, 2009).

Critical infrastructure throughout the region lies in the 100-year floodplain, as portions of Morgan Hill, Gilroy, Hollister, and Watsonville are the 100-year flood plain. Regional mapping of 200-year floodplains and critical infrastructure has yet to be completed. Additional vulnerabilities within the watershed may be aging flood protection infrastructure that may not be resilient to more intense storms and increased risk of flooding associated with wildfires. Low-lying disadvantaged communities (DACs) will be particularly vulnerable to flooding damages causing temporary and/or permanent displacement. Some of the DACs within the Pajaro region currently lie within the 100-year floodplain as shown in Figure 14-12, and the effects of climate change, including more intense storms and sea level rise, could exacerbate this vulnerability. Delta levee breaches could impact the reliability of the region's CVP supplies.

Flood Management Vulnerabilities

- *Increased flooding*
- *Reduced imported water supplies*

Figure 14-12: Low-lying Disadvantaged Communities in Pajaro Watershed



14.4.6 Ecosystem and Habitat

Several creeks and rivers in the Pajaro River Watershed support riparian habitat, including the Pajaro River, Llagas Creek, Uvas/Carnadero Creek, San Benito River, Miller Canal, Corralitos Creek, and other associated tributaries. Riparian and wetland areas along these water features and along various drainage ditches provide habitat and movement corridors for wildlife. Some of the wetland areas contain suitable habitat for two sensitive species known to occur in the project vicinity: the California red-legged frog and the California tiger salamander. San Felipe Lake, which is the central feature of the "Bolsa de San Felipe", is designated as a "California Important Bird Area" by the National Audubon Society. The fields surrounding San Felipe Lake are saturated with water during the winter months and it is possible that vernal pools could be located here. If vernal pools do exist around the lake, they could serve as potential habitat for fairy shrimp and the larval stage of California tiger salamander (SCVWD, 2003). In addition, the Pajaro River serves as a migration pathway for adult steelhead (*Oncorhynchus mykiss*) migrating to spawning and nursery habitat in the upper watershed and for steelhead smolts (1-2 year old juveniles) migrating from that habitat to the ocean. Uvas, Llagas, and Corralitos Creeks provide potential spawning and rearing habitat, and Uvas provides access, spawning and rearing in all but extreme drought years. In addition, the Pajaro River Watershed is a tributary to Monterey Bay, a federally protected National Marine Sanctuary administered by the National Oceanic and Atmospheric Administration. Potential impacts of climate change on ecosystems and habitat include:

- Aquatic and terrestrial invasive species may spread in some areas (NAS 2010a).

- Certain habitats, such as estuaries and other coastal habitats, are especially vulnerable to climate change effects (EPA 2009a).
- Some temperature-sensitive fish species are especially sensitive to climate change (DWR 2008).
- Water quality issues associated with increased erosion and sedimentation may be detrimental to some benthic and aquatic communities (DWR 2008, EPA 2009a).

The Pajaro River Watershed includes aquatic habitats that are vulnerable to erosion and sedimentation. These include river and creek reaches that support steelhead trout as well as the Monterey Bay National Marine Sanctuary. Increased water temperatures could also affect steelhead trout. Increased temperatures and drought conditions could also affect other sensitive species such as the California red-legged frog and the California tiger salamander. Reduced water quality and flows could affect habitat for a variety of species, as could the spread of invasive species. Estuarine habitats, such as the Watsonville Slough, could be impacted by reduced seasonal freshwater flows. Invasive species may become even more challenging to manage (CCSP, 2009). Climate change will stress forested areas, making them more susceptible to pests, disease, and changes in species composition. With less frequent but more intense rainfall, wildfires are likely to become more frequent and intense, potentially resulting in changes in vegetative cover (CCSP 2009, SNA 2010). Coastal ecosystems that are sensitive to acidification and changes in salinity balances, sedimentation, and nutrient flows (such as estuaries and coastal wetlands) may be particularly vulnerable (CNRA, 2009).

Ecosystem and Habitat Vulnerabilities

- *Reduced habitat availability*
- *Reduce habitat quality*
- *Reduced water quality*

14.4.7 Hydropower

The region does not rely on local hydropower generation and does not plan to develop hydropower as a significant energy source. Therefore, the Pajaro River Watershed is not vulnerable to climate change impacts on hydropower generation.

14.4.8 Vulnerability Prioritization

The RWMG evaluated each of the climate change vulnerabilities using the factors in the Climate Change Handbook for Regional Water Planning. These factors are:

1. The region's overall planning priorities.
2. Risks associated with vulnerabilities. Risk is defined as the probability of an event occurring, multiplied by the consequence of its occurrence.
3. Presence of multiple potential stressors.
4. The potential for a vulnerability to shape regional objectives and inform IRWM Plan decisions. Some vulnerabilities exist that, even after being quantified, will not be useful for decision making. For example, if adaptation options for addressing a climate vulnerability are limited, little may be gained from further analysis or forming a related planning objective.

Most of the vulnerabilities ranked high for all of the factors and, therefore, have a high priority for the Pajaro River Water Watershed IRWM Plan. Two of the vulnerabilities – increased coastal flooding and increased damage to existing infrastructure – ranked high for the first three factors but ranked medium for the potential to affect regional objectives or decisions. They were ranked medium because adaptation will require significant changes to the social, economic, and environmental policies that extend beyond the

scope of the IRWM Plan. They were given an overall medium rank. One objective – increased cooling demand – was ranked low because cooling demands are a relatively small demand in the region and will not likely influence decisions in the region. The results of the vulnerability prioritization for the IRWM Plan are presented in Table 14-2.

Table 14-2: Climate Change Vulnerability Prioritization

Vulnerability	Priority
Increased agricultural demand	High
Increase landscape demand	High
Increased environmental demands	High
Reduced imported water supplies	High
Increased groundwater overdraft	High
Increased saltwater intrusion	High
Reduced drought reliability	High
Increased pollutant concentrations	High
Increased frequency of eutrophication and algae blooms	High
Increased turbidity and sedimentation	High
Reduced habitat quality	High
Increased flooding	High
Reduce habitat availability	High
Reduced water quality	High
Increased coastal flooding	Medium
Increased damage to existing infrastructure	Medium
Increased cooling demand	Low

The goals and objectives described in Chapter 3 address all of the vulnerabilities list above.

14.5 Adaptation and Mitigation Strategies

Chapter 4 discussed the Resource Management Strategies (RMS) that will achieve the region's goals and objectives. It also included Table 4-3 that identified whether each RMS included in the Pajaro River Watershed could address climate change adaptation and mitigation. The following strategies will help address the vulnerabilities identified above:

- Agricultural Water Use Efficiency
- Urban Water Use Efficiency
- Conveyance – Delta
- Conveyance — Regional / Local
- System Reoperation
- Water Transfers

- Conjunctive Management and GW Storage
- Desalination
- Recycled Municipal Water
- Surface Storage – CALFED
- Surface Storage — Regional/Local
- Drinking Water Treatment and Distribution
- Groundwater and Aquifer Remediation
- Matching Water Quality to Use
- Pollution Prevention
- Salt and Salinity Management
- Urban Runoff Management
- Agricultural Lands Stewardship
- Economic Incentives
- Ecosystem Restoration
- Forest Management
- Land Use Planning and Management
- Recharge Areas Protection
- Watershed Management
- Sediment Management
- Flood Risk Management
- Outreach and Education
- Water and Culture

Another aspect of climate change is reducing GHG emissions, or mitigating climate change. As described in Section 14.1, The Science of Climate Change, increasing GHG concentrations in the Earth's atmosphere contribute to warming trends and climate change impacts. Because the water industry is such a significant contributor to GHG emissions and the overall increasing concentrations in the atmosphere, there is a great opportunity to make a difference, help achieve the GHG emission goals set by AB32, and reduce GHG emissions through this IRWM planning process. The RMS included in the Pajaro River Watershed IRWM Plan that will help mitigate climate change are:

- Agricultural Water Use Efficiency
- Urban Water Use Efficiency
- System Reoperation
- Conjunctive Management and GW Storage
- Recycled Municipal Water
- Surface Storage – CALFED
- Surface Storage — Regional/Local
- Economic Incentives
- F**o**rest Management
- Land Use Planning and Management
- Watershed Management
- Sediment Management
- Outreach and Education
- Water and Culture

14.6 Climate Change in the Project Review Process

The project review process described in Chapter 5 includes a project-level evaluation of how projects help adapt to and mitigate climate change. The evaluation is usually qualitative during the project review process, but becomes more quantitative as projects are better defined and environmental documents are completed. Projects that address climate change adaptation and/or mitigation receive additional points in the project review process, which can increase their priority for implementation.

14.7 Next Steps

14.7.1 Updates on Climate Change Research

Research on the climate change impacts on water resources is ongoing and continues to evolve with further analysis and more refined methodologies. During the preparation of this Plan update, key literature resources on climate change have been reviewed. New scientific findings should be reviewed periodically and incorporated into the climate change vulnerability assessment.

14.7.2 Climate Change Models and Scenarios

The Climate Change Center of the California Energy Commission prepares periodic reports on climate model simulations for California. It also maintains the Cal-Adapt site and updates the modeling tools as new climate change modeling results, based on more refined data, become available from the IPCC. In addition, some agencies in the Region have prepared their own climate change analyses for their watersheds and have used these studies to develop scenarios for vulnerability and adaptation assessments. Agencies within the Region should explore ways where existing and updated climate models, and other available climate change tools and projections for the Region, can be used for future vulnerability assessments updated in future versions of the Plan.

14.7.3 Vulnerability Assessment Next Steps

The intent of future data gathering is to address gaps in the current vulnerability assessment, to improve the understanding of climate change impacts and vulnerabilities, and to enable more quantitative analyses. Future data gathering efforts should include data that facilitate more quantitative analysis of the vulnerability, as described in the following sections. Data gathering efforts should be also be considered in the context of the current and proposed projects and funding available. Consideration should be given to coordinated multi-agency funding of more localized modeling, projections, and more rigorous vulnerability analysis of the more critical areas.

14.7.3.1 Demands

Future data gathering efforts to quantify the climate change effects on municipal and agricultural water demand include the following (note these efforts will require coordination among water purveyors who use different data collection systems):

- Increase the frequency of water use measurement to quantify the weather effects on water use and seasonal variations in response to changes in historical temperature.
- Based on the water demand and temperature data, develop regression analyses correlating water demand to temperature on a maximum day, monthly, and seasonal bases The historical responses can be used to infer future response with the projected changes in temperature with climate change.
- Characterize the variations in indoor and outdoor water use. Future data gathering should focus on the seasonal and monthly patterns both in indoor and outdoor usage to evaluate the effects of weather conditions on each use category.
- Collect and analyze historical agricultural water demand to quantity the weather effects on water use and seasonal variations in response to changes in historical temperature.

14.7.3.2 Water Supply

Future data gathering efforts to quantify the climate change effects on water supply include the following:

- Continue to monitor updates on surface water supply projections from the CVP to assess the effects of future climate change on regional water supply.
- Update information on projections of changes in surface water runoff to regional local water storage facilities for future climate change scenarios when such projections are available.
- Evaluate the effects of reduction in precipitation from climate change on natural groundwater recharge. Further analysis is suggested to refine and to quantify the potential reduction in groundwater supply due to potential reduction in precipitation from climate change.

14.7.3.3 Water Quality

Future data gathering efforts to quantify the climate change effects on water quality include:

- Monitor and collect historical water quality data within each sub-region during storm events and dry-season flows.
- Collect long-term weather records associated with air temperature, precipitation, and ET to assess potential correlations with seasonal water quality.

14.7.3.4 Sea Level Rise

New projections of sea-level rise are being developed; each increasingly sophisticated and with higher resolution. Future data gathering efforts to address the potential climate change effects on sea-level rise include the following:

- Regional monitoring of the geomorphological and ecological response of marshes and mudflats to observed sea-level rise.
- Develop regional adaptation strategies that incorporate both evolution of the natural shorelines and the protection of the built environment.
- Identify opportunities for the realignment of existing flood risk management levees that would create more resilient shorelines.
- Develop demonstration projects of shorelines that incorporate “green infrastructure” or “living shorelines” principles.

14.7.3.5 Flooding

A quantitative assessment of the potential impacts of climate change on flooding cannot be performed as climate projections are not detailed enough to project short-term extreme events such as flooding (flooding from sea level rise can be looked at more quantitatively). Future data gathering efforts to address the potential climate change effects on flooding include the following:

- Perform an inventory of runoff monitoring stations in the region to see if a more robust runoff record can be developed. Those data may allow an analysis of historical storm events correlated with precipitation events as well as annual precipitation to provide a better understanding of conditions that may lead to more extreme flooding conditions. This could also support a more robust flood warning system.

- Future work should focus on gathering the 200-year floodplain maps for the Region after DWR develops them. Currently, the 100-year and 500-year floodplain maps are available from the Federal Emergency Management Agency (FEMA).
- Promote better understanding of value of open space, riparian corridor, wetlands or natural habitats among land use decision makers.
- Coordinate with the region stakeholders for advanced flood preparation and quick response and document the protocol(s).
- Perform an inventory of critical infrastructure located in floodplains and level of vulnerability to flooding.
- Update the projections of runoff with climate change as updates from the California Climate Change Center and the ICCC become available.
- Work with local flood plain managers and/or equivalent to determine areas of concern.

14.7.3.6 Ecosystem and Habitat

Adaptive management strategies need to be developed that can accommodate changing climatic conditions. This may require new management goals as it may not be possible to restore historical systems. Water resource managers are subject to regulatory requirements based on certain hydrology and other species related criteria (i.e. temperature). With climate change it may become more difficult for agencies to abide by the regulatory requirements they have committed to and more importantly, be able to achieve the ecosystem mitigations and enhancements that they are trying to accomplish. There needs to be an adaptive component to the regulatory requirements to acknowledge that the natural environment will be altered as a result of climate change. The efforts taken through projects, operations and mitigations may not be able to fully achieve their intended environmental outcomes, through no fault of their own, with respect to improvements in the natural environment. Goals may have to be set based on anticipated future conditions.

Future data gathering efforts to address the potential climate change effects on ecosystem and habitat include the following:

- Regional monitoring of the geomorphological and ecological response of marshes and mudflats to observed sea-level rise.
- Regional monitoring of the geographic range shifts of plants and animals to inform discussions on potential managed relocation.
- Vulnerability analysis of how climate change may affect specific habitats and inform future open space or buffer acquisition programs.
- Identify open space or buffer that would be critical to allow existing systems to evolve.
- Identify optimal genotypes for future conditions either by modeling future climates and patterns of adaptive variation across the range of a species or by experimental plantings and observing natural selection.

Appendix A – 2004 Partner Memorandum of Understanding

MEMORANDUM OF UNDERSTANDING
among the
PAJARO VALLEY WATER MANAGEMENT AGENCY,
SAN BENITO COUNTY WATER DISTRICT
and
SANTA CLARA VALLEY WATER DISTRICT
for
COORDINATION OF WATER RESOURCES PLANNING

This Memorandum of Understanding (MOU) dated October 7, 2004 is entered into among the Pajaro Valley Water Management Agency (PVWMA), the San Benito County Water District (SBCWD) and the Santa Clara Valley Water District (SCVWD) for the purpose of coordinating water resources planning activities undertaken by the three water districts.

WHEREAS, the PVWMA is a state-chartered water management district formed to efficiently and economically manage existing and supplemental water supplies in order to prevent further increase in, and to accomplish continuing reduction of, long-term overdraft and to provide and insure sufficient water supplies for present and anticipated needs within its boundaries; and

WHEREAS, the SBCWD, a water conservation and flood control district, preserves the economic and environmental wealth and well-being of San Benito County through the control, management and conservation of waters and the provision of water services in a practical, cost-effective and responsible manner; and

WHEREAS, the SCVWD manages groundwater and wholesale drinking water resources, provides stewardship for the county's vast watersheds and promotes flood protection for Santa Clara County's 1.7 million residents to achieve a healthy, safe, and enhanced quality of living in Santa Clara County through watershed stewardship and comprehensive management of water resources in a practical, cost-effective, and environmentally-sensitive manner; and

WHEREAS, it is in the interests of the signatory Parties and the region served by the Parties that these water resources are responsibly managed and conserved to the extent feasible; and

WHEREAS, the Parties wish to coordinate their long term water supply planning efforts to ensure that the water supply benefits of conservation, water recycling, groundwater management and other water supply initiatives undertaken by each of the Parties on behalf of their constituents inure primarily to the party making the financial investment to create such programs and contribute to meeting the needs of the region; and

WHEREAS, the Parties anticipate the potential need for future agreements on specific projects or programs and with other affected agencies to further coordinate long term water supply planning;

NOW, THEREFORE, it is mutually understood and agreed as follows:

SECTION 1:
AUTHORITY OF PARTIES

1.1 The PVWMA is a state-chartered special purpose district formed under State Law pursuant to the Pajaro Valley Water Management Agency Act.

1.2 The SBCWD is a special purpose district formed under State Law pursuant to the San Benito County Water District Act.

1.3 The SCVWD is a special purpose district formed under State Law pursuant to the Santa Clara Valley Water District Act.

SECTION 2:
DEFINITIONS

The abbreviations and capitalized words and phrases used in this MOU shall have the following meanings:

2.1 **"PVWMA"** means the Pajaro Valley Water Management Agency.

2.2 **"SBCWD"** means the San Benito County Water District.

2.3 **"SCVWD"** means the Santa Clara Valley Water District.

2.4 **"Parties"** means the PVWMA, SBCWD and SCVWD.

SECTION 3:
PURPOSES AND GOALS OF THIS MOU

3.1 **Purposes and Goals:**

This MOU is to memorialize the intent of the parties to coordinate and share information concerning water supply planning programs and projects and other information, and to improve and maintain overall communication among the parties involved. It is anticipated that coordination and information sharing among the three parties will assist the agencies in achieving their respective missions in a cost-effective and environmentally responsive manner and contribute to the overall well-being of the region. Coordination and information sharing will focus on the following issue areas of water supply planning that are of common interest:

3.2 **Common Issues and Interest:**

3.2.1 Water supply programs and projects that may provide mutual benefits in improving water supply reliability and/or water quality.

3.2.2 Coordination of near-term and long-term water supply planning activities.

3.2.3 Development of regional approaches to problem-solving and issues resolution as well as to further common interests.

SECTION 4:
JOINT AGENCY PLANNING FOR PROJECTS AND PROGRAMS

4.1 **Projects and Programs Covered by this MOU:** It is the intent of PVWMA, SBCWD and the SCVWD that they coordinate and collaborate to address the common issues identified. The parties may develop and implement projects and programs individually or jointly in groupings of two or three, or enter into additional agreements in furthering those goals. Applicable projects and programs include, but are not limited to, the following:

4.1.1 Water conservation programs and other demand management programs.

4.1.2 Water recycling, desalination and groundwater basin management programs and projects.

4.1.3 Water banking, conjunctive use and transfer arrangements.

4.1.4 Storage development to improve system reliability, efficiencies, and flexibility.

4.1.5 Project and program planning and development to solicit external funding.

4.1.6 Other meritorious projects or programs consistent with the purposes of this MOU.

4.2 **Communication and Coordination:** It is the intent of the Parties to meet on at least a quarterly basis in order to carry out the purposes and goals of this MOU.

SECTION 5:
GENERAL PROVISIONS GOVERNING MOU

5.1 **Term:** The term of this MOU is indefinite. The MOU may be terminated by any of the Parties by written notice at least 45 days prior to the requested termination date.

5.2 **Construction of Terms:** This MOU is for the sole benefit of the Parties and shall not be construed as granting rights to any person other than the Parties or imposing obligations on a Party to any person other than another Party.

5.3 **Good Faith:** Each Party shall use its best efforts and work wholeheartedly and in good faith for the expeditious completion of the objectives of this MOU and the satisfactory performance of its terms.

5.4 **Governing Law:** This MOU is made under and shall be governed by the laws of the State of California.

5.5 **Rights of the Parties and Constituencies:** This MOU does not contemplate the parties taking any action that would:

5.5.1 Adversely affect the rights of any of the parties; or

5.5.2 Adversely affect the customers or constituencies of any of the parties.

IN WITNESS WHEREOF, the parties have executed this Memorandum of Understanding as of the day and year indicated on the first page of this MOU.

PAJARO VALLEY WATER MANAGEMENT AGENCY

By: Chris McNeish Date: 9/16/04
Charles McNeish, General Manager

APPROVED AS TO FORM:
By: Date: 9/15/04
General Counsel

SAN BENITO COUNTY WATER DISTRICT

By: Date: 9/13/04
John S. Gregg, District Manager/Engineer

APPROVED AS TO FORM:
By: Date: 9/13/04
District Counsel

SANTA CLARA VALLEY WATER DISTRICT

By: Date: 10/7/04
Stan Williams, Chief Executive Officer

APPROVED AS TO FORM:
By: Emily J. Cotter Date: October 1, 2004
Asst. General Counsel

Appendix B – Pajaro River Watershed IRWM Project Submittal Form

PROJECT OVERVIEW

General Project Information

Project Title:	
Project Location:	
Estimated Cost:	$0

Brief Project Description (1 to 2 sentences):

Project Proponent Information

Contact Name:	
Affiliation:	
Address:	
Phone Number:	
Email:	

Other participating agencies/organizations (if applicable):

DETAILED PROJECT INFORMATION

Description

Please provide a description of your project (including the location) and its purpose, what will be constructed and/or implemented, how the project will function, the area(s) and/or entities that will be affected by or will benefit from the project, and any potential obstacles to implementation.

Technical Feasibility

Discuss the technical feasibility of the project. If possible, cite references that contain information about the proposed project and detail the technical feasibility of the project.

Pajaro River Watershed IRWM Regional Goals & Objectives

Put an X next to any goal that the proposed project will achieve.

	Water Supply
	1. Meet 100% of M&I and agriculture demands (both current and future conditions) in wet to dry years including the first year of a drought.
	2. Meet 85% M&I and 75% agriculture demands (both current and future conditions) in second and subsequent years of a drought.
	3. Identify and address water supply needs of disadvantaged communities in the Pajaro River Watershed.
	4. Implement water conservation programs to reduce M&I and agricultural water use consistent with SBx7-7 and CVPIA.
	5. Maximize the use of recycled water during the irrigation season and expand other uses of recycled water.
	6. Optimize the use of groundwater and aquifer storage.
	7. Maximize conjunctive use opportunities including interagency conjunctive use.
	8. Optimize and sustain the use of existing import surface water entitlements from the San Felipe Unit.
	9. Maximize the beneficial use of existing local water supplies while protecting existing surface water rights.
	Water Quality
	1. Meet or exceed all applicable groundwater, surface water, wastewater, and recycled water quality regulatory standards.
	2. Identify and address the drinking water quality of disadvantaged communities in the Pajaro River Watershed.
	3. Protect groundwater resources from contamination including salts and nutrients.
	4. Address impacts from surface water runoff through implementation of Best Management Practices or other surface water management strategies.
	5. Meet or exceed delivered water quality targets established by recycled water users.

Flood Protection

	1. Implement flood management strategies throughout the watershed that provide multiple benefits.
	2. Reach consensus on the Pajaro River Risk Reduction Project necessary to protect existing urban areas and infrastructure from flooding and erosion
	3. Work with stakeholders to preserve existing flood attenuation by implementing land management and conservation strategies throughout the
	4. Develop approaches for adaptive management to minimize maintenance requirements and protect quality and availability of water while preserving
	5. Provide community benefits beyond flood protection such as public access, open space, recreation, agriculture preservation and economic

Environmental Protection and Enhancement

	1. Address opportunities to enhance the local environment and protect and/or restore natural resources, in cooperation with landowners, when
	2. Improve biological and cultural resources, including riparian habitats, habitats supporting sensitive plant or animal species and archaeological/historic
	3. Address opportunities to protect, enhance, or restore habitat to support Monterey Bay National Marine Sanctuary marine life in conjunction with water
	4. Address opportunities for open spaces, trails, parks along creeks and other recreational projects in the watershed that can be incorporated with water

Integration and Coordination

Put an X next to any Resource Management Strategies (RMS) that the proposed project will address.

Reduce Water Demand	Agricultural Water Use Efficiency	
	Urban Water Use Efficiency	
Improve Operational Efficiency and Transfers	Conveyance - Delta	
	Conveyance - Regional/local	
	System Reoperation	
	Water Transfers	
Increase Water Supply	Conjunctive Management & Groundwater Storage	
	Desalination	
	Precipitation Enhancement	
	Recycled Municipal Water	
	Surface Storage - CALFED	
	Surface Storage - Regional/local	
Improve Water Quality	Drinking Water Treatment & Distribution	
	Groundwater Remediation /Aquifer Remediation	
	Matching Quality to Use	
	Pollution Prevention	
	Salt & Salinity Management	
	Urban Runoff Management	
Improve Flood Management	Flood Risk Management	
Practice Resources Stewardship	Agricultural Lands Stewardship	
	Economic Incentives (Loans, Grants, & Water Pricing)	
	Ecosystem Restoration	
	Forest Management	
	Recharge Area Protection	
	Water-Dependent Recreation	
	Watershed Management	
Other Strategies	Crop Idling for Water Transfers	
	Dewvaporation or Atmospheric Pressure Desalination	

	Fog Collection	
	Irrigated Land Retirement	
	Rainfed Agriculture	
	Waterbag Transport/Storage Technology	

Please describe:	

List the projects that were integrated to develop a single proposed project, if applicable.

List the agencies and organization that are working together to implement the project.

Climate Change Mitigation and Adaptation

Put an X next to any climate change adaptation or mitigation strategy the proposed project will contribute to.

Adaption Strategies

	Improve water supply reliability
	Expand conjunctive use of multiple water supply sources
	Increase water use and/or reuse efficiency
	Provide additional water supply
	Promote water quality protection
	Reduce water demand
	Advance / expand recycled water use
	Promote urban runoff reuse
	Address sea level rise
	Address other anticipated climate change impacts
	Improve flood control
	Promote habitat protection
	Establish migration corridors
	Re-establish river-floodplain hydrologic continuity
	Re-introduce anadromous fish populations to watershed
	Enhance and protect watershed forest and meadow systems

Please describe:

Mitigation Strategies

	Increase water use efficiency or promote energy-efficient water demand reduction
	Improve water system energy efficiency
	Advance / expand recycled water use
	Promote urban runoff reuse
	Promote use of renewable energy sources
	Contribute to carbon sequestration

Please describe:

Does the proposed project reduce regional greenhouse gas emissions and/or improve energy efficiency? If so, explain how.

Social Benefits and Impacts

Does the project provide specific benefits to disadvantaged communities and/or Native American tribal communities? If so, explain.

Does the project address any known environmental justice issues?

Project Cost

Total Estimated Capital Cost	$0
Annual Operation & Maintenance (O&M) Cost	$0
Cost Basis (Year)	
Source(s) of Funding for Capital	
Source(s) of Funding for O&M Cost	
Project Life (years)	
Provide link to project cost estimate, if available	

Economic Feasibility

Has a benefit:cost or cost effectiveness analysis been completed for your project? If so, please cite reference and briefly summarize. If no economic analysis has been completed for the project, the project may receive zero points out of a possible 100 points for the financial considerations criteria unless the project is a DAC project. If the project is not a DAC project but the B:C ratio is expected to be greater than 1, please provide a justification. The lack of an economic analysis may also affect the project's readiness score.

If known, please provide the Benefit:Cost Ratio.

Provide a detailed discussion of the benefits the project will provide. To the extent possible, quantify changes and benefits (e.g. water quality and water supply benefits) that will result from project implementation; otherwise, describe benefits qualitatively.

Project Readiness

Proposed Project Start Date:	
Anticipated Project Completion Date:	

Please Indicate the status (pending, in process, complete) of the following.

Project Element	Status	% Complete	Estimated Completion Date
Feasibility Study			
Preliminary design			
CEQA/NEPA			
Permit Acquisition			
Construction Docs			

Appendix C – Drought Funding Project Submittal Form

Pajaro River Watershed IRWM
2014 IRWM Drought Funding Solicitation
Project Submittal Form

Project Title:
Sponsoring Agency:
Sponsoring Agency Contact Information:
Partner Agency or Agencies:

Project Summary/Description

Below, please briefly describe the project including the project location; water supply, water quality, and other benefits; partnering agencies; and status of the project. Please provide quantifiable benefits, i.e., acre-feet of new supply, kwh of reduced energy use, etc.

Click here to enter text.

Provide a description of the regional water management impacts due to the 2014 Drought and any anticipated or projected impacts if drought or dry year conditions continue into 2015.

Click here to enter text.

Is your agency at risk of not meeting drinking water demands without the proposed project?

Click here to enter text.

Are there Mandatory or Voluntary Water Conservation Measures/Restrictions that have been implemented due to the 2014 Drought or any planned or anticipated actions if Drought or Dry Years continue to 2015?

Click here to enter text.

Was the project developed in response to or was project implementation expedited due to the 2014 Drought?

Click here to enter text.

Project Specific Requirements

Below, please discuss how the project meets one or more of the following Project Specific Requirements for Eligibility.

- **Provide immediate regional drought preparedness.**
- **Increase local water supply reliability and the delivery of safe drinking water.**
- **Assist water suppliers and regions to implement conservation programs and measures that are not locally cost-effective.**
- **Reduce water quality conflicts or ecosystem conflicts created by the drought.**

Click here to enter text.

Is the Project a Water Conservation Project? If so, is it locally fundable?

Water conservation programs and measures must be not locally cost-effective to be eligible for the 2014 IRWM Drought funds. For the purposes of the 2014 IRWM Drought solicitation, "not locally cost-effective" means the present value of the local benefits of implementing a water conservation program or measure is less than the present value of the local costs of implementing that program or measure. Proposed water conservation program or measure's total annualized cost (annualized capital costs plus annual operation and maintenance cost) exceeds its annualized local monetary benefits over the life of the project.

Click here to enter text.

What is the status of CEQA and/or NEPA for the project?

The act of applying for funding through the 2014 IRWM Drought Grant Solicitation does not qualify any project for the emergency CEQA exemption contained in the Governor's drought proclamation. Lead agencies have the responsibility of determining how they will comply with CEQA for any given project. Submittal of CEQA documentation will be required within 30 days of grant award.

Click here to enter text.

Will the project be ready to start construction/implementation by April 1, 2015?

Below, please demonstrate that the CEQA/NEPA, Permitting Schedule, etc. will allow for the project to be ready for construction on April 1, 2015. Readiness is defined as having construction contracts awarded in advance of April 1, 2015.

Click here to enter text.

What is the proposed budget and match for the Project

Below, please provide a budget for the project, including requested amount. The minimum match requirement is 25% of total project costs unless the project meets the critical water supply or water quality needs of a Disadvantaged Community.

Click here to enter text.

Is this Project currently on the Pajaro River Watershed IRWM Project Priority List?

Click here to enter text.

Will your Agency/Entity be able to accommodate/execute Resolutions to meet Grant Application submittal deadlines in July?

Click here to enter text.

If subject to the requirements, has your agency complied with the Urban Water Management, Agricultural Water Management, Surface Water Diverter, Groundwater Management and Water Conservation Programs as defined in the grant guidelines and PSP?

Click here to enter text.

Appendix D – 2012 Project Priority List

Pajaro River Watershed
Project Priority List

Project	Total Score		Project Cost
Watsonville Slough and North Dunes Recharge Basin	657	High	$11,200,000
Harkins Slough Facility Recovery Optimization	647	High	$2,450,000
Hollister Urban Area Water and Wastewater Master Plan	637	High	$27,500,000
Integrated Aquifer Enhancement Program for the Pajaro Valley	624	High	$1,500,000
Corralitos Creek Water Supply and Fisheries Enhancement	605	High	$1,000,000
Regional Mobile Lab	586	High	$1,349,993
Increased Watsonville Recycled Water Storage and Deliveries	583	High	$6,200,000
Upper Llagas Creek Flood Protection Project	559	High	$137,000,000
Pacheco Reservoir Reoperation	544	High	$324,523
College Lake	542	Medium	TBD
Soap Lake Floodplain Preservation Project	534	Medium	$34,000,000
Pajaro River Risk Reduction Project	526	Medium	$200,000,000
Lee Road Watsonville Slough Flood/Habitat	522	Medium	$1,210,000
Main and Madrone Pipeline Repair	520	Medium	$8,363,000
Upper Pajaro River Restoration Project	510	Medium	$10,500,000
SBCWD Demand Management Measures	510	Medium	$300,000
Agricultural Water Quality Program	505	Medium	$1,500,000
Pescadero Creek Steelhead and Pajaro River Baseflow	503	Medium	$375,000
On Farm Meter Education, Installation and Implementation	500	Medium	$794,372
Watsonville Slough Water Quality, Public Acc. and Habitat	482	Medium	$250,000
Conservation Planning and On Farm Irrigation Efficiency	479	Medium	$896,452
Pajaro River Watershed Studies	460	Medium	$285,000
Murphy Crossing with Recharge Basins	452	Medium	$8,200,000
Salsipuedes Creek Bench Excavation Project	445	Medium	$700,000
Upper Pajaro River Uplands Conservation and Stewardship	440	Medium	$81,423,000
Integrated Watershed Restoration Program	435	Medium	$500,000
Permit Coordination	416	Low	$100,000
South County Recycled Water Pipeline	409	Low	$19,981,000
Lower Llagas Creek Capacity Restoration Project	405	Low	$15,000,000
Oakridge/Via Del Sol Water System	396	Low	$3,000,000
San Justo Zebra Mussel Eradication Project	375	Low	$2,500,000
Rural Landowner Stewardship	333	Low	$1,793,500
Uvas Creek Fish Passage Improvement at UPRR Crossing	329	Low	TBD
Road Raise at Pajaro River	291	Low	$1,150,000
Uvas Creek Flood Protection Project	263	Low	$1,400,000

December 20, 2012

Appendix E – 2014 Grant Project Priority List

Pajaro River Watershed IRWM
Drought Funding Project Screening Process

The Pajaro River Watershed IRWM region received five project submittals through the Drought Funding Project Solicitation Process. The Regional Water Management Group screened the projects through the methodology below and is recommending four of the five projects be included in a grant application to the Department of Water Resources seeking funding from the Emergency Drought Program.

Pajaro River Watershed IRWM Drought Funding Project Screening Process involved the following:

1. IRWM Consistency
    a. IRWM Related (Y/N)
    b. Includes related IRWM Goals and Objectives (Y/N)

2. Screen out ineligible project applicants or ineligible project types and document rationale

3. Evaluate and rank project readiness
    a. Confirm April 1, 2015 construction start date
    b. Rank degree of certainty (High/Medium/Low)
        i. CEQA Complete or low level CEQA analysis required
        ii. Permitting Complete or limited permitting issues
        iii. Level of Design or demonstration of expedited design process
        iv. Match funding secured

4. Evaluate and rank project competitiveness and degree of benefit
    a. Drought impacts to service area (H/M/L)
    b. Project mitigation of drought impacts (H/M/L)
    c. At risk of not meeting drinking water demands (Y/N)
    d. Address Human Rights to Water (Y/N)

Fine Screening:
Once the Projects for the Application have been accepted, should a project not meet the criteria below, they will be dropped from the Application.

5. Evaluate project development and documentation
    a. Technical Justification (i.e. Feasibility Study, Alternatives Analysis)
    b. Preliminary Design (design adequate to justify benefits and costs)
    c. Benefit Cost Analysis (i.e. Project Cost Estimate, Benefits Estimates)

Pajaro River Watershed IRWM Drought Funding Project Scoring

Project	Meets IRWM Goals	Project Specific Project Criteria and Score	Score	Project Cost	P84 IRWM Drought Grant Request Amount	Local Cost Match
Corralitos Creek Water Supply and Fisheries Enhancement Project	**Yes**	**Human Right to Water - 1 Readiness to Proceed - 3 Drought Mitigation - 1 Community At Risk of Not Meeting Drinking Water Demand - 3**	**8**	**$5,608,000**	**$5,608,000**	**$0**
South County Recycled Water Improvements	**Yes**	**Human Right to Water - 0 Readiness to Proceed - 2 Drought Mitigation - 3 Community At Risk of Not Meeting Drinking Water Demand – 3**	**8**	**$150,000**	**$150,000**	**$0**
Delivered Water Enhancement and Drought Response Irrigation Program	**Yes**	**Human Right to Water - 0 Readiness to Proceed - 2 Drought Mitigation -3 Community At Risk of Not Meeting Drinking Water Demand - 2**	**7**	**$3,515,000**	**$2,565,000**	**$950,000**
Wright Road Recycled Water Project	**Yes**	**Human Right to Water - 0 Readiness to Proceed - 2 Drought Mitigation - 3 Community At Risk of Not Meeting Drinking Water Demand - 2**	**7**	**$5,000,000**	**$3,700,000**	**$1,300,000**
Grant Administration	**Yes**	**N/A**	**N/A**	**$300,000**	**$300,000**	**$0**
Total Recommended Grant Funding for Pajaro River Watershed IRWM Region Drought Grant Application				**$14,573,000**	**$12,323,000**	**$2,250,000**
Integrated Aquifer Enhancement Program	Yes	Human Right to Water – 0 Readiness to Proceed - 2 Drought Mitigation - 1 Community At Risk of Not Meeting Drinking Water Demand - 2	5	$647,000	$0	$0

Notes:

1. The City of Watsonville will apply for the Disadvantaged Community waiver, therefore a local cost match is not required for the Corralitos Creek Water Supply and Fisheries Enhancement Project.
2. The local cost match requirement, excluding the City project, is 25% of the total project cost of $9 million. The local match requirement is $2.25 million.

Appendix F – Abbreviations and Acronyms

Acronyms and Abbreviations

AF	Acre-feet
AFY	Acre-feet per year
AMBAG	Association of Monterey Bay Area Governments
APV	Action Pajaro Valley
BMP	Best Management Practice
CASGEM	California Statewide Groundwater Elevation Monitoring
CCA	Critical Coastal Area
CDS	Coastal Distribution System
cfs	Cubic feet per second
CEQA	California Environmental Quality Act
CERES	California Environmental Resources Evaluation System
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
Corps	U.S. Army Corps of Engineers
CSSC	California Species of Special Concern
CVP	Central Valley Project
CWA	Clean Water Act
DAC	Disadvantaged Community
DWR	California Department of Water Resources
EPA	U.S. Environmental Protection Agenc
ESU	Evolutionary Significant Unit
FC	Federal Candidate
FE	Federally listed Endangered
FEMA	Federal Emergency Management Agency
FT	Federal listed Threatened
GAMA	Groundwater Ambient Monitoring Assessment
IRWM	Integrated Regional Water Management
IRWMP	Integrated Regional Water Management Plan
LOD	Level of Development
M&I	Municipal and Industrial
MBNMS	Monterey Bay National Marine Sanctuary
MCWRA	Monterey County Water Resources Agency

MHI	Median Household Income
MOU	Memorandum of Understanding
MTBE	Methyl Tertiary Butyl Ether
NFIP	National Flood Insurance Program
NMSP	National Marine Sanctuary Program
NEPA	National Environmental Policy Act
NOAA	National Oceanic and Atmospheric Administration
NPS	Non-point Source
QA/QC	Quality assurance and quality control
Partners	PVWMA, SBCWD, SCVWD
PCLF	Planning and Conservation League Foundation
PRWFPA	Pajaro River Watershed Flood Prevention Authority
PVWMA	Pajaro Valley Water Management Agency
RCDs	Resource Conservation Districts
RWMG	Regional Water Management Group
RWQCB	Regional Water Quality Control Board
SBCWD	San Benito County Water District
SCCFC&WCD	Santa Cruz County Flood Control and Water Conservation District, Zone 7
SCRWA	South County Regional Wastewater Authority
SCVWD	Santa Clara Valley Water District
SE	State listed Endangered
SP	State Protected
SR	State listed as Rare
SSC	Stakeholder Steering Committee
SSCWD	Sunnyslope County Water District
ST	State listed Threatened
SWAMP	Surface Water Ambient Monitoring Program
SWP	State Water Project
SWRCB	State Water Resources Control Board
TM	Technical Memorandum
TMDL	Total Maximum Daily Load
TNC	The Nature Conservancy
UCCE	University of California Cooperative Extension
USBR	U.S. Bureau of Reclamation

USFWS	U.S. Fish and Wildlife Service
WAWRP	Watsonville Area Water Recycling Project
WRA	Water Resources Association
WRDA	Water Resources Development Act
WRWTF	Watsonville Recycled Water Treatment Facility
WWTP	Wastewater Treatment Plant

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