

Comparison of the  
Six Central Coast Integrated Regional Water Management Plans  
and Recommendations for Collaborative Programs



A Concept Paper presented to the  
Monterey Bay National Marine Sanctuary  
Water Quality Protection Program

February 22, 2008

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## I. Introduction and Background

In 2002, California voters passed Proposition 50, the “Water Security, Clean Drinking Water, Coastal and Beach Protection Act of 2002,” authorizing \$500 million for integrated regional water management projects. Proposition 84, the “California Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act of 2006,” was passed by voters in November 2006, providing an additional \$1 billion in funding for integrated regional water management. Proposition 1E, the “Disaster Preparedness and Flood Prevention Bond Act,” was also passed at that time, authorizing the state to sell \$4.09 billion in bonds to rebuild and repair California’s most vulnerable flood control structures.

An integrated regional water management plan (IRWMP) is prerequisite to seeking funds from many of these funding sources. An IRWMP is a comprehensive planning document prepared collaboratively by water management entities and stakeholders within a region that identifies priority water resource projects and integrates the regional planning efforts into a single plan. IRWMPs must address, at a minimum, the water management strategies of water supply reliability, water quality protection and improvement, groundwater management, ecosystem restoration, environmental and habitat protection and improvement, flood management, recreation and public access, stormwater capture and management, water conservation, water recycling, and wetlands enhancement and creation. Optional elements might also include: conjunctive use, desalination, imported water, land use planning, nonpoint source pollution control, surface storage, watershed planning, water and wastewater treatment, and water transfers.

Six IRWMPs have been developed for the Central Coast region:

- Northern Santa Cruz County IRWMP (Preliminary Plan, October 2005)
- Pajaro River Watershed IRWMP (May 2007)
- Monterey Peninsula, Carmel Bay and South Monterey Bay IRWMP (Draft, July 2007)
- Salinas Valley IRWM Functionally Equivalent Plan (Update, May 2006)
- San Luis Obispo County IRWMP (July 2007)
- Santa Barbara Countywide IRWMP (May 2007)

A Memorandum of Understanding has been signed by the County of Santa Cruz, the Pajaro Valley Water Management Agency, the Monterey Peninsula Water Management District, and the Monterey County Water Resources Agency to link and integrate their respective IRWMPs toward the joint development of a comprehensive IRWMP for the entire Monterey Bay area. The purpose of developing this comparative document is to improve and maximize coordination of individual public agency plans, programs, and projects within each planning region; to help identify, develop, and implement collaborative plans, programs, and projects that may be beyond the scope or capability of a single public agency or planning region group but which would be of mutual benefit if implemented among multiple planning regions; and to realize regional water

management objectives at the least cost possible through mutual cooperation, elimination of redundancy, and enhanced regional competitiveness for State and Federal grant funding.

In addition, in February 2007 all six IRWMP planning regions within the Central Coast began discussions regarding regional cooperation within the framework of the IRWM process. It is generally agreed that while several common, overlapping water interests exist between the sub-regions, most water issues are more effectively managed within the sub-regions themselves. The water management issues that are being considered for future coordination across the Central Coast funding area include, but are not limited to, water conservation, water quality monitoring and improvements, fisheries restoration, and drought preparation and protection. Also noted as an additional area of coordination among the sub-regions is the need to address the geographic areas within the Central Coast region that are not currently covered by an IRWMP.

The Monterey Bay National Marine Sanctuary (MBNMS) has an interest in the integrated regional water management planning process as the Sanctuary borders a significant portion of the Central Coast IRWMP coverage area with the exception of the San Luis Obispo coastline south of Cambria and the entire Santa Barbara County coastline. Since its inception in 1992, MBNMS has been working collaboratively with partners to develop Action Plans through a stakeholder approach to address multiple water quality issues as well as water supply. MBNMS Action Plans relevant to the integrated regional water management planning process include:

- Implementing Solutions to Urban Runoff
- Regional Monitoring, Data Access, and Interagency Coordination
- Agriculture and Rural Lands
- Beach Closures and Microbial Source Tracking
- Desalination

Other Sanctuary programs relevant to regional water quality protection efforts include the Sanctuary's bilingual outreach program Multicultural Education for Resource Issues Threatening Oceans (MERITO), the Sanctuary Integrated Monitoring Network (SIMoN), and numerous education and outreach programs.

The objective of this analysis is to compare the six IRWMPs that have been developed for the Central Coast region, identify the major priorities of each plan and common interests and concerns, and to provide recommendations for areas that might be addressed through joint programs, particularly those areas that have relevance to Sanctuary programs and objectives. Note that this analysis is not an attempt to begin the process of coordinating water management interests across the six geographic planning regions or to develop a "mega-regional" IRWMP for the entire Central Coast, but merely to compare regional priorities and concerns, and to identify common needs that might be addressed through common projects or programs, recognizing that most water issues will be more effectively managed on the sub-regional level.

## II. Regional Overviews and Water Management Interests

This section provides brief regional descriptions and a summary of the water management interests contained within each of the six Central Coast IRWMPs (often times quoted verbatim). This summary is not meant to be comprehensive, but simply to provide background and a basis for general comparison of issues pertinent to this analysis. For a more complete understanding of the six geographic regions and the water management issues relevant to each region, please refer to the original IRWMP documents. To see a full list of stakeholders and participants involved in the IRWMP process for each region, please see Appendix A. A map of the Central Coast special area designations (MPAs, CCAs, and ASBSs) are in Appendix B.

### Regional Overviews

#### Northern Santa Cruz County

The partner agencies in the development of the Northern Santa Cruz County IRWMP are Soquel Creek Water District, Scotts Valley Water District, Santa Cruz County Resource Conservation District, County of Santa Cruz, Santa Cruz County Sanitation District, and Davenport Sanitation District.

Santa Cruz County encompasses 446 square miles, and the Northern Santa Cruz County IRWMP planning region encompasses approximately 84% of the county area. The IRWMP region is based on watershed and jurisdictional boundaries as well as common water management issues. The planning area overlaps with the Pajaro River Watershed IRWMP planning area in the region of the Watsonville Sloughs, which is the lowest portion of the Pajaro River watershed. The Northern Santa Cruz County IRWMP addresses water quality protection and habitat restoration in the Watsonville Sloughs area, while the Pajaro River Watershed IRWMP addresses issues of groundwater management and flooding, and additionally covers the remainder of the Pajaro River watershed.

*Land Use:* Northern Santa Cruz County is dominated by residential land use, including rural and mountain residential zoning; timber harvest preserve; and a mix of commercial and special districts. The lower portions of the watersheds, close to Monterey Bay, are more urbanized with residential, commercial, light industrial and special districts land use. Upper watershed land use consists predominantly of rural residential, timber harvest preserve and/or open space, some mining, and limited agriculture. On the north coast, the coastal terraces are utilized for agriculture and grazing.

*Economy:* The county is largely dependent upon tourism and recreation, which generate roughly \$525 million/year. Agriculture is the county's second biggest industry; Santa Cruz County crops were worth \$450 million in 2004. The southern area of the county, including Watsonville Sloughs, is a productive agricultural district yielding strawberries, raspberries, landscape plants, flowers, and vegetables. North coast agriculture includes brussel sprouts, strawberries, lettuce and specialty crops.

*Environmental Resources:* The largest watershed that is completely within the county is the San Lorenzo River watershed, draining 138 square miles. The Watsonville Sloughs, which drain a 12,500-acre watershed from the coastal plain and foothills of southern Santa Cruz County into Monterey Bay, sustain a large wetland marsh and riparian habitats, economically important agricultural lands, and the fastest-growing area in Santa Cruz County in terms of development.

Scientists have recognized Santa Cruz County as being an important center for biological diversity. Seven animal species are currently listed as in danger of extinction and at least three species are endemic to Santa Cruz. Eight plant species are federally listed as endangered, and six of the species considered to be rare or endangered are endemic. The northern Santa Cruz County planning region includes the southernmost range for coho salmon (listed as federally endangered south of San Francisco), and contains three of the five streams where these fish occur south of San Francisco. Santa Cruz County watersheds also support populations of steelhead, which are federally listed as threatened on the central California coast. In addition, coastal watershed areas in the county have been designated as critical habitat for the California red-legged frog, listed as federally threatened.

The Northern Santa Cruz IRWMP planning region impacts four Critical Coastal Areas: Watsonville Sloughs, San Lorenzo River, Soquel Lagoon, and Aptos Creek coastal areas.

### **Pajaro River Watershed**

The Pajaro River Watershed IRWMP is a collaborative effort by the Pajaro Valley Water Management Agency, San Benito County Water District, and Santa Clara Valley Water District. The IRWMP planning area encompasses the boundaries of the Pajaro River watershed. The Pajaro River is the largest coastal stream between San Francisco Bay and the Salinas River watershed. The watershed is approximately 1,300 square miles and includes portions of Santa Cruz, Santa Clara, San Benito, and Monterey Counties.

Flooding along the Pajaro River is a major concern in the watershed; the City of Watsonville, the unincorporated town of Pajaro, and surrounding agricultural areas in Monterey and Santa Cruz Counties are all subject to flooding from the Pajaro River. In March 1995, 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 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.

*Land Use:* Development within the watershed is clustered around the major cities – Watsonville, Hollister, Gilroy, and Morgan Hill. 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 the sudden increase in population in the four major cities. A second land use trend is a shift in the types of crop grown in the watershed, generally towards higher value crops such as nursery, strawberry, and vine crops.

*Economy:* Agricultural production and processing are the major industries throughout the watershed. Agriculture is a \$400 million plus industry in the Pajaro Valley, and includes strawberries, lettuce, tomatoes, broccoli, and apples. San Benito County agriculture is a \$210 million industry (based on the 2000 Annual Crop Report); some of the most common vegetable crops grown include lettuce, bell peppers, onions, celery, and broccoli; common orchard crops are walnuts, grapes, apricots, and apples. The total gross value of Santa Clara County's agricultural production was \$241 million in 2003, and includes nursery and cut flower crops, vegetable, fruit, and wine grape crops, milk and egg production, and livestock grazing and sales.

*Environmental Resources:* The Pajaro River watershed supports a multitude of biotic habitats and special status plant and animal species, including 22 federally or state listed threatened or endangered species that have been documented as occurring or potentially occurring in the region. Among these species are the tidewater goby, western snowy plover, bald eagle, and Bell's vireo; and plants such as the Monterey spineflower and sand gilia. Riparian and wetland areas along creeks, rivers, and various drainage ditches in the watershed 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 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 entire Pajaro River watershed provides potential habitat for several fish species and comprises one of the major drainages of the south-central steelhead. The Pajaro River itself serves as a migration pathway for steelhead, but because of low, warm summer stream flows and substrate dominated by sand or silt, provides almost no rearing habitat for steelhead. Although once present in the Pajaro River, Coho salmon have not been present in the river since at least the late 1960s.

Critical Coastal Areas impacted by the Pajaro River Watershed IRWMP sub-region include the Pajaro River and Watsonville Sloughs.

### **Monterey Peninsula, Carmel Bay and South Monterey Bay**

Development of the Monterey Peninsula, Carmel Bay and South Monterey Bay IRWMP is a collaborative effort led by the Monterey Peninsula Water Management District, the Big Sur Land Trust, City of Monterey, Monterey County Water Resources Agency, and the Monterey Regional Water Pollution Control Agency. The planning region is approximately 347 square miles and consists of coastal watershed areas in Carmel Bay and south Monterey Bay between Pt. Lobos on the south and Sand City on the north—a 38-mile stretch of the Pacific coast. Except for Laguna Seca (a sub-basin in the Seaside Basin), all watersheds in the region flow directly to the ocean. The area encompasses the six Monterey Peninsula Cities of Carmel-by-the-Sea, Del Rey Oaks, Pacific Grove, Monterey, Sand City, Seaside, and extends into portions of the unincorporated area of Monterey County in the Carmel Highlands, Pebble Beach and the inland areas of Carmel Valley and the Laguna Seca area.



*Land Use:* The Monterey Peninsula and its surrounding areas are composed of a wide range of land uses that serve residential, commercial, industrial, recreational, and open space uses. Urban development is concentrated primarily in the coastal cities; outside of the cities, low to rural density residential areas dominate. Land use in the 255-square mile Carmel River watershed includes wilderness, viticulture, grazing, recreation (golf courses and park areas), and sparse residential, suburban, commercial and light industrial. Very little of the watershed is currently in traditional agricultural use. Resource conservation represents another important land use throughout the region, with parts of the planning area including the Ventana Wilderness and Los Padres National Forest.

*Economy:* The economic base in the region is made up of tourism, government, education, and military.

*Environmental Resources:* The planning region includes a diverse assemblage and mosaic of plant and animal species. A preliminary assessment of the flora and fauna in the region shows there are 121 special status species; of these, 15 plant species and 10 animal species are formally listed as threatened or endangered under State or Federal endangered species laws. Twelve special-status animal species are particularly important, including the California red-legged frog and the South-Central California steelhead trout. More than one-quarter of the Carmel River watershed and a portion of nearby San Jose Creek watershed have been designated as critical habitat for the California red-legged frog. Steelhead inhabit two coastal streams in the region, San Jose Creek and the Carmel River, which supports one of the stronger populations in the South-Central Coast distinctive population segment.

The southeastern portion of the region includes a part of the Ventana Wilderness, which is in the Los Padres National Forest. The region includes three Areas of Special Biological Significance (Point Lobos, Carmel Bay, and Pacific Grove) and impacts three Critical Coastal Areas: Pacific Grove Marine Gardens and Hopkins Marine Life Refuge, Carmel Bay, and Point Lobos Ecological Reserve.

## **Salinas Valley**

The Monterey County Water Resources Agency (MCWRA), Marina Coast Water District, and Castroville Water District have formed the Salinas Valley Water Management Group to spearhead IRWM planning for the Salinas Valley region of Monterey County. The current planning document is an IRWM Functionally Equivalent Plan; however, MCWRA has plans to create an official IRWMP which will potentially include a broader regional area, stakeholder participation and extended analysis of water management issues and opportunities.

The Salinas River watershed encompasses an area of approximately 3,950 square miles and is the largest individual watershed in the Central Coast area. The watershed includes the Salinas Valley, which extends from the Salinas River headwaters in the La Panza and Garcia Mountains in southern San Luis Obispo County to Monterey Bay, a length of approximately 170 miles. The region for the Salinas Valley IRWMFEP is defined by the boundaries of the Salinas Valley Groundwater Basin. The basin is located entirely within Monterey County, and consists of one

large hydrologic unit comprised of five subareas, three of which are unconfined and in direct hydraulic connection with the Salinas River. The region includes parts of the Nacimiento, San Antonio, and Arroyo Seco Rivers and their watersheds, all of which are tributary to the Salinas River.

*Land Use:* The predominant land use in the Salinas Valley is agriculture and rangeland, with discrete areas of urban development occurring in the cities and towns along the Salinas River. The highest density areas of urban development are clustered to the north in the vicinity of Monterey Bay. Along the Salinas River are several urban and residential centers, including the City of Salinas in which over 60% of the valley's population resides. The former military installation of Fort Ord is located in the northwestern portion of the county, and is being redeveloped into an education, technology and housing center.

*Economy:* The Salinas Valley has such a strong agricultural economy that it is called the Salad Bowl of the World. Agricultural production generated \$3.4 billion in 2004. The agricultural economy supplies lettuce, broccoli, strawberries, artichokes, wine grapes and numerous other crops, with agricultural practices varying throughout the basin based on soil type and climatic conditions. An emerging economic trend in the Salinas Valley is tourism.

*Environmental Resources:* Environmental resources in the region include Elkhorn Slough, the largest tidal estuary between San Francisco Bay and Morro Bay, providing some of the most important freshwater marsh and brackish marsh habitat for wildlife in California. The Salinas River Lagoon is also a valuable natural resource, supporting over 280 species of fish and wildlife, including at least 38 rare, threatened, or endangered species.

The Salinas River tributaries provide natural habitat for steelhead trout. Riparian habitat is widely distributed in narrow strands along the banks of the Salinas River but rarely exists as extensive, mature stands, having been severely reduced and fragmented by agricultural conversion, urban development, grazing, and flood control activities. State and/or federally listed wildlife species which have the potential to occur within and along the Salinas River and its tributaries include California red-legged frog, least Bell's vireo, and arroyo toad. The western snowy plover is known to occur at the mouth of the Salinas River. Other special status species include the western pond turtle, yellow-breasted chat, and yellow warbler (all California Species of Special Concern). The Salinas Valley IRWM planning area impacts three Critical Coastal Areas: Elkhorn Slough, Old Salinas River Estuary, and the Salinas River coastal area.

### **San Luis Obispo County**

The San Luis Obispo County IRWMP is a collaborative effort led by the San Luis Obispo County Flood Control and Water Conservation District in coordination with 24 agencies that make up the Water Resources Advisory Committee (see list of stakeholders in Appendix A). The IRWMP planning area includes the jurisdictional boundaries of San Luis Obispo County, encompassing 3,304 square miles.

*Land Use:* Agriculture comprises 66% of the land use in San Luis Obispo County, with the vast majority of this acreage used for livestock grazing. Other land uses include rural lands (14%), open space (10%), and residential, commercial, and urban uses (10%).

*Economy:* San Luis Obispo County's economy is heavily concentrated in government (21% of jobs in the county), other services (37% of jobs, many tourism related), retail trade (13%), mining and construction (8%), finance, insurance, and real estate (5%), and agriculture (4%). Agricultural crop values for 2005 were estimated at approximately \$597 million, with wine grapes holding the top position for value and the cattle industry second.

*Environmental Resources:* The county's size and geographic diversity support a wide variety of landscapes including maritime chaparral, serpentine habitats, grasslands and juniper and oak woodlands that provide habitat and migration corridors for a wide variety of native species. San Luis Obispo County also contains over 110 miles of coastline, including one of the last intact estuaries on the California coast, miles of undeveloped rocky coastline, the largest coastal dune system in California, and miles of undeveloped sandy beach. As evidenced by the presence of stable populations of at least five listed sensitive wildlife species, much of the coastline remains both undeveloped and largely intact from an ecosystem perspective. Key aquatic species with substantial populations within the county include marine mammals (southern sea otters, elephant seals, harbor seals), southern steelhead, California red-legged frog, tidewater goby, and vernal pool fairy shrimp. Key coastal and upland species include the Morro shoulder band snail, San Joaquin kit fox, snowy plover, California condor, bald eagle, brown pelican, California clapper rail, least tern, and least Bell's vireo.

The San Luis Obispo IRWMP planning area impacts four Critical Coastal Areas: Morro Bay, Chorro Creek, Los Osos Creek, and San Luis Obispo Creek.

## **Santa Barbara County**

The Santa Barbara Countywide IRWMP has been developed by the "Cooperating Partners," a broadly based group of 29 entities representing all geographical areas of the region and virtually every governmental agency with responsibility for water resource management. Public participation (through workshops and public review period comments) has included the general public, agriculture and business interests, disadvantaged communities, environmental groups, academic institutions, and the media.

The IRWMP planning region includes all of Santa Barbara County, encompassing approximately 2,739 square miles and including 110 miles of coastline. The region includes five major ecological zones and numerous subareas ranging from arid high desert regions in the interior; mountains and foothills; and coastal plains. About 65% of the terrain of Santa Barbara County is hilly or mountainous, and most of the remaining 35% is composed of valleys and plains. Approximately one-third of the land area within the county is located within the Los Padres National Forest.

The county contains four principal watersheds: Santa Maria, which includes the Cuyama and Sisquoc watersheds; San Antonio Creek; Santa Ynez; and South Coast, which is composed of

approximately 50 short, steep watersheds (ranging from 162 acres to 30,572 acres in size). The headwaters of the principal watersheds are generally undeveloped, and the middle and lower sections are often developed with urban or agricultural uses. In spite of low average annual rainfall, Santa Barbara County experiences periods of high intensity rains, which can cause flooding in virtually any watershed; drought periods of several years or more also occur with some regularity. The potential harm to people and property caused by flooding is noted as being one of the region's key water management issues.

*Land Use:* Major land use in the county includes agricultural preserves (34% of the county), and an additional 13% of land is zoned for 100-acre or greater lot size, or is in other agriculturally zoned land. Less than 3% of the county is within incorporated cities, 2% is within unincorporated urban areas, and less than 1% is zoned for hillside estate lots of 40 acres or more. Most of the county population lives in the coastal valleys and in the cities of Santa Barbara and Santa Maria. The federal government is the largest landowner in the county; Los Padres National Forest and Vandenberg Air Force Base comprise approximately 748,000 acres combined (nearly 46% of the land area in the county).

*Economy:* The county is economically diverse with pronounced differences between the north and the south. Agricultural activities and oil development traditionally have been dominant economic forces north of the Santa Ynez Mountains; although in recent years tourism has increased, oil leases have been decommissioned, and more white-collar workers have been moving into the area because of high housing prices in the south. Agriculture continues to be the county's major producing industry, despite reductions in the amount of farmland. The South Coast's economy is largely based on tourism, software or other high-tech pursuits, city and county government, and education-related activities (UCSB); although the area continues to support oil development offshore, and agricultural activities continue to occur in the Goleta and Carpinteria valleys.

*Environmental Resources:* Santa Barbara County is located at a point of transition between the Southern California and Northern California eco-zones and is characterized by rare plant assemblages. The county has a range of climatic zones, ranging from Mediterranean climate to Alpine to high desert, resulting in considerable ecological diversity. Over 1,400 plant and animal species are found in the county. Of these, 54 are federally or state-listed threatened or endangered species (22 plant and 32 animal species), and another 60 species are considered rare or of special concern.

The county's four major rivers and its many creeks and streams are characterized by riparian vegetation along their banks, supporting a great diversity of aquatic and terrestrial wildlife species. Small populations of the southwestern willow flycatcher and least Bell's vireo (federally and state-listed species) are present in the riparian areas along the Santa Ynez River, portions of which are designated as critical habitat for these species. The county's watersheds provide critical habitat for steelhead trout, which are found primarily in the Santa Ynez River and its tributaries and the South Coast creeks. Other special status species of note include the southwestern pond turtle, tidewater goby, tiger salamander, California red-legged frog, and the arroyo toad.

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Several salt marshes occur in the county and provide habitat for a number of estuarine invertebrates and fish, migratory birds, and rare and endangered animal species. A large portion of the Greater Devereux Slough is designated Environmentally Sensitive Habitat; the upland drainage areas are home to one of the largest monarch butterfly overwintering sites on the West Coast. Near the mouth of the Santa Maria River is the Guadalupe-Nipomo Dunes Complex, a National Natural Landmark comprising 18 miles and more than 22,000 acres of one of the largest coastal dune ecosystems on earth.

The Carpinteria Salt Marsh (230-acre estuary) was one of the original California Critical Coastal Areas identified in 1995 as an impaired estuary. Goleta Slough and the Santa Ynez River coastal area are also designated as a Critical Coastal Areas.

## Water Supply and Demand

### Northern Santa Cruz County

Two of the primary water management problems in the North Santa Cruz County planning region are the lack of adequate surface water supply during droughts, and depletion of the aquifers. Other than the City of Santa Cruz's single storage reservoir, all surface water sources are dependent on available flow and are utilized at maximum capacity for a significant portion of the year. Current water needs exceed available supplies in significant parts of each of the four basins of the region. Additional water is not available from these sources to support current levels of demand or even modest future growth.

As demands grow over the next 20-30 years, surface water shortages are projected to become the norm, even in so-called "average" hydrologic conditions. To remedy this situation, local water agencies are actively pursuing supplemental supply alternatives, in particular, desalination, as well as conjunctive use and groundwater recharge enhancement projects. Below is a summary of water supply and demand issues in each of the area's sub-basins.

*North Coast Sub-Basin:* Streams in the North Coast Watershed Area provide supply for agricultural users, the town of Davenport and the City of Santa Cruz (25-30% of the total city supply). Groundwater in the area also supplies individual wells and small water companies for rural residents in Bonny Doon and other areas of the basin. The City of Santa Cruz year 2020 demand will exceed the safe yield of their system by 1.8 billion gallons (about 5500 AF). The safe yield of their system in a severe drought is 3.3 billion gallons. Present use is about 4.4 billion gallons. Projected growth is 1% a year in demand, and projected demand is about 5.2 billion gallons.

*San Lorenzo River Sub-Basin:* Surface water from the San Lorenzo River watershed provides 60-80% of the supply for the City of Santa Cruz system and also is a key supply for the communities of the San Lorenzo Valley. Groundwater from the Santa Margarita Groundwater Basin maintains stream base flows and provides the entire water supply for the Scotts Valley Water District and approximately half of the supply for the San Lorenzo Valley Water District. Developed groundwater supplies are not sustainable at present pumpage rates. Coverage by impervious surfaces of primary recharge areas has reduced groundwater recharge by at least 50% in the city of Scotts Valley and 11% in other parts of the San Lorenzo River watershed. Summer stream flows have been further reduced by 15-90%, depending on location, through direct stream diversions for water supply.

*Soquel/Aptos Sub-Basin:* Most of the water supply for the coastal urban areas in this sub-basin is provided by groundwater from the Purisima Formation. In the eastern part of the area, the communities of Rio del Mar, Seascapes, and La Selva Beach receive groundwater supplied by the Aromas Red Sands aquifer, which extends southeast into the Pajaro basin. The Aromas Red Sands aquifer is experiencing seawater intrusion and the Purisima Formation is in danger of seawater intrusion. The rate of seawater intrusion in the Aromas Red Sands aquifer currently averages about 10,000 AF during a normal year, ranging up to 15,000 AF during critically dry years.

*Watsonville Sloughs Sub-Basin:* Water supply reliability for both agriculture and municipal use is a concern in the Watsonville Sloughs watershed. Underlying groundwater is part of the larger Pajaro Basin, which is over pumped by an estimated 45,000 AFY. Wells as far inland as Harkins Slough have become too brackish for domestic or agricultural use due to seawater intrusion. Groundwater is the primary source of agricultural water supply at this time, though the City of Watsonville is developing a recycled water project, and the Pajaro Valley Water Management Agency (PVWMA) may purchase recycled water from the City to supply coastal farmers. The current PVWMA Basin Management Plan estimates that 45,000 AFY are being pumped in exceedance of the safe yield causing 12,000 acre feet of lost water storage per year; 4,000 AFY of this lost water storage is due to falling water levels and 8,000 AFY is a result of seawater intrusion.

### **Pajaro River Watershed**

*Water Supply:* The region's water supplies consist of groundwater, local surface water, import surface water from the Central Valley Project (CVP), and recycled water. Desalination is not currently employed within the Pajaro River watershed, though it is being investigated as an option for future water supply.

Current sustainable yield of groundwater for the region is 97,700 AFY (65% of total current usage); CVP water supplies contribute 34,800 AFY (23%) to current usage, and local surface water and recycled water supplies combined contribute 17,100 AFY (11%). Each of the three partner agencies in the Pajaro River Watershed Management Collaborative—Pajaro Valley Water Management Agency (PVWMA), San Benito County Water District (SBCWD), and Santa Clara Valley Water District (SCVWD)—is entitled to CVP deliveries through the San Felipe Division of the CVP system, which supplies water from San Luis Reservoir. While all three partners have CVP contracts or contract reservations, only SCVWD and SBCWD have existing conduits allowing for use of CVP water; PVWMA plans to construct an Import Pipeline Project connecting to the Santa Clara Conduit.

The Pajaro Valley Groundwater Basin is separated from the rest of the watershed's groundwater basins by the San Andreas Fault, and is currently in overdraft. The primary sources of recharge for this basin are natural sources such as infiltration of rainfall, seepage of stream flow, and percolation of irrigation water. The major groundwater basin that underlies the SCVWD and SBCWD portions of the watershed is the Gilroy-Hollister Valley Groundwater Basin. Within the SBCWD portion of the Gilroy-Hollister Valley Groundwater Basin, recharge occurs through a combination of natural and artificial sources 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. 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.

*Recycled Water:* SCVWD, South County Regional Wastewater Authority (SCRWA), Gilroy, and Morgan Hill are partners in the South County Recycled Water Program. Existing customers use approximately 1,000 AFY of recycled water for landscape irrigation, crop irrigation and

industrial use within the Gilroy area. In addition, SCRWA uses about 1,000 AFY for on-site needs. The South County partners completed a South County Recycled Water Master Plan in 2004, which identified a potential market that would more than quadruple the then current usage of 600 AFY. In the Pajaro Valley, the City of Watsonville in conjunction with PVWMA is implementing the Watsonville Recycled Water Treatment Facility (WRWTF) to provide recycled water for agricultural use in the coastal area. The 4,000 AFY of recycled water produced by the current phase of the WRWTF will be blended with up to 3,000 AFY of groundwater and surface water to meet delivered water quality objectives set by local growers. This combined supply of 7,000 AFY of blended recycled water will be delivered to agricultural water users in the Pajaro Valley coastal zone, minimizing the need for coastal pumping and assisting in balancing the Pajaro Valley Groundwater Basin.

*Water Uses:* Major water uses in the watershed are comprised of agriculture irrigation and municipal and industrial use. In recent years, the relative proportions of M&I use versus agricultural use was approximately 25% M&I and 75% agricultural. Over the next 20 years, relative M&I and agricultural usage percentages in PVWMA and SCVWD are expected to remain fairly constant, while the proportion of agriculture usage for SBCWD is expected to grow by 2-3%.

*Projected Demand:* Between 2006 and 2025, the total water demand for the watershed is projected to increase by 13% (from 194,000 AFY to 219,900 AFY). The majority of this increased demand can be attributed to increasing demand in San Benito County, which is projected to increase 29% by 2025; projections of future agricultural water demand assumes irrigated acreage will increase approximately 17,000 acres by 2022. In addition, urban water use in the PVWMA service area will increase with projected growth in population, and agricultural water use is expected to increase steadily through the conversion of low water-use crops to high water-use berry crops. The increase in demand in the SBCWD and PVWMA service areas is balanced in part by the significant conservation efforts on the part of SCVWD, which are projected to reduce the overall water demand in Santa Clara County by 20% over the next 20 years.

### **Monterey Peninsula, Carmel Bay and South Monterey Bay**

*Water Supply:* The region is dependent on local rainfall and runoff for its potable water supply, with no connections to water sources outside of the region. Nearly all of the region's water supply comes from the Carmel River and groundwater in the Carmel Valley Aquifer, which underlies the alluvial portion of the Carmel River downstream of the San Clemente Dam, and groundwater in the coastal subareas of the Seaside Groundwater Basins. About 70% to 80% of the surface runoff in the Carmel River watershed is generated from rainfall within the Los Padres National Forest and Ventana Wilderness. The remaining watersheds (about 92 square miles) within the region do not currently provide municipal water supply from surface runoff, although groundwater recharge in these basins is an important source for municipal supply.

Total known usable storage in the region is estimated to be about 37,500 AF. Two reservoirs exist on the Carmel River—the Los Padres and San Clemente Reservoirs—but they have been severely impacted by sedimentation; Los Padres Reservoir has a storage capacity of less than



1,500 AF, and San Clemente Reservoir is no longer operated for municipal supply. Instead, stored water is released during dry periods from the Los Padres Reservoir to meet instream flow requirements and partially offset environmental damage from groundwater extraction. Thus, the region is mostly dependent on a system of wells in Carmel Valley and in the Seaside Groundwater Basin to meet municipal demand for potable water. During the dry season, pumping of wells causes significant declines in the groundwater levels and leads to decreased surface flows in the Lower Carmel River along as much as nine river miles. In 1995, the State Water Resources Control Board (SWRCB) issued Order No. WR 95-10, ordering California American Water (the water supply company) to limit diversions from the Carmel River Basin to 11,285 AF and instead to maximize diversions from the Seaside Groundwater Basin.

Groundwater conditions in the Seaside Basin, however, have deteriorated in the past decade. Groundwater extraction near the coast increased markedly beginning in 1995, resulting in declining water levels and depletion of groundwater storage. The estimated sustainable yield of the Seaside Basin under present conditions is 2,880 AFY; although there is significant uncertainty in this value, basin-wide groundwater withdrawals in recent years have been on the order of 5,600 AFY. In 2006, a Final Decision was rendered that adjudicated the basin and set a three-year goal aimed at reducing annual extractions to 3,000 AFY.

*Water Use:* Total municipal water use (all sources) in the planning region in the 2006 Water Year was about 18,830 acre-feet.

*Recycled Water:* The Monterey Regional Water Pollution Control Agency Regional Treatment Plant near the mouth of the Salinas River services a total population of about 250,000, which includes areas both inside and outside of the planning region, and processes about 22 million gallons per day. A substantial portion of this flow is tertiary treated, recycled and supplied for irrigation to nearly 12,000 acres of farmland in the northern Salinas Valley as part of the Castroville Seawater Intrusion Project. The objective of this project is to retard the advancement of seawater intrusion by supplying recycled water for irrigation in the northern Salinas Valley in lieu of groundwater. In addition, approximately 700 AFY of wastewater from the Carmel Area Wastewater District treatment plant is reclaimed and piped within the region for turf irrigation, golf courses and other areas in Pebble Beach.

*Projected Use:* Calculations regarding projected water demand show an additional long-term water need of 4,545 AFY to satisfy build-out projections of regional jurisdictions. A program to eliminate overdraft of water basins will be developed as part of a Capital Implementation and Financing Plan (CIFP) in the General Plan using a variety of strategies, including but not limited to: water banking; groundwater management and aquifer recharge and recovery; desalination; pipelines to new supplies; and conjunctive use techniques.

## **Salinas Valley**

The Salinas River meanders through the Salinas Valley floor, an area of about 239,000 acres. Several tributaries enter the river along the length, the largest by far being the Nacimiento and San Antonio Rivers, with watersheds of about 330 and 328 square miles, respectively. The Monterey County Water Resources Agency (MCWRA) owns and operates dams on both of these

ivers, which contribute approximately 200,000 AFY and 70,000 AFY, respectively, to the Salinas River.

The primary source of water in the Salinas Valley region is groundwater. Groundwater recharge in the Salinas Valley is principally from infiltration from the Salinas River, Arroyo Seco and, to a much less extent, other tributaries to the Salinas River, and deep percolation of rainfall. Average annual flows to the ocean from the Salinas River are around 282,000 AFY, most of which occurs during the period of November through March. During the spring and summer months, the reservoirs on the Nacimiento and San Antonio Rivers regulate flow to minimize outflow to the ocean, maximizing groundwater recharge through the Salinas River channel.

In the northern coastal areas of the basin, groundwater extraction occurs primarily from two groundwater sources, the 180-Foot and the 400-Foot Aquifers. In the central and southern portions of the basin, groundwater extraction occurs from the unconfined aquifer. Groundwater withdrawal has outpaced groundwater recharge and has resulted in overdraft conditions in the basin, allowing for seawater to infiltrate both aquifers. In 1999, MCWRA estimated that seawater affected approximately 24,000 acres overlying the 180-Foot Aquifer and 10,500 acres overlying the 400-Foot Aquifer in the Northern Salinas Valley.

*Recycled Water and Desalination:* In addition to the groundwater pumping systems, two other alternative water supply systems exist in the valley. The Marina Coast Water District has a desalination plant that provides 300 AF of water to the City of Marina, and Monterey Regional Water Pollution Control Agency provides approximately 13,300 AF of recycled water from its Regional Treatment Plant to approximately 12,000 acres of agricultural land located near Castroville (as described above).

*Water Use:* Agriculture is the dominant water use in the Salinas Valley. According to the most recently published MCWRA groundwater extraction summary report, 504,000 AF of groundwater is reported to have been extracted in 1999; 464,000 AF of which was designated for agricultural purposes and 40,000 AF for urban use.

*Projected Demand:* Basin water needs are anticipated to decline slightly between 1995 and 2030. Total urban needs are projected to increase 90% from 45,000 AFY in 1995 to 85,000 AFY in 2030, while agricultural needs are projected to decrease by approximately 60,000 AFY (13% reduction) due to factors including increased irrigation efficiencies, changes in crops, and some conversion of land from agriculture to urban uses.

## **San Luis Obispo County**

*Water Supply:* Nine major watersheds cross San Luis Obispo County's 3,304 square mile land mass. The county obtains nearly 80% of its water from groundwater supplies and about 20% from reservoirs and other sources (reclaimed water accounts for 1%, imported State Water accounts for 2%, while desalted water accounts for 0.2%). Total supply is approximately 259,600 AF.<sup>1</sup>

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<sup>1</sup> See Tables B3.1 and B4.1 in the IRWMP.

Groundwater over pumping is occurring or is potentially occurring along several coastal basins. Seawater intrusion is problematic in the community of Los Osos, where the impact of intrusion has been estimated to be migrating 100 feet per year; and recent studies show strong potential for seawater intrusion into the Nipomo area, and that it may already be occurring.

From a regional perspective, the status of overall water supplies within the San Luis Obispo region and their ability to meet projected demand over the next 20 years has improved dramatically with the 2004 decisions to implement the Nacimiento Water Project and with initiation of the Nipomo Supplemental Water Project. The Nacimiento Water Project will provide the capability to convey 15,750 AF of water per year from the existing reservoir to North County communities and south of the Cuesta Grade on State Highway 101 to the City of San Luis Obispo. The pipeline will intersect with two of the region's other major surface water supplies (State Water and Santa Margarita Lake Water), thereby opening the door to future groundwater banking and conjunctive use programs.

*Water Use:* Major water use in the region consists of agriculture (56%) and urban uses (32%), with rural uses comprising the remaining 12% of water use.

*Projected Demand:* Assuming a total water supply of 255,942 AF (not counting reclaimed, imported, or desalted water sources), total projected demand across the entire region based on a 20-year planning horizon will result in a total deficit across the region of approximately 8,110 AF. Note, however, that the projected water balance differs widely according to sub-region; Creston, for instance, is projected to have a supply surplus of 36,280 AF while Salinas is projected to have a supply deficit of 28,690 AF.

Partners in the IRMWP are attempting to quantify and establish environmental water demands for future watershed and basin-level planning. They note: "To achieve sustainable development, future water management will require an ecosystem approach, which recognizes that adequate water supply and development objectives are dependent on protecting functioning ecosystems."

## **Santa Barbara County**

The Santa Ynez River basin is the largest drainage system that is wholly located in Santa Barbara County, draining about 40% of the mainland part of the county. It is the primary source of water for about two-thirds of Santa Barbara County residents. Three dams have been constructed on the river to store and divert water to the South County (Cachuma, Gibraltar, and Jameson). Water supplies for the region include groundwater, surface water, imported State Water Project water, and recycled water; water supplies also are enhanced by the conjunctive use of surface and groundwater supplies and cloud seeding. The current average annual water supplies for Santa Barbara County total about 223,000 AFY, plus about 90,000 AFY in return flows to useable groundwater basins.

Groundwater basins are the major source of water in the county, supplying about 77% of Santa Barbara County's domestic, commercial, industrial, and agricultural water. Given the county's low annual rainfall and the fact that nearly all rivers and creeks are dry in summer, many areas

have historically been dependent on groundwater from four basins along the South Coast and seven basins in the north. In the South County, water purveyors use groundwater as a secondary source of potable water. However, the North County is largely supported by groundwater and/or shallow, riparian basin water, both of which are recharged by surface flows.

Surface water supplies are an important part of the regional water supply. Lake Cachuma on the Santa Ynez River provides approximately 65% of the South Coast's water supply on an average annual basis, and Gibraltar Reservoir is the source of about one-third of the City of Santa Barbara's water supply. Twitchell Reservoir on the Cuyama River is important to both the water supply and the flood protection of the Santa Maria Valley; the reservoir supplies about 20,000 AF of recharge to the Santa Maria Groundwater Basin on an average annual basis.

Santa Barbara County has contractual rights to 39,078 AFY of State Water Project water, though actual use may be less than that amount. State Water Project water has helped reduce the use of groundwater in all major basins (except the Cuyama Basin, which does not have a water purveyor that receives State Water Project water). It also has improved water quality in areas that directly receive State Water Project water and has increased the overall water supply in Santa Barbara County.

Key water management issues in the Santa Barbara County sub-region include:

- The need to replace, rehabilitate, or upgrade aging infrastructure serving the general population and especially Disadvantaged Communities.
- Water supply reliability, stemming from multiple factors, including the variable reliability of State Water Project water, the loss of storage capacity in the four major reservoirs, and the need for water supplies to serve a growing population.
- The need to operate and maintain water and wastewater systems in a manner that minimizes impacts to sensitive habitats and species and complies with federal, state, and local regulatory requirements.
- Overdrafted groundwater basins in North County.
- The need for emergency planning to address potential impacts to water and wastewater facilities from floods, earthquakes, and fires, as well as planning for (and responding to) periodic droughts.

*Recycled Water and Desalination:* Presently, two agencies in Santa Barbara County treat all of their effluent to full tertiary level. The Laguna County Sanitation District produces approximately 2,400 AFY, which is used for agricultural, landscaping, and industrial purposes; and the Summerland Sanitary District treats approximately 168 AFY, which is discharged to the Pacific Ocean. Two other agencies treat some of their flow to tertiary levels for reuse landscape irrigation: the City of Santa Barbara currently treats 800 AFY (with a capacity to treat up to 1,200 AFY of tertiary effluent), and the Goleta Sanitary District currently treats 1,000 AFY (with a capacity to treat up to 1,500 AFY of tertiary effluent). Desalted water is not currently used; however, the City of Santa Barbara owns a desalination plant, currently decommissioned, for use as an emergency water supply.

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*Current Water Uses:* Agricultural water use accounts for approximately 75% of all water demand in the county, with urban use accounting for the remaining 25%. Most agricultural water supplies are obtained from private groundwater wells.

*Projected Demand:* By 2040, the Santa Barbara County population is expected to increase by almost 52% over 2000 levels; total water demand for this same 40-year period, however, is projected to increase by only 9%. Agricultural water demand is expected to remain nearly the same. At present, with careful and strategic planning, water supplies are sufficient to meet demand countywide during normal water years, but water purveyors will need to develop an additional 10,800 AFY by 2030. Only one of the five Designated Analysis units in Santa Barbara County has a water supply that meets the current demand in normal rainfall years; the other basins have existing shortfalls in water supply that will increase in the future.

## **Water Quality**

### **Northern Santa Cruz County**

*Surface Water Quality:* Development in the watersheds has increased runoff and erosion and decreased groundwater recharge in many Santa Cruz County watershed sub-basins. The 303(d) list of impaired water bodies approved in July 2003 includes 14 water bodies, impaired by pathogens, nutrients, pesticides, and sedimentation. Among these waterbodies is the San Lorenzo River, listed for sediment, pathogens, and nitrate. Despite these listings, many local waterways are reported to have less impairment in 2003 than in 2001, perhaps reflecting increased attention to stormwater management and nonpoint source pollution reduction.

Excessive erosion, sedimentation, and turbidity have severely degraded habitat for coho salmon and steelhead, reduced availability of winter flows for both water supply and environmental needs, and caused extensive public and private property damage. Excessive sedimentation is the primary reason for the estimated 70-90% reduction in salmon and steelhead populations that have occurred in the San Lorenzo watershed since the 1960's.

Many areas of wetlands and sloughs in the Watsonville Sloughs watershed have been drained, channelized and converted to agriculture. These land use changes have resulted in soil erosion, reduced groundwater levels, and seawater intrusion. Housing developments along lower Watsonville Slough has reduced habitat behind the dune fields and modified the drainage of the marsh and slough. The Watsonville Sloughs system is 303(d) listed for elevated levels of pesticides, sediment, oils and grease, metals, and pathogens.

*Groundwater Quality:* Septic systems, livestock and nonpoint urban contamination have increased bacteria levels in groundwater and creeks by 20-50 times and nitrate levels by 5-7 times in the San Lorenzo sub-basin, threatening the City of Santa Cruz water supply and recreational opportunities in the San Lorenzo River. Leakage and spills from gas stations, dry cleaners and other hazardous materials sites have caused localized groundwater contamination and pose more serious threats to water supplies. Priority areas to be addressed are Scotts Valley in the San Lorenzo watershed, and the Soquel and Aptos watersheds.

Groundwater underlying the Watsonville Sloughs watershed has significant seawater intrusion and nitrate contamination problems. The rate of seawater intrusion in the Pajaro basin currently averages about 10,000 AF during a normal year, ranging up to 15,000 AF during a critically dry year. Slough sediment and biota regularly exhibit toxic levels of the banned pesticide DDT. Depletion of dissolved oxygen in the water column, fragmented habitat, structural barriers to wildlife movement and the presence of non-native aggressive species have impacted wildlife.

*Coastal Water Quality:* Urban runoff in developed areas has degraded water quality at moderate levels in coastal lagoons and at ocean beaches, and unusual algal blooms have recently occurred. Sewer leaks and overflows contribute to this problem. All urban lagoons in this planning region are posted as unsafe for swimming year round due to high bacteria levels. Local beaches are frequently posted as unsafe for human contact in response to elevated bacteria.

## **Pajaro River Watershed**

Major water quality issues in the watershed include:

- Pajaro Valley Groundwater Basin overdraft
- Salinity and hardness in the Gilroy-Hollister Groundwater Basin
- Contaminated or poor groundwater quality throughout the watershed
- Sediment and nutrients in surface water throughout the watershed

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 activities near rivers and creeks that run through the watershed. Groundwater quality is also an issue throughout the region, particularly with respect to salinity and nitrates.

*Surface Water Quality:* The SWRCB has identified seven water bodies in the Pajaro River watershed that suffer significant water quality impairments. In total, 160 miles of river and creek reaches and 626 acres of reservoir are impaired. The impaired water bodies are listed for nutrient, sediment, fecal coliform, mercury, chloride, pH, low dissolved oxygen and pesticide pollutants/stressors. Nitrate and sediment pose one of the most significant challenges to water quality in the Pajaro River watershed. 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.

*Groundwater Quality:* Specific groundwater quality issues of concern in the region include seawater intrusion along the coast, perchlorate plumes in San Martin and Hollister, long-term groundwater salinity build-up in the upper watershed, MTBE, and nitrates. 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. Most (90%) of the total water demand in the Pajaro Valley Groundwater Basin 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, MTBE, and other contaminants.

The major groundwater basin that underlies the SCVWD and SBCWD portions of the watershed is the Gilroy-Hollister Valley Groundwater Basin; portions of this basin are affected by high salinity levels, nutrients, perchlorate, MTBE, and other contaminants.

## **Monterey Peninsula, Carmel Bay and South Monterey Bay**

*Surface Water Quality:* Water quality conditions in the Monterey Peninsula, Carmel Bay and South Monterey Bay IRWM planning region are generally good. Total maximum daily loads (TMDLs) have not yet been developed for any of the region's streams, including the Carmel River. The Central Coast Regional Water Quality Control Board (RWQCB), Region 3 Basin Plan identified the Carmel River Lagoon as the only water body in the region that requires an intensive survey. A "water quality screening" is recommended, but the Basin Plan did not identify a particular problem with the water quality in this body.

Dissolved oxygen, carbon dioxide, and pH levels in the main stem of the Carmel River have generally met Central Coast Basin Plan objectives set by the RWQCB. However, average daily water temperature during the late summer and fall commonly exceeds the range for optimum steelhead growth (50-60°F). Turbidity in the main stem is normally low, except during winter when storm runoff events can elevate turbidity for several days during and after a storm event. Very wet years, such as in 1998, can cause extensive landslides and bank erosion, which can increase turbidity in the main stem for up to several months. Water quality in the Carmel River Lagoon typically declines during late summer and fall as freshwater inflows cease and ocean waves start to overtop the sandbar at the mouth of the river. Water temperature often exceeds 70°F, which is above Central Coast Basin Plan guidelines. Dissolved oxygen levels also periodically drop below guidelines.

*Groundwater Quality:* Monitoring activities have indicated only minor changes in overall water quality of the Carmel Valley Aquifer in recent years; monitoring results do not indicate seawater intrusion to be a concern at this time. There is also no indication of seawater intrusion in the two principal aquifer units of the Seaside Basin at the present time.

*Coastal Water Quality:* Monitoring and analysis in both the near shore environment and coastal watersheds has pointed to urban runoff as the leading cause of water pollution affecting the Monterey Bay National Marine Sanctuary. This monitoring has revealed high concentrations of nutrients, metals, pathogens, detergents and other contaminants in local creeks and rivers as well as in the numerous urban outfalls that drain into the MBNMS.

## **Salinas Valley**

The Salinas Valley IRWM planning region faces two major water quality issues: seawater intrusion and nitrate contamination. Groundwater extraction has outpaced groundwater recharge and has resulted in overdraft conditions, allowing for seawater to infiltrate both the 180-Foot and the 400-Foot Aquifers. Seawater intrusion was first documented on 1946. In 1999, it was estimated that seawater was affecting approximately 24,000 acres overlying the 180-Foot Aquifer and 10,500 acres overlying the 400-Foot Aquifer. As a result of this intrusion, urban and agricultural supply wells have been abandoned, destroyed and relocated. The SWRCB considers the problems facing the basin to be one of the “most critical” water resource issues facing California.

Nitrate contamination in the Salinas Valley was first documented in 1978. Fifty percent of wells sampled recently in the Salinas Valley exceed the maximum contaminant level for drinking water (which is 45 mg/l NO<sub>3</sub>). SWRCB ranked the Salinas Valley as their number one water quality concern due to the severity of nitrate contamination in a July 1995 staff report. The activities that are most directly linked to high nitrate levels include agricultural fertilizer application, confined animal production facilities, and septic waste disposal systems. MCWRA has prepared a nitrate management plan that is currently under implementation.



## **San Luis Obispo County**

The waters in the San Luis region have the good fortune of being exposed to fewer pollutants than many of the urban areas of the State, and are important in sustaining numerous ecosystems. Nonetheless, the region does have some notable water quality challenges.

*Surface Water Quality:* Surface water quality problems in the region generally include:

- Stormwater runoff pollution
- Point and nonpoint source discharges
- Urbanization
- Sanitary sewer overflows/spills
- Sedimentation
- On-site waste disposal
- Loss of riparian corridors and wetlands

The SWRCB has identified a number of water bodies in the region as having serious water quality impairments. Among these are Los Osos Creek and Chorro Creek, 303(d) listed for sediment, pathogens, and nutrients; Los Osos Creek is also listed for low dissolved oxygen. San Luis Obispo Creek is listed for pathogens, nutrients, and priority organics. Santa Maria River is listed for fecal coliform and nitrate. The Salinas River is listed for sodium and chloride.

*Groundwater Quality:* Groundwater quality problems in the region generally include:

- Seawater intrusion
- Increasing TDS
- Increasing nitrate levels
- MTBE and other industrial pollutants

The community of Los Osos has been subject to seawater intrusion for some time, the impact of intrusion recently estimated to be migrating 100 feet per year. The Department of Water Resources notes a critical overdraft condition in the Cuyama Valley Basin. In the Nipomo sub-region, recent studies indicate a strong potential for seawater intrusion, and that seawater intrusion may already be occurring.

*Coastal Water Quality:* Morro Bay, one of 28 estuaries in the National Estuary Program, is 303(d) listed for sediment, pathogens, nutrients, and metals, with sedimentation posing the greatest threat. Sources of contaminants include agriculture, boats, urban runoff, abandoned mines in the upper watershed, and boatyards. The region's most highly publicized coastal water quality issue, however, has been the Los Osos Wastewater Project. Embroiled in decades of local debate and deliberation, this wastewater facility in Morro Bay has been operating on a waiver to discharge secondary treatment to the ocean. Morro Bay has committed to upgrade the facility to tertiary treatment by 2014.

## **Santa Barbara County**

Key issues related to water quality in the Santa Barbara County IRWM planning region include:

- Risk of illness from inadequate drinking water and pollution from wastewater, especially in Disadvantaged Communities.
- The need to operate and maintain water and wastewater systems in a manner that minimizes impacts to sensitive habitats and species and complies with federal, state, and local regulatory requirements.
- Water quality impairments in both groundwater and surface water bodies, including pollution of creeks and ocean water, especially from sediment runoff.

*Surface Water Quality:* The county contains a number of water bodies that are listed as impaired under Section 303(d) of the Clean Water Act. Among them are the Santa Ynez River, listed for nitrate, salinity/TDS/chlorides, and sedimentation/siltation; the Santa Maria River, listed for ammonia, chlorpyrifos, DDT, dieldrin, fecal coliform, and nitrate; and San Antonio Creek, listed for ammonia, boron, nitrogen, and nitrate. Sources of pollution include both urban and agricultural uses, as well as natural sources.

Invasive weeds are present in the county's riparian areas, including arundo, tamarisk, Pampas grass, myoporium, cape ivy, and castor bean. Such weeds are detrimental to habitat and water conservation, and increase the risk of flooding and erosion in riparian systems.

*Groundwater Quality:* Several of the county's groundwater basins are (or potentially are) in a state of overdraft; notably, the Cuyama Groundwater Basin is in a state of overdraft ("safe yield") of approximately 28,525 AFY, and the San Antonio Groundwater Basin is in a state of overdraft of approximately 9,540 AFY. Also, several areas (Santa Barbara and near Santa Maria) have experienced signs of seawater intrusion. As of yet, these initial signs do not pose a threat to drinking water supplies. Note that groundwater pumping within the Santa Barbara Groundwater Basin has been drastically reduced since 1991; effective pumping practices together with groundwater injection programs have restored the previously existing gradient (as much as 100 feet), thereby reversing the trend of seawater intrusion.

In addition, the county contains a number of non-sewered, fairly densely populated areas that remain on septic tanks; state maximum contaminant levels for nitrates already have been exceeded in some areas, and MTBE and chlorinated solvents pose problems for some wells.

*Coastal Water Quality:* The natural function of local creeks has been affected over time by human activities and land alteration, which ultimately has altered natural hydrologic and geomorphologic processes, degraded water quality, and diminished native biological communities. South Coast creeks discharge to the Santa Barbara Channel, and impaired creek water quality affects the water quality of the ocean in the vicinity of public beaches. The average percentage of exceedances for indicator bacteria in 2006 for Santa Barbara County beaches was 14%.

## CC IRWMP Comparative Analysis

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Carpinteria Salt Marsh, a 230-acre estuary, was one of the original California Critical Coastal Areas identified in 1995 as an impaired estuary. The marsh is 303(d) listed for nutrients, organic enrichment, low dissolved oxygen, and priority organics. Carpinteria Salt Marsh and its tributaries contain levels of nitrates that exceed Basin Plan objectives for municipal and domestic supply. Goleta Slough is also considered a Critical Coastal Area and is 303(d) listed for pathogens and priority organics. Large volumes of sediment and debris contained in runoff from the mountains have entered the Goleta Slough and have profoundly affected the ecosystem.

### III. Comparison of Goals & Objectives and High Priority Projects

This section provides a general summary and comparison of the goals and objectives and high priority projects for each of the six IRWMP regions. The purpose of this comparison is to assess priorities and to note major differences between regions, if any.

#### Summary and Comparison of Goals and Objectives

There is much overlap in the goals and objectives chosen by each planning region for inclusion in the IRWMPs, with several regions adding additional goals to reflect regional priorities. All six regions included water supply, water quality, and environmental protection and enhancement goals. In addition, all of the regions, with the exception of Santa Barbara County, included a flood management goal. San Luis Obispo and Santa Barbara Counties both added a groundwater management goal, and Northern Santa Cruz County and the Monterey Peninsula, Carmel Bay and South Monterey Bay region both added a regional collaboration goal. In addition, Northern Santa Cruz County included recreation, public health, and regional economy goals; and Santa Barbara included emergency preparedness and infrastructure efficiency/reliability goals.

Table 1 below shows the IRWMP goals included by each region. Table 2, on the following pages, include the actual language of the goals and objectives for each region, shown side-by-side according to goal for ease of comparison. Note that all regions assigned equal weight to each goal, except for Pajaro River Watershed, which prioritized goals (and objectives) in the order listed.

**Table 1. IRWMP Goals**

Northern Santa Cruz County	Pajaro River Watershed	Monterey Peninsula, Carmel Bay and South Monterey Bay	Salinas Valley	San Luis Obispo County	Santa Barbara County
<ol style="list-style-type: none"> <li>1. Water Supply Reliability</li> <li>2. Raw Water Quality</li> <li>3. Delivered Water Quality</li> <li>4. Habitat Restoration &amp; Maintenance</li> <li>5. Recreation</li> <li>6. Public Health</li> <li>7. Flood Management</li> <li>8. Regional Economy</li> <li>9. Regional Collaboration</li> </ol>	<ol style="list-style-type: none"> <li>1. Water Supply</li> <li>2. Water Quality</li> <li>3. Flood Protection</li> <li>4. Environmental Protection and Enhancement</li> </ol>	<ol style="list-style-type: none"> <li>1. Water Supply</li> <li>2. Water Quality</li> <li>3. Flood Protection and Erosion Prevention</li> <li>4. Environmental Protection and Enhancement</li> <li>5. Regional Communication and Cooperation</li> </ol>	<ol style="list-style-type: none"> <li>1. Water Supply</li> <li>2. Water Quality</li> <li>3. Flood Protection</li> <li>4. Environmental Enhancement</li> </ol>	<ol style="list-style-type: none"> <li>1. Water Quality</li> <li>2. Water Supply</li> <li>3. Ecosystem Preservation and Restoration</li> <li>4. Groundwater Monitoring and Management</li> <li>5. Flood Management</li> </ol>	<ol style="list-style-type: none"> <li>1. Water Supply</li> <li>2. Groundwater Management</li> <li>3. Ecosystem Restoration</li> <li>4. Water Quality</li> <li>5. Emergency Preparedness</li> <li>6. Infrastructure Efficiency and Reliability</li> </ol>

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Note that the six IRWM planning regions have quite similar goals and objectives in terms of water supply, water quality, flood management, and environmental protection and enhancement, with minor differences reflecting regional needs and priorities. All regions aim to improve water supply reliability and protect against drought; almost all of the regions contain objectives regarding maximizing water conservation and recycled water use. Similarly, all regions aim to protect and improve water quality (including surface water, groundwater, stormwater, wastewater, recycled water, and/or coastal waters), and to meet or exceed all applicable regulatory standards.

Regarding environmental protection, all regions essentially aim to identify opportunities for enhancement and/or restoration of natural resources and to minimize adverse effects from water management activities. The Monterey Peninsula, Carmel Bay and South Monterey Bay and Santa Barbara County planning regions specifically mention improving water quality for aquatic health (and Northern Santa Cruz County specifies actively pursuing watershed protection). Northern Santa Cruz County and San Luis Obispo County IRWMPs contain the most specific language for habitat restoration and ecosystem preservation; both of these regions as well as the Salinas Valley region include specific mention of improving habitat for steelhead (or “fish”), and Northern Santa Cruz and San Luis Obispo also include specific mention of removing invasive plant species and re-establishing native vegetation. All regions include objectives within the environmental goal for public access opportunities and/or recreation (open spaces, trails, parks), except for Northern Santa Cruz, which has a separate goal dedicated to “recreation.”

## **Summary and Comparison of High Priority Projects**

The purpose of this section is to assess the types of projects identified by each of the six IRWM planning regions in order to get a general sense of regional needs and priorities, and begin to determine where overlapping interests may lie. Table 3, on the following pages, lists all “high priority” projects identified by the six IRWMP regions, along with the water management strategies that each project satisfies. For a brief description of each project, please refer to Appendix C.

All projects essentially satisfy more than one water management strategy, though each project can also be categorized by the water management strategy that *best* defines it. Regional priorities in the discussion below are considered in both ways, that is, taking into account how many water management strategies are achieved by all projects in a region combined, as well as how many water management strategies singularly “best define” a region’s projects.

**TABLE 3**  
**PRIORITY PROJECTS VS. WATER MANAGEMENT STRATEGIES**  
**ACCORDING TO IRWMP REGION**

<b>Strategies</b>	Ecosystem Restoration	Environmental & Habitat Protection & Improvement	Water Supply Reliability	Flood Management	Groundwater Management	Recreation & Public Access	Storm Water Capture & Management	Water Conservation	Water Quality Protection & Improvement	Water Recycling	Wetlands Enhancement & Creation	Conjunctive Use	Desalination	Imported Water	Land Use Planning	NPS Pollution Control	Surface Storage	Watershed Planning	Water & Wastewater Treatment	Water Transfers
<b>Projects by Region</b>																				
<b>Northern Santa Cruz County</b>	2	10	13	7	7	5	3	1	12	1	3	2	1			5		1	3	
San Lorenzo Onsite Sewage Disposal System Upgrades		X	X		X				X							X			X	
Abandoned Well Destruction Program			X		X				X											
Feasibility Study for Enhanced Aquifer Recharge, Phase 2		X	X	X	X				X			X								
Regionwide Drainage Master Plan			X	X			X		X							X				
Santa Cruz County Stormwater Pollution Prevention Program		X	X	X		X	X		X		X					X				
Enhance and Protect Primary Groundwater Recharge Areas		X	X	X	X		X		X											
Relocate Sewer Main from New Brighton State Beach		X				X													X	
Engineering for Regional Ocean Desalination Project			X						X				X							
Polo Grounds Well, Treatment Plant, Pipelines, and Water Conservation Project		X	X		X	X		X	X											
Groundwater Monitoring Wells in the Aromas and Purisima Formations			X		X				X											
Davenport Drinking Water Improvement Project			X																X	
Watsonville Sloughs Integrated Watershed Restoration	X	X		X		X			X		X					X				
Phase II: Integrated Watershed Restoration Program	X	X	X	X		X			X		X					X				
Four Recycled Water Distribution System Extensions in the Scotts Valley Area		X	X							X										
Bergstrom Pit Aquifer Recharge Project		X	X	X	X				X			X								
Project Monitoring Program																				
Upgrade and Expand IRWMP																			X	
<b>Pajaro River Watershed</b>			1	2	4				1	4		2	2	1			2	1	4	1
Regional Mobile Lab									X											
Coastal Distribution System					X															
Watsonville Recycled Water Treatment Facility Project										X										

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Corralitos Creek Surface Fisheries Enhancement Project  Strategies  Projects by Region	Ecosystem Restoration	Environmental & Habitat Protection & Improvement	Water Supply Reliability	Flood Management	Groundwater Management	Recreation & Public Access	Storm Water Capture & Management	Water Conservation	Water Quality Protection & Improvement	Water Recycling	Wetlands Enhancement & Creation	Conjunctive Use	Desalination	Imported Water	Land Use Planning	NPS Pollution Control	Surface Storage	Watershed Planning	Water & Wastewater Treatment	Water Transfers
SBCWD Groundwater Demineralization													X							
Hollister Groundwater Softening																			X	
Groundwater and surface water blending												X								
South County Recycled Water Program									X											
North San Benito County Regional Recycled Water Project									X											
Sunnyslope Recycled Water Project									X											
Morgan Hill Wellhead Treatment																			X	
Aromas Water District Wellhead Treatment																			X	
Soap Lake Floodplain Preservation Project				X																
North Monterey County Desalination Project													X							
Pacheco Reservoir Reoperation																	X			
Hernandez Reservoir Reoperation																	X			
Cienega Valley Conjunctive Use Project												X								
San Juan Basin Surface Drainage				X																
Pajaro Valley Import Pipeline Project														X						
Main Avenue and Coyote-Madrone Pipeline Repair					X															
Pajaro River Watershed Study																		X		
San Juan Bautista Surface Water Treatment Plant																			X	
Church Ave. Diversion					X															
Non-CVP water transfers and banking agreements																				X
SCVWD Groundwater Recharge with CVP and local sources					X															
<b>Monterey Peninsula, Carmel Bay, and South Monterey Bay</b>	<b>7</b>	<b>8</b>	<b>5</b>	<b>2</b>	<b>7</b>	<b>5</b>	<b>5</b>	<b>1</b>	<b>9</b>	<b>2</b>	<b>3</b>	<b>5</b>			<b>2</b>	<b>2</b>	<b>1</b>	<b>4</b>	<b>2</b>	
Lower Carmel River Restoration and Floodplain	X	X		X		X	X		X		X				X			X		
Refine ASBS Alternatives	X	X	X		X	X	X		X	X		X					X	X		
CSUMB Stormwater Percolation and Education	X	X					X				X	X			X			X		
Seaside Groundwater Basin Aquifer Storage and Recovery	X	X	X		X				X			X								
Seaside 90" Outfall Infiltration		X	X	X	X	X	X		X		X	X				X				

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Component																				
Strategies	Ecosystem Restoration	Environmental & Habitat Protection & Improvement	Water Supply Reliability	Flood Management	Groundwater Management	Recreation & Public Access	Storm Water Capture & Management	Water Conservation	Water Quality Protection & Improvement	Water Recycling	Wetlands Enhancement & Creation	Conjunctive Use	Desalination	Imported Water	Land Use Planning	NPS Pollution Control	Surface Storage	Watershed Planning	Water & Wastewater Treatment	Water Transfers
	<b>Projects by Region</b>																			
Seaside Basin Groundwater Replenishment	X		X		X				X	X		X							X	
Water Conservation Retrofit Program	X	X	X		X			X												
Carmel River Watershed Volunteer Monitoring Program	X	X				X			X							X		X		
Sanitary Sewer System Repair and Replacement in Monterey and Pacific Grove						X			X										X	
Microbial Source Tracking					X		X		X											
Implementation of Solid Waste Removal Technology		X			X				X											
<b>Salinas Valley</b>	<b>1</b>	<b>1</b>	<b>4</b>	<b>1</b>	<b>3</b>				<b>2</b>	<b>2</b>		<b>1</b>	<b>1</b>						<b>1</b>	
Salinas Valley Water Project			X	X	X							X								
Water Quality and Fish Habitat Monitoring Program	X	X							X											
MCWD Well 33, Pump Station and Reservoir Project			X		X														X	
Soledad Water Recycling/ Reclamation Project			X		X				X	X										X
Regional Water Augmentation Project										X			X							
Castroville Water District Well Relocation and Replacement Project																				
Urban Recycled Water Project – Former Fort Ord			X																	
<b>San Luis Obispo</b>	<b>16</b>	<b>20</b>	<b>19</b>	<b>9</b>	<b>22</b>	<b>9</b>	<b>11</b>	<b>4</b>	<b>26</b>	<b>12</b>	<b>7</b>	<b>11</b>	<b>3</b>	<b>4</b>	<b>13</b>	<b>9</b>	<b>1</b>	<b>11</b>	<b>14</b>	<b>5</b>
Los Osos Community Wastewater Project	X	X	X		X	X			X	X	X								X	
Flood Control Zone 1/1A Waterway Management Program	X	X		X	X	X	X		X											
Flood Control Zone 9 Waterway Management Program	X	X		X		X	X		X		X					X				
Southland Wastewater Treatment Facility Upgrade		X	X		X				X	X									X	
Morro Bay Desalination Facility Upgrade			X		X				X	X		X	X						X	X
Nipomo CSD Supplemental Water Project			X		X				X					X	X				X	X
Nacimiento Water Project			X		X							X		X	X		X		X	X
Morro Bay Harborwalk	X	X		X		X			X							X				
Morro Bay Estuary Comprehensive Conservation and Management Plan	X	X			X	X	X		X		X				X	X		X		
Chorro and Morro Groundwater Basin Management Plans	X	X	X		X				X			X			X	X		X		
Agriculture and Open Space	X	X		X	X	X	X		X		X				X	X		X		

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Element (region-wide)																				
Flood Management Plan (region-wide)				X			X		X						X			X		
<b>Strategies</b>	Ecosystem Restoration	Environmental & Habitat Protection & Improvement	Water Supply Reliability	Flood Management	Groundwater Management	Recreation & Public Access	Storm Water Capture & Management	Water Conservation	Water Quality Protection & Improvement	Water Recycling	Wetlands Enhancement & Creation	Conjunctive Use	Desalination	Imported Water	Land Use Planning	NPS Pollution Control	Surface Storage	Watershed Planning	Water & Wastewater Treatment	Water Transfers
<b>Projects by Region</b>																				
Conservation Element Update (region-wide)	X	X	X		X	X	X	X	X	X					X	X		X		
Master Water Plan (region-wide)		X	X		X			X	X	X		X	X	X	X			X	X	X
Low Impact Development Program (region-wide)	X	X	X	X	X	X	X	X	X		X				X	X		X	X	
Wetland and Vernal Pool Mapping (region-wide)	X	X		X	X	X	X		X		X				X			X		
Nipomo CSD Salt Management Program	X	X	X		X				X							X				
Morro Bay NPDES Illicit Discharge Detection and Elimination Ordinance							X		X							X				
Morro Bay Wastewater Treatment Facility Upgrade	X	X	X		X				X	X		X							X	
Groundwater Recharge Optimization Program (region-wide)	X	X	X	X	X		X		X	X	X	X		X	X			X	X	X
Groundwater Management Ordinance Study (region-wide)			X		X			X	X	X		X			X			X		
South San Luis Obispo County Sanitation District Facility Upgrade	X	X	X		X				X	X		X							X	
Desalination Study (region-wide)			X		X				X			X	X						X	
Paso Robles Reclamation and Recharge Program	X	X	X		X				X	X		X							X	
San Luis Obispo Reclamation Facility Upgrade	X	X	X		X				X	X		X							X	
San Simeon Wastewater Treatment Facility Upgrade		X	X	X			X		X	X									X	
Edna Valley Groundwater Basin Study		X	X		X				X						X			X		
<b>Santa Barbara County</b>	<b>14</b>	<b>16</b>	<b>21</b>	<b>10</b>	<b>14</b>	<b>8</b>	<b>7</b>	<b>7</b>	<b>28</b>	<b>11</b>	<b>8</b>	<b>11</b>	<b>2</b>	<b>14</b>		<b>8</b>	<b>7</b>	<b>8</b>	<b>21</b>	<b>5</b>
Santa Maria River/Oso Flaco, Santa Ynez River, and South Coast Beaches TMDLs Watershed Working Groups	X	X	X		X	X	X	X	X	X	X					X	X	X		
Regional Water Conservation Rebates, Incentives, and Promotion (region-wide)			X					X		X				X						
Cuyama Wastewater Treatment Plant Effluent Disposal Project					X														X	
Cuyama Water Tower Repair			X						X										X	
Jalama Beach County Park Septic System Improvements Project									X										X	
Casmalia Water System Improvements Project			X						X											
Guadalupe WWTP Reuse Improvements Project						X				X										

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<div style="text-align: right;">Santa Maria Wastewater Treatment Plant Expansion</div> <div style="text-align: left;">Strategies</div>	Ecosystem Restoration	Environmental & Habitat Protection & Improvement	X	Flood Management	X	Recreation & Public Access	Storm Water Capture & Management	Water Conservation	X	Water Quality Protection & Improvement	Water Recycling	Wetlands Enhancement & Creation	X	Desalination	X	Land Use Planning	NPS Pollution Control	Surface Storage	Watershed Planning	X		
Projects by Region																						
Laguna County Sanitation District Wastewater Reclamation Plant Upgrade			X					X	X	X				X						X	X	
Santa Maria River Levee Reinforcement				X													X					
Santa Ynez River Arundo Eradication Project	X	X	X	X	X							X	X							X		
Quiota Creek Fish Passage Enhancements Project	X	X		X		X			X											X		
Gallery Well Filtration Facility			X		X				X				X		X							X
Lompoc Regional Wastewater Reclamation Plant		X	X		X				X											X	X	
South Coast Conduit 2 <sup>nd</sup> Pipeline – Upper Reach			X												X							X
Bluffs Sewer Relocation Project	X	X							X												X	
Carpinteria Creek Overhead Crossing Replacement Project	X	X				X			X			X								X	X	
Central Zone Transmission Main/ASR Demonstration Well			X		X				X				X	X	X							
Recycled Water Feasibility Study (Carpinteria Valley)	X	X	X		X			X		X	X	X	X		X						X	
Braemer Area Sewer Extension Project	X	X							X								X				X	
El Estero Swale Restoration Project	X	X							X			X										
Elings Park Solid Waste Assessment Test/Corrective Action Plan	X	X			X				X													
Las Positas Storm Water Management Project		X		X		X	X		X			X					X	X	X	X		
Lower Mission Creek Flood Control and Rehabilitation Project	X	X		X		X	X		X			X					X	X	X	X		
Old Mission Creek Storm Water Management and Restoration Project	X	X		X		X	X		X			X					X	X	X	X		
Fairview Avenue Sewer Line Installation Project	X	X							X	X											X	
Mattorral Way Creek Arial Crossing Sewer Replacement Project	X	X		X						X											X	
Modoc Road New Sewer Line Installation Project									X	X											X	
Water Reclamation Facility 2007 Refurbishment Project			X						X	X					X						X	
ASR Well Rehabilitation and Construction Project			X		X				X				X		X							
Backwash Tank Replacement at 4 Wells Project			X		X		X	X	X	X			X	X	X			X				
Cathedral Oaks Pipeline Replacement Project			X		X								X		X							X
Corona Del Mar Water Treatment			X						X				X								X	



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Plant – Sedimentation Basin Effluent Upgrades Project																				
<b>Strategies</b>	Ecosystem Restoration	Environmental & Habitat Protection & Improvement	Water Supply Reliability	Flood Management	Groundwater Management	Recreation & Public Access	Storm Water Capture & Management	Water Conservation	Water Quality Protection & Improvement	Water Recycling	Wetlands Enhancement & Creation	Conjunctive Use	Desalination	Imported Water	Land Use Planning	NPS Pollution Control	Surface Storage	Watershed Planning	Water & Wastewater Treatment	Water Transfers
<b>Projects by Region</b>																				
Downstream Reservoir Meters Project			X					X						X						
Interconnect with City of Santa Barbara Project (Goleta WD)			X											X						X
Blended Irrigation Project			X	X	X	X	X	X	X			X		X		X	X		X	
Iron and Manganese Removal Plant Project			X		X				X			X		X					X	
Non-Storm Water Diversion, Isla Vista							X		X	X						X	X		X	
Las Vegas and San Pedro Creeks Flood Control Improvements	X	X		X																
San Jose Creek Flood Control Improvements				X					X											

**NOTES:**

The numbers at the top of each planning region's section represents the total number of projects that satisfy each water management strategy.

Projects are listed in order of priority, except for Santa Barbara County, where projects are sorted by watershed, not by priority.

Northern Santa Cruz County: The data contained in the table above was derived from two sources: Table ES-2 (projects grouped according to Northern Santa Cruz County IRWMP "objectives") and Appendix D (projects grouped according to "management strategies"). These two sources contained slightly different but overlapping information; the above table reflects a best effort to combine this information.

Pajaro River Watershed: The Pajaro River Watershed IRWMP differs from the other IRWMPs in that each project reflects just one water management strategy. This is because each project was categorized based on the water management strategy it most effectively addressed, though in fact most projects do employ a combination of water management strategies.

Salinas Valley: Only the first four projects listed on this table are included as part of the Salinas Valley Integrated Regional Water Management Functionally Equivalent Plan. The next three projects are cited for consideration for future IRWM planning.

San Luis Obispo County: The projects included on this list are those that were "high ranked." The first 18 projects are considered "immediate-term implementation priorities" (high ranking and ready to proceed within the next two years). However, only the first eight projects were included for consideration in the San Luis Obispo Proposition 50 Implementation Grant Application.

### Northern Santa Cruz County

Two of the primary water management problems in the North Santa Cruz County planning region are the lack of adequate surface water supply during droughts, and depletion of the aquifers. Not surprisingly, water supply reliability projects dominate the list of projects included in the region’s IRWMP. Of the 17 projects identified as high priority, 7 might best be described as primarily water supply projects. The table below summarizes the number of projects “best described” by each water management strategy:

<b>Water Management Strategy</b>	<b># of Projects Best Described by that Strategy</b>
Water Supply	7
Recharge and/or Stormwater Management	3
Habitat Restoration and/or Sediment Control	2
Wastewater	2
Management and/or Planning Efforts	2
Water Quality	1

In addition, considering all water management strategies across all projects, water supply reliability is also the strategy satisfied by most projects (see Table 3: the number of projects that satisfy each water management strategy is totaled at the top of each region’s section). This strategy is followed closely by water quality protection and improvement, and environmental and habitat protection and improvement.

### Pajaro River Watershed

Groundwater is the primary water supply in the Pajaro River watershed, and major water quality issues in the region include:

- Pajaro Valley Groundwater Basin overdraft
- Salinity and hardness in the Gilroy-Hollister Groundwater Basin
- Contaminated or poor groundwater quality throughout the watershed
- Sediment and nutrients in surface water throughout the watershed

These concerns are reflected in the projects chosen for inclusion in the region’s IRWMP. Of the 25 projects included for consideration, the greatest number concern groundwater management, water recycling, and water and wastewater treatment. The table below summarizes the number of projects “best described” by each water management strategy:

<b>Water Management Strategy</b>	<b># of Projects Best Described by that Strategy</b>
Groundwater Management	4
Water Recycling	4
Water and Wastewater Treatment	4
Surface Storage	2
Conjunctive Use	2
Flood Management	2

Desalination	2
Water Supply Reliability	1
Water Quality Protection and Improvement	1
Imported Water	1
Watershed Planning	1
Water Transfers	1

### Monterey Peninsula, Carmel Bay and South Monterey Bay

The following regional priorities are identified in the Monterey Peninsula, Carmel Bay and South Monterey Bay IRWMP:

- Meet current replacement supply and future demand targets for water supply and support the Seaside Groundwater Basin Watermaster to implement the physical solution in the Basin.
- Reduce the potential for flooding in Carmel Valley and at the Carmel River Lagoon.
- Mitigate effects of stormwater runoff throughout the planning region.
- Address stormwater discharges into Areas of Special Biological Significance.
- Promote the steelhead run.

These priorities are strongly reflected in the 11 projects chosen for inclusion in the region’s plan. Table 3, on page 34 illustrates that the water management strategy satisfied by most high priority projects is water quality protection and improvement, followed closely by the strategies of environmental protection and improvement, ecosystem restoration, and groundwater management (and then by water supply reliability, stormwater capture and management, conjunctive use, and recreation/public access).

Grouping projects according to the water management strategy that “best describes” each project, most projects fall under the category of water quality protection and improvement, followed by environmental protection and improvement and water supply/groundwater management<sup>2</sup>:

<b>Water Management Strategy</b>	<b># of Projects Best Described by that Strategy</b>
Water Quality Protection and Improvement	6
Environmental & Habitat Protection & Improvement	2
Water Supply Reliability/ Groundwater Management	2
Water Conservation	1

<sup>2</sup> Note: The table represents this consultant’s “best educated guess” since the Monterey Peninsula, Carmel Bay and South Monterey Bay IRWMP does not group projects according to the one strategy that best describes them (but does show how each project achieves several strategies—see Table 3).

## Salinas Valley

The Salinas Valley IRWM FEP identifies the following regional priorities:

### Short-term Priorities:

- Projects that stop seawater intrusion and balance the basin.
- Projects that help meet existing water demands (with a focus on coastal communities).
- Projects that re-establish steelhead in Arroyo Seco (located 40 miles upstream of the mouth of the Salinas River).
- Projects that protect and improve groundwater quality.

### Long-term Priorities:

- Meet future water demands.
- Establish steelhead upstream of Arroyo Seco (including the Nacimiento River 90 miles upstream of the mouth of the Salinas River).
- Continue efforts to improve groundwater quality.
- Implement watershed management (specifically, in the Nacimiento and San Antonio watersheds).

The Salinas Valley IRWM FEP describes 7 projects, only 4 of which are considered for IRWM funding. Regional priorities are evident in these 4 projects, as indicated below.<sup>3</sup>

<b>Water Management Strategy</b>	<b># of Projects Best Described by that Strategy</b>
Water Supply/Groundwater Management	2
Environmental & Habitat Protection & Improvement	1
Water and Wastewater Treatment	1

## San Luis Obispo County

San Luis Obispo County obtains nearly 80% of its water from groundwater supplies and about 20% from reservoirs and other sources. Groundwater over pumping is occurring or is potentially occurring along several coastal basins, and groundwater quality problems in the region include seawater intrusion, increasing TDS and nitrate level, and MTBE and other industrial pollutants. Accordingly, most of the 27 high priority projects included in the San Luis Obispo IRWMP fall under the water management strategies of water quality protection/improvement and water supply (followed closely by ecosystem preservation and restoration), as summarized below:

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<sup>3</sup> Once again, the table represents this consultant's "best educated guess" since the Salinas Valley plan does not group projects according to the one strategy that best describes them (but does show how each project achieves several strategies—see Table 3).

<b>Water Management Strategy</b>	<b># of Projects Best Described by that Strategy</b>
Water Quality Protection and Improvement	7
Water Supply Reliability	7
Ecosystem Preservation and Restoration	6
Groundwater Monitoring and Management	4
Flood Management	3

Table 3 shows the number of water management strategies achieved by each project and serves to further illustrate the region’s primary emphasis on water quality, groundwater management, environmental protection/improvement, and water supply reliability.

### **Santa Barbara County**

The Santa Barbara County IRWMP identifies the following regional priorities<sup>4</sup>:

Short-term Priorities (5 years):

- Protect public safety by reducing the potential for **flooding** in strategic areas through infrastructure improvements such as levee reinforcement, channel modifications, floodplain restoration, and increasing reservoir storage capacity.
- Increase **water supply reliability** by developing new water sources; maximizing the efficient use of existing sources, including recycled water used for landscaping, irrigation, industrial and commercial purposes, desalinate water, conservation, and groundwater treatment; and strategically restoring or replacing water infrastructure.
- Strategically restore and replace infrastructure to **improve wastewater quality**, limit the potential for adverse impacts to water quality and sensitive environmental areas, increase wastewater management efficiency, and meet regulatory requirements.
- Ensure the adequacy of water and wastewater facilities in **Disadvantaged Communities**.
- Improve **surface and ocean water quality** and **reduce beach closures** by replacing septic systems with sanitary sewers, ensuring the integrity of wastewater collection systems near the ocean and surface water bodies, improving the quality of urban runoff, reducing runoff that enters the ocean and surface waters, and developing education programs to increase awareness of measures to improve water quality.
- Further define sources of **groundwater contamination**, and develop strategies to prevent contamination and improve quality in areas with known contamination.
- Protect, restore, and enhance **ecological processes in aquatic areas** through water quality improvements; public education; restoration efforts, including removal of invasive species, and improved steelhead passage on strategic creeks.
- Ensure the adequacy of **water supplies during droughts and emergencies** such as fires, floods, and earthquakes through strategic replacement and rehabilitation of critical infrastructure.

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<sup>4</sup> Text in the original document is not bolded.

- Develop programs and policies to **increase groundwater recharge or decrease groundwater use**, especially in overdrafted groundwater basins.
- Encourage cooperation in beginning to develop **groundwater banking** programs.

Long-term Priorities (5-20 years):

- Provide adequate water and wastewater services to **meet projected growth**.
- Implement regional and/or interagency **conjunctive use and groundwater banking** programs where supported by legal decisions and landowners.
- Promote programs, policies, and infrastructures to increase water supply sustainability through **artificial recharge of local groundwater basins**.
- **Maximize storage capacity** of existing surface reservoirs.
- Optimize the use of **seawater desalination** to increase water supply reliability and offset groundwater use.
- Expand distribution systems to provide **recycled water** to new users.
- Expand voluntary **water conservation programs** for residential, commercial, industrial and agricultural uses.
- Continue **interagency coordination** to develop opportunities to further integrate the management of water and wastewater projects and programs.
- Continue to **coordinate with adjacent counties** to develop strategies and programs that improve the management of regional water resources.

For the purpose of seeking IRWM funding from the State, the Santa Barbara County partners identify two “overarching needs” which Proposition 50 grant requests should address: 1) more efficient water use in the northern and central portions of the county through improved water and wastewater treatment to meet standards; and to allow effluent reuse and improved quality of surface discharges and returns to groundwater; and 2) increased reliability and efficiency through conjunctive use and system flexibility in the southern portion of the county.

The region’s priorities are broad compared to the other IRWMP regions, and Santa Barbara County’s IRWMP likewise includes more high priority projects (40) than do the other regions. In terms of water management strategies, Table 3 shows that almost three-quarters of the projects promise water quality protection/improvement benefits, and half aim to achieve water supply reliability and water/wastewater treatment benefits. Other management strategies which are satisfied by a large number of projects include environmental protection and improvement, ecosystem protection, groundwater management, and imported water.

The table below summarizes projects included in the Santa Barbara County IRWMP according to the management strategy that best describes each project<sup>5</sup>:

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<sup>5</sup> Once again, the table represents this consultant’s “best educated guess” since the Santa Barbara County IRWMP does not group projects according to the one strategy that best describes them (but does show how each project achieves several strategies—see Table 3).

<b>Water Management Strategy</b>	<b># of Projects Best Described by that Strategy</b>
Wastewater Treatment and Distribution	9
Water Supply Reliability	8
Environmental Protection and Improvement	7
Groundwater Management	4
Flood Protection	4
Stormwater Management	3
Water Quality Protection and Improvement	2
Recycled Water	2
Water Conservation	1

## **Conclusions**

Not surprisingly, all six regions express similar interests in terms of goals and objectives. Commonalities are also evident in the types of high priority projects chosen for integrated regional water management funding. The differences between regions reflect region-specific needs and issues. In terms of projects, all six regions place greatest emphasis on the water management strategies of water supply reliability, groundwater management, water quality, and environmental protection/improvement. At the risk of being simplistic, it appears that Northern Santa Cruz County places greatest emphasis on water supply; Pajaro River Watershed on groundwater management; Monterey Peninsula, Carmel Bay, and South Monterey Bay on water quality; Salinas Valley on water supply/groundwater management; San Luis Obispo County on water quality and water supply; and Santa Barbara County equally across several strategies, mainly, water quality, water supply, wastewater treatment, and environmental protection.

## IV. Region-wide Priorities

As discussed in Section I, the region comprises several distinct hydrologic sub-regions. So while the challenges faced by each IRWM planning region may be specific to that region, it is also clear that many overlapping interests and issues exist, both on the level of goals and objectives and on the level of shared projects. Significant potential exists for combining efforts and resources in order to achieve more efficient programs, and possibly better solutions, to some of the water management problems in the Central Coast region.

Below is a table that includes the goals and objectives of all of the Central Coast IRWMPs for key issues that have a Central Coast region-wide potential for implementation, or otherwise inter-regional collaboration in one form or another (Table 4). Meetings were held with representatives from each planning region in Summer 2008. A list of shared issues of concern was compiled. Each region then ranked the issues as high, medium or low. Those ranked as high are listed in the table below; within this group they are not ranked in order of priority because it was determined by the regional representatives that these are all high priority key issues. As funding becomes available, they will be an appropriate basis for requests.

Most of the project examples are not “new” projects/programs but are derived from the high priority projects listed in each of the six planning region IRWMPs for funding. Some of these ideas were inspired more generally by the discussions of water management issues and problems contained within the IRWMPs. The planning regions have identified opportunities where existing programs can be expanded or combined, where information can be readily shared, or where grant funds might be sought for common projects that would mutually benefit all regions.

In addition, all of the projects fall within the realm of MBNMS interests, either directly or indirectly. Many of the projects, in fact, appear as strategies and activities within the Sanctuary’s Action Plans, including specifically the Desalination Action Plan, Sanctuary Integrated Monitoring Network (SIMoN) Action Plan, Beach Closures and Microbial Contamination Action Plan, and the Water Quality Protection Program Action Plans (including Implementing Solutions to Urban Runoff; Regional Monitoring, Data Access, and Interagency Coordination; Agriculture and Rural Lands; and as implied strategies for the upcoming plan, Protecting Water Quality in Wetlands and Riparian Corridors). These projects are also outlined in local Storm Water Management Plans, Local Coastal Plans and other land use plans.



Table 4. Central Coasts Objectives and Goals

<u>Objectives</u>	<u>Key Issues</u>	<u>Goals</u>	<u>Strategies</u>	<u>Project Examples</u>
<b>Water Quality</b>	<b>Agriculture Water Quality:</b> high concentrations of nutrients, pesticides and sediment are known pollutants in certain watersheds with agricultural development	Protect/improve Water Quality Assure Adequate Water Supply	Nutrient Management Irrigation Management Education Integrated Pest Mgmt Food Safety Efforts	Permit Coordination Watershed Working Groups Ranchette Series Model Expand Regional Mobile lab
<b>Water Quality</b>	<b>Urban Water Quality:</b> high concentrations of nutrients, indicator bacteria and metals are known pollutants in watersheds with urban development	Protect/improve Water Quality	Reduce Runoff Education Integrated Pest Mgmt Best Management Practices	Permit Coordination Low Impact Development First Flush monitoring Green Business Program (Workshops)
<b>Water Quality</b>	<b>Special Protected Areas:</b> All planning regions along the coast have areas either designated as Marine Protected Areas, Critical Coastal Areas or Areas of Special Biological Significance	Water Quality Environmental Protection/Enhancement	Education Watershed Assessments Monitoring	Coast and Oceans Regional Round Table CCC Critical Coastal Areas Program Historical Ecology
<b>Water Quality</b>	<b>Sediment and Erosion:</b> erosion from roads, agriculture and unstable stream banks carry pollutants and are detrimental to aquatic habitat and organisms	Protect/improve Water Quality Environmental Protection/Enhancement	Irrigation management Stream bank stabilization Redesign of rural roads Education	RCD Rural Roads program Roads Maintenance Guide Implementation of SWMPs
<b>Water Quality</b>	<b>Data Coordination and Management:</b> a coordinated effort of data synthesis, assessment, management and accessibility is important to determine effectiveness of efforts	Protect/improve Water Quality	Make data comparable, accessible, and useful. Develop consistent evaluation tools	SAM Project Upload of data to SWAMP. Regional Web Information Station Central Coast Wetland Group
<b>Water Quality Water Supply</b>	<b>Groundwater Management:</b> Groundwater is an important source of water for much of the Central Coast, but is threatened or already affected by saltwater intrusion, salinity, and overdraft in many areas	Protect/improve Water Quality Assure Adequate Water Supply	Conjunctive Management Recharge Area Protection	Pajaro Watershed Desalination Feasibility Study RWQCB Low-Impact Development Strategy
<b>Water Supply</b>	<b>Water Availability:</b> Water needs exceed available supply throughout the Central Coast for municipal, domestic, and agricultural use as well as environmental protection. Expected water demand will increase in the future.	Assure Adequate Water Supply Assure Adequate Water Supply Assure Adequate Water Supply Environmental Protection/Enhancement	Desalination Water Recycling Expand conservation programs Expand rebate programs Recharge, Restoration, and Enhancement	Regional Planning Approach Research Explore new technologies Reclaimed Water Information Exchange Import advanced technology Regional Conservation Programs Wastewater Mgmt to restore naturally functioning systems Seaside ASR
<b>Ecosystem Protection</b>	<b>Fisheries Enhancement:</b> Many Central Coast streams provide habitat for federally threatened or endangered species such as coho, steelhead, and the red-legged frog	Environmental Protection/Enhancement	Promote, improve or re-establish habitat	Removing fish passage barriers Watershed Assessments Habitat restoration
<b>Ecosystem Protection</b>	<b>Flood Management:</b> All regions have areas prone to flooding and development within flood plains.	Improved Public Safety through flood protection	Flood management	Wetland restoration Improve existing levees Hydromodification Central Coast Wetland Group Stream gauges

Below is a more detailed narrative of some of the programs that have been highlighted as project examples.

## **WATER QUALITY**

### **Regional Agricultural Water Quality Programs**

Agriculture is a dominant land use activity across most of the Central Coast region, and therefore receives significant attention as a water management issue within the IRWMPs. The Sanctuary's Agriculture and Rural Lands Action Plan contains numerous strategies to address agricultural nonpoint sources of pollution, and a great deal of progress has already been made. Owners and operators of irrigated agricultural lands across the Central Coast region are implementing Farm Water Quality Plans as a requirement of the RWQCB's Conditional Agricultural Waivers Program, and many ranchers are voluntarily developing and implementing Range Water Quality Plans to protect water quality.

The following is a list of example programs implemented to one degree or another throughout the Central Coast region. Given the importance of these programs and the ongoing need for farmer and rancher support, it makes sense to combine efforts and resources where possible, learn from existing efforts (information sharing), and to create region-wide programs where practicable.

Permit Coordination Programs for Restoration Activities: Santa Cruz County's Partners in Restoration Permit Coordination Program encourages landowners to implement restoration projects on their land by simplifying the permitting process, enabling local and state regulatory agencies' concerns to be addressed in a single "master" permit. The Natural Resources Conservation Service (NRCS) and the Resource Conservation Districts (RCDs) administer the program, working with landowners to ensure that their projects fit parameters of the program. San Benito and South Santa Clara Counties also have permit coordination programs, modeled after the Santa Cruz County Partners in Restoration Program. One possibility would be to expand these permit coordination programs to the other counties in the Central Coast region (potentially a Central Coast permitting coordination program) where such permit coordination programs do not already exist.

Regional Mobile Lab: The Regional Mobile Lab is envisioned to be an extension of the Integrated Program for Irrigation and Fertilization Management, called the Ag Mobile Lab. The Ag Mobile Lab was a grant-funded project that provided irrigation and fertilization management assistance for farmers and nurseries in Santa Clara, San Benito, Santa Cruz, Monterey and San Mateo Counties; funding for this project ended in March 2007. However in Santa Barbara County the Mobil Lab program continues to assist agricultural interests with water conservation and water quality services as it has for more than 20 years. Given the groundwork that has already been done in setting up this program and its significant value in helping farmers comply with the Conditional Agricultural Waivers Program, it would seem an efficient use of resources to extend this program to counties throughout the Central Coast.

Ranchette Series: Similar to the Mobile Lab, the Ranchette Series encompasses a variety of water quality workshops, targeting landowners with small acreages. The program is run by the RCDs, and may include wells and groundwater protection, septic system management,

hazardous materials management, manure management, erosion control, native plant identification and uses, irrigation management, IPM, and composting. Given that the framework for these workshops already exists, it would seem this program could be readily shared with RCDs in other Central Coast regions. It is an excellent model to follow to ensure sustainability of the watershed working groups.

Nitrate Management Programs: These programs provide groundwater protection and management through education on nitrate issues, with emphasis on agricultural loading as well as other sources such as septic systems and non-agricultural fertilizer use. Individual nitrate management efforts are happening throughout the Central Coast; the Pajaro River Watershed IRWMP includes this project as a means of combining the partners' efforts.

The Southern San Luis Obispo and Santa Barbara Counties Agricultural Watershed Coalition was organized to coordinate activities associated with the Central Coast RWQCB Conditional Waiver to regulate waste water discharges from irrigated land. This group includes local grower associations such as the Central Coast Wine Grower Association, Santa Barbara County Farm Bureau, Grower-Shipper Vegetable Association of Santa Barbara and San Luis Obispo counties, and the Santa Barbara County Flower and Nursery Growers Association. It has worked with the RWQCB to develop water quality monitoring and reporting program that allows the RWQCB to waive "Waste Discharge Requirements". The intent is to ensure that discharges do not cause or contribute to water quality impairment.

### **Sedimentation and Erosion Programs**

The issue of sedimentation and erosion is cited in all six IRWMPs as a major source of water quality (and habitat) degradation. Controlling sedimentation and erosion is mentioned specifically within the IRWMP objectives of both Santa Barbara and Northern Santa Cruz Counties, and is included as projects in the Northern Santa Cruz, Pajaro River Watershed, and San Luis Obispo IRWMPs. MBNMS also recognizes this issue as a major water quality problem; two different Action Plans list promoting sedimentation and erosion controls as a strategy, namely, the Urban Runoff Action Plan (for non-agricultural areas) and the Agriculture and Rural Lands Action Plan (for public roads and waterways, rural roads, and agency/public trust lands). Technical assistance could be funded and made available on a region-wide scale to assist road associations, private road owners, and State Parks in identifying and correcting erosion and drainage problems.

### **Regional Urban Water Quality**

Urban areas are also major contributors of non-point source pollution. To address this, the CCRWQCB has made **Low Impact Development** a high priority. The San Luis Obispo County IRWMP notes: "Urbanization of formerly rural areas impacts the water cycle and all five areas of water resource management: water supply, water quality, ecosystem preservation and restoration, groundwater monitoring and management, and flood management. Perhaps the single most dramatic and pervasive impact of urbanization on the hydrologic cycle is the replacement of the natural landscape with pavement and other water-impervious surfaces such as roads, parking lots, driveways, sidewalks, and rooftops".

As little as 10% impervious cover has been linked to impacts on a water body's natural hydrology and water quality, which increase in severity as impervious cover increases.<sup>6</sup> Impacts include flooding, habitat loss, erosion, increased toxic load, increased temperature, diminished groundwater reserves, and diminished surface water levels. An interesting project—which could be used to inform future land use planning—would be a large-scale, region-wide study, possibly using historical ecology, to map areas especially suitable for LID, particularly in built out communities throughout the Central Coast region. The Central Coast Wetland Group and Central Coast Regional Water Quality Control Board's LID program are both excellent resources to facilitate this effort.

**Urban Watch** and **First Flush** regional monitoring programs are examples of citizen monitoring programs providing valuable water quality data that assists local cities in implementing appropriate management measures to curb urban pollution. These programs currently exist in Santa Cruz and Monterey counties and could be expanded to other cities on the Central Coast.

**Water quality education**, including urban runoff education, is a major activity of the Sanctuary's Water Quality Protection Program. Increasing public awareness is mentioned in several of the IRWMPs, and is included as a short-term regional priority in Santa Barbara County's IRWMP. As an example, Project Clean Water offers water quality education to K-8th grade students throughout Santa Barbara County within the urban unincorporated areas (NPDES permit area). All lessons are correlated to the State Curriculum Standards by grade level. Another example includes a resource and activity guide and education program called *Watershed Cruzin'* developed by Santa Cruz County designed to complement the Coastal Commission's *Waves, Wetland, and Watersheds* guide.

The **Monterey Bay Area Green Business Program** is another successful partnership of environmental agencies, utilities and nonprofit organizations that assist, recognize and promote businesses and government agencies that volunteer to operate in a more environmentally responsible way. To be certified "green," participants must be in compliance with all regulations and meet program standards for conserving resources, preventing pollution and minimizing waste.

### **Integrated Pest Management/Pesticide Reduction**

The Northern Santa Cruz County IRWMP includes a project to reduce the application of pesticides in Santa Cruz County roads maintenance with emphasis on protecting riparian and aquatic areas and improving water quality. Agencies in Santa Barbara County, including the City of Santa Barbara, several area school districts and the County have developed and implemented comprehensive IPMs for all phases of their delivery of public services. An organization could take the lead in ensuring that lessons learned from this project are shared with other counties in the Central Coast region, and perhaps even help the other counties initiate similar programs.

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<sup>6</sup>Schueler, T. 1995. Site Planning for Urban Stream Protection. Metropolitan Washington Council of Governments, Washington, DC.

### **Special Protected Areas**

There are several different classifications of special protected areas both by the State and Federal government. Many of these fall within the Central Coast Region (see map in App. C). They include Marine Protected Areas, Marine Reserves, Critical Coastal Areas and Areas of Special Biological Significance. These areas all have restrictions and require special management. Regional efforts are underway for each type of area but there is not currently any coordination between the entities responsible for their management and many of the designations overlap geographically. Projects such as Historical Ecology mapping and watershed planning and monitoring would optimize resources and assist local jurisdictions affected by these regulated designations.

### **Regional Data Coordination**

Given the massive amount of water resource data that is being collected by numerous agencies and organizations along the Central Coast, the need for a coordinated regional monitoring program and data access system has been given a great deal of attention. The Monterey Bay Sanctuary has developed an Action Plan devoted entirely to this topic (Regional Monitoring, Data Access, and Interagency Coordination Action Plan) and has formed the Central Coast Region Synthesis, Assessment and Management (SAM) project, to integrate monitoring efforts, identify data gaps, and establish a regional database for water quality data. This program also facilitates the integration of water quality data into the Central Coast Ambient Monitoring Program's and CA Surface Water Ambient Monitoring Program's databases.

Regional coordination of monitoring efforts of in-stream and riparian habitat data would help resource managers obtain a big-picture understanding of Central Coast watershed health, with important implications for water quality, surface and groundwater water supply, fisheries, and of course, coastal and marine water quality. The Central Coast Wetland Group has been instrumental in mapping wetland and conducting the Ca Rapid Assessment Method throughout the Central Coast watersheds.

## **WATER SUPPLY**

### **Desalination**

All six IRWM planning regions are either currently using or actively exploring the possibility of desalination as a water supply water management strategy. While desalted water can provide many benefits in terms of both water supply reliability and water quality improvements, operating costs can be substantial and environmental impacts can be significant. MBNMS addresses the issue of desalination in its Desalination Action Plan and the *Desalination Feasibility Study for the Monterey Bay Region*. Strategies include developing a comprehensive modeling and monitoring program to determine predicted properties of brine plume and measure short-term, long-term, and cumulative impacts; and conducting outreach and information exchange.

Given the ever increasing need for water supply reliability with increasing population growth along the Central Coast, and given the current interest in desalination on the part of both water management entities and MBNMS, the recommendation here is to simply implement the Desalination Action Plan strategies. Grant funds could be sought to support research or

exploration of new desalination technologies that would reduce costs and environmental impacts, with this information then shared with water management entities throughout the Central Coast.

### **Water Conservation Public Outreach Programs**

All six IRWMP planning regions recognize water conservation as an important means of increasing water supply reliability and aggressively support water conservation programs, including public outreach programs. In the Pajaro River watershed, for instance, water conservation is implemented through a number of measures related to either agricultural or urban settings and include water use efficiency studies, water metering programs, tiered water rates, agricultural irrigation audits and technical assistance, grower education and demonstration projects, weather-based irrigation controller program, low flow and high efficiency appliance rebates, and conservation advertising campaigns. SCVWD and SBCWD partnered on a water softener rebate program, which offers rebates to customers who replace old softeners with new softeners that use less water, less salt, and less energy. While these water conservation programs are typically offered individually by entities, the partners are attempting to integrate individual efforts where possible to gain greater public awareness and cost efficiency.

Likewise, the San Luis Obispo County Flood Control and Water Conservation District and the Cities of Paso Robles, Templeton, Atascadero, and San Luis Obispo have joined together to form the Partners in Water Conservation; the Partners meet on regular basis to pool resources in order to promote water conservation. In Santa Barbara County, water conservation activities occur countywide through the Regional Water Efficiency Program, where water purveyors work cooperatively to implement conservation in the areas of residential, commercial, agricultural, and landscape programs; regional programs have been in place since 1990 and are staffed and funded by a multiagency team of conservation staff from the Santa Barbara County Water Agency and local water purveyors.

A great deal is already is being done to support water conservation efforts in the Central Coast region, and collaboration between entities continues to grow within each of the IRWM planning regions. The recommendation here is to provide a forum for continued and expanded collaboration between the six planning regions both to encourage information exchange and to potentially develop Central Coast region-wide advertising campaigns and educational materials, in order to maximize efficiency of efforts and agency funds.

### **Recycled Water**

As with desalted water, most of the IRWMP planning regions express an active interest in expanding opportunities for recycled water. The recommendation is to encourage information exchange between water management entities in the Central Coast region, particularly regarding new technologies that would reduce costs for advanced tertiary treatment. The SLO plan promotes improvements to receiving water/ecosystem restoration through wastewater treatment and management projects.

## **ENVIRONMENTAL PROTECTION AND IMPROVEMENT**

### **Fisheries Enhancement Projects**

Restoring steelhead habitat is a significant focus of all six IRWM planning regions. The Monterey Peninsula, Salinas Valley, and Santa Barbara County sub-regions all include promoting, improving, or re-establishing steelhead habitat as regional priorities; San Luis Obispo and Northern Santa Cruz Counties include it as part of their objectives; and the Pajaro River Watershed sub-region includes several projects aimed at protecting and restoring habitat for steelhead. The San Luis Obispo County IRWMP notes: “To fully achieve fish friendly stream conditions will require activities on all reaches across many jurisdictions”. Likewise, a broader Central Coast-wide approach to fisheries enhancement, well integrated with state and federal restoration efforts, may result in increased benefits for steelhead populations. Prioritizing steelhead streams along the Central Coast and developing a comprehensive Central Coast plan for steelhead habitat restoration may also make these projects more competitive for major grants.

### **Watershed Management Plans (Assessments)**

The San Luis Obispo IRWMP notes that “focusing on the development and implementation of Watershed Management Plans (by Resource Conservation Districts and other conservation groups) will provide a common set of tools and techniques that can be applied across multiple watersheds, promoting efficiency and taking advantages of experiences developed in other areas”. Likewise, these tools and techniques can be shared more generally with emerging watershed groups across the Central Coast during information exchange forums set up specifically for this purpose.

### **Flood Management**

Flood protection is a concern shared by all IRWMP planning regions, and flood management is a complex and oftentimes contentious process. The San Luis Obispo County Flood Control and Water Conservation District is proposing to develop a model to help address flood control issues throughout the county. The Flood Management Plan will identify several of the most significant constraints and propose methods to address the challenges, including steps on how to integrate solutions for multiple benefits and community acceptance. In Monterey County, flooding along the Carmel River is being addressed in part by the proposal of a major floodplain restoration project. The project aims to restore natural floodplain function to a 131-acre historic floodplain along the lower Carmel River, and includes removal of a half-mile section of levee, excavation/grading to re-create wetland and floodplain area, and planting/seeding to encourage native vegetation. Results of this project in Monterey County and of the Flood Management Plan in San Luis Obispo County, as well as other floodplain restoration and flood management projects being implemented throughout the region, can help inform future flood management decision making throughout the Central Coast region. Such projects could be topics for discussion at Central Coast integrated water management forums.

In Santa Barbara County the Flood Control pioneered the use of an Annual Plan to guide needed maintenance work and incorporate a well defined set of environmental protections into its operations. The plan provides flexibility and encourages innovative measures such as the use of willow growth to protect levees in the Santa Maria River.

## CC IRWMP Comparative Analysis

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Additionally, the 1980's and 1990's saw the termination of the operation of numerous stream flow gauges on the Central Coast, eliminating a critical long term data source for many watersheds. There should be regional support to restore gauging stations previously operated by the US Geological Survey.

In summary, by prioritizing key issues on the Central Coast, we can now identify successful programs being implemented locally and expand those programs regionally. This process of representatives from six IRWMP regions working together to identify cross cutting Central Coast priorities was a major feat. There were many issues that were easy to identify, but others required more discussion and clarification. All parties were considerate and worked well together. There is a genuine resolve for each of the regions to work together on the Central Coast in order to accomplish improved water quality, water supply and environmental protection.



## Appendix A: Stakeholders

### Northern Santa Cruz County

#### Adopting Agencies:

- County of Santa Cruz (Public Works Dept. and Environmental Health Services)
- Santa Cruz County Sanitation District
- Soquel Creek Water District
- Scotts Valley Water District
- Santa Cruz County Resource Conservation District
- Davenport Sanitation District

#### Participating Agencies:

- Community Foundation of Santa Cruz County
- City of Santa Cruz
- City of Watsonville
- Watsonville Wetlands Watch
- Central Water District

#### Additional Implementation Partners:

- Arana Gulch Watershed Alliance
- California Coastal Commission
- California Coastal Conservancy
- California Department of Fish and Game
- California Department of Forestry
- California Department of Parks and Recreation
- City of Capitola
- Coastal Watershed Council
- Fishnet4C
- Monterey Bay National Marine Sanctuary
- Natural Resources Conservation Service
- NOAA Fisheries
- Regional Water Quality Control Board 3
- Santa Cruz County Department of Planning
- Scotts Creek Watershed Council
- Sustainable Conservation
- US Army Corps of Engineers
- US Fish and Wildlife Service

## **Monterey Peninsula, Carmel Bay and South Monterey Bay**

### Partners (“Water Management Group”):

- Monterey Peninsula Water Management District
- The Big Sur Land Trust, City of Monterey
- Monterey County Water Resources Agency
- Monterey Regional Water Pollution Control Agency

### Stakeholders:

- California American Water
- California Coastal Commission
- California Coastal Conservancy
- California Department of Fish and Game
- California State University Monterey Bay
- California State Water Resources Control Board
- Carmel Area Wastewater District
- Carmel River Steelhead Association
- Carmel River Watershed Conservancy
- Carmel Unified School District
- Carmel Valley Association
- City of Carmel-by-the-Sea
- City of Del Rey Oaks
- City of Pacific Grove
- City of Sand City
- City of Seaside
- Monterey Bay Citizen Watershed Monitoring Network
- Monterey Bay National Marine Sanctuary
- Monterey County Resources Conservation District
- Monterey County Service Area 50
- Monterey Peninsula Regional Park District
- NOAA Fisheries
- Pebble Beach Community Service District
- Pebble Beach Company
- Regional Water Quality Control Board
- Seaside Basin Watermaster
- State Department of Parks & Recreation
- Surfrider Foundation
- The Nature Conservancy
- U.S. Army Corps of Engineers
- U.S. Fish and Wildlife Service
- Watershed Institute of California State University, Monterey Bay

## **Salinas Valley**

### Partners (“Salinas Valley Water Management Group”):

- Monterey County Water Resources Agency
- Marina Coast Water District
- Castroville Water District

### Key Stakeholders:

- Monterey Regional Water Pollution Control Agency
- Elkhorn Slough Foundation
- City of Soledad

### Other Stakeholder Agencies/Organizations:

- California Water Service Company
- City of Gonzales
- City of Greenfield
- City of Marina
- City of Salinas
- Fort Ord Reuse Authority

### **Grower-Shipper Association of Central California**

- King City
- Monterey County Board of Supervisors
- Monterey County Farm Bureau
- Monterey County Planning and Building Inspection Department
- Monterey Peninsula Water Management District
- Pajaro Valley Water Management Agency
- Salinas River Channel Coalition
- Salinas Valley Water Coalition
- Watershed Institute of California State University, Monterey Bay

Note: The Salinas Valley Regional Management Group is modifying the composition of the key stakeholder group for the project implementation and the next phase of planning efforts. The stakeholder group is being expanded to include a broader range of urban interest groups, environmental resource groups, business groups and the agricultural community.

## **San Luis Obispo County**

Lead Agency: San Luis Obispo County Flood Control and Water Conservation District

Stakeholders involved in developing the IRWMP include the agencies participating on the Water Resources Advisory Committee (WRAC), which advises the Board of Supervisors of the San Luis Obispo County Flood Control and Water Conservation District; the County of San Luis Obispo Departments of Public Works, Planning and Building, and Agriculture; the seven Cities and six Community Services Districts; State agencies including the Regional Water Quality Control Board and Department of Health Services; other governmental entities including the

Counties of Santa Barbara and Monterey; and land trusts and other non-governmental environmental organizations in the region.

Each incorporated city, water serving independent special district, resource conservation district, private water agency, State agency, agricultural and environmental entity within the San Luis Obispo County Flood Control and Water Conservation District is invited to participate on the WRAC. The WRAC is an appointed advisory body made up of citizens and governmental representatives, including elected officials, which advise the District's Board of Supervisors on water resource projects and policies in the region. For over 50 years, WRAC hearings have been the primary forum for the regional review of water resource issues and details. Currently, 24 local agencies and organizations are actively participating on the WRAC.

Water Resources Advisory Committee:

- Atascadero Mutual Water Company
- Cal Cities Water
- California Mens Colony
- Cambria CSD
- Camp San Luis Obispo
- City of Arroyo Grande
- City of Atascadero
- City of Grover Beach
- City of Morro Bay
- City of Paso Robles
- City of Pismo Beach
- City of San Luis Obispo
- County Farm Bureau
- Cuesta Community College
- County Board of Supervisors District 1
- County Board of Supervisors District 2
- County Board of Supervisors District 3
- County Board of Supervisors District 4
- County Board of Supervisors District 5
- Environmental at Large
- Heritage Ranch CSD
- Nacimiento Regional Water Management Advisory Committee
- Los Osos CSD
- Nipomo CSD
- Oceano CSD
- San Luis Coastal RCD
- Templeton CSD
- Upper Salinas RCD
- Agriculture at Large

## **Santa Barbara County**

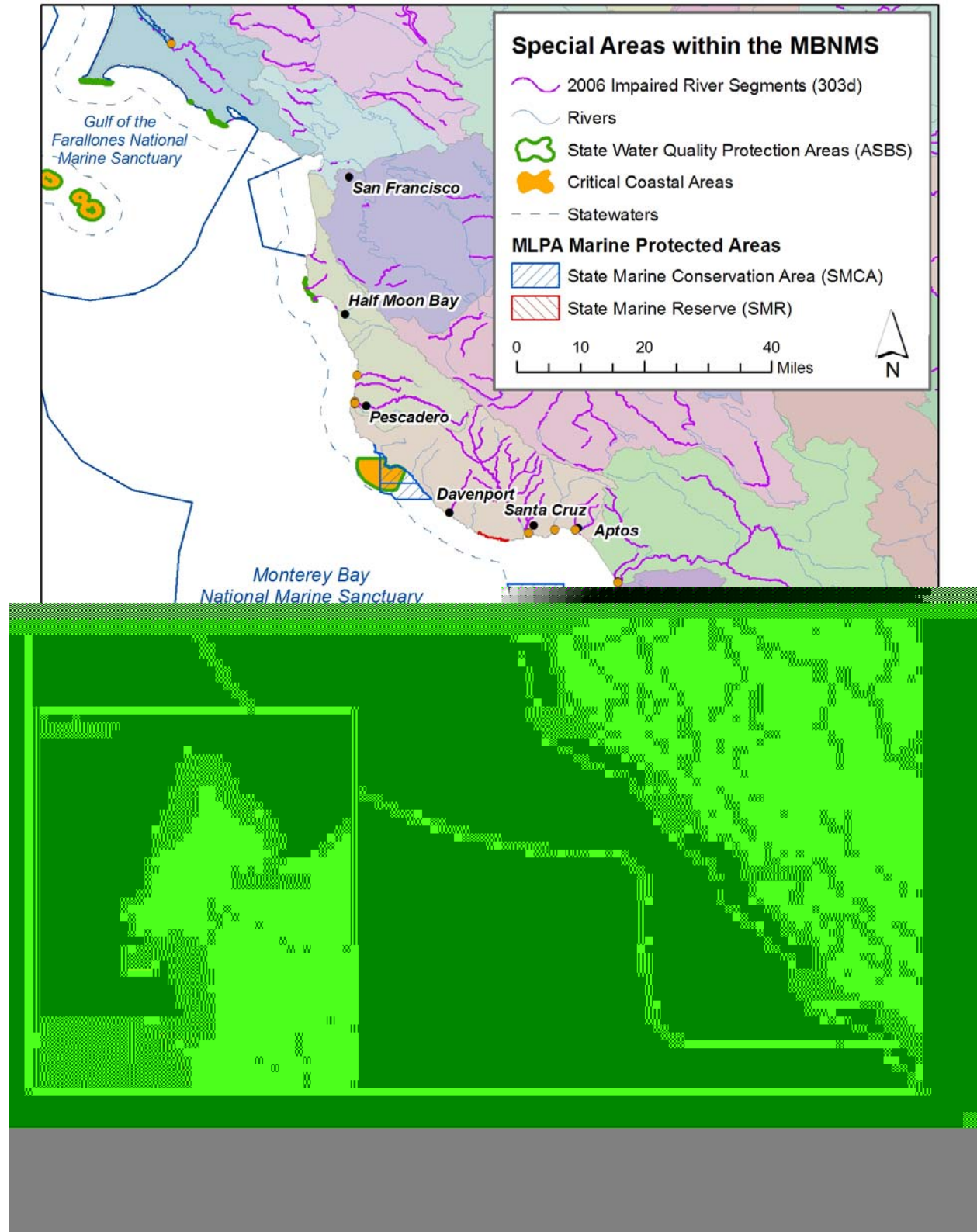
### Cooperating Partners:

Cachuma Conservation and Release Board  
Cachuma Operation and Maintenance Board  
Carpinteria Sanitary District  
Carpinteria Valley Water District  
Casmalia Community Services District  
Central Coast Water Authority  
City of Buellton  
City of Carpinteria  
City of Guadalupe  
City of Lompoc  
City of Santa Barbara  
City of Santa Maria  
City of Solvang  
Cuyama Community Services District  
Golden State Water Company  
Goleta Sanitary District  
Goleta Water District  
Goleta West Sanitary District  
La Cumbre Mutual Water Company  
Los Alamos Community Services District  
Mission Hills Community Services District  
Montecito Sanitary District  
Montecito Water District  
Santa Barbara County  
Santa Maria Valley Water Conservation District  
Santa Ynez River Water Conservation District  
Santa Ynez River Water Conservation District Improvement District No.1  
Summerland Sanitary District  
Vandenberg Village Community Services District

*Public Stakeholders:* Public participation included representatives from the general public, agriculture and business interests, disadvantaged communities, environmental groups, academic institutions, and the media, including (among others):

Heal the Ocean  
Southern San Luis Obispo and Santa Barbara County Agricultural Watershed Coalition  
Community Environmental Council  
Santa Barbara Channelkeeper  
Surfrider Foundation  
Santa Barbara City Creeks Committee  
Santa Barbara County Special District Association  
Southern California Wetlands Recovery Project  
Environmental Defense Center  
The Dunes Center

## Appendix B: Special Protected Areas



## **Appendix C: Project Descriptions**

**[INSERT APPENDIX C HERE]**