

SECTION 2.0 REGION DESCRIPTION

2.1 Region Overview

The Region included in this IRWM Plan is Ventura County (Please see Map 1). The County is a logical Region for integrated regional water management due to the history of cooperative water management in the past, the topography and geography of the Region and the similarity of water issues facing agencies in the Region. The Watersheds Coalition of Ventura County (WCVC) recognizes that watersheds are not defined by political boundaries and that future efforts to protect and manage water and watersheds in the Region must include representatives of jurisdictions outside Ventura County. Therefore, representatives of the Region are working with stakeholders and agencies in the upper reaches of the Santa Clara River Watershed, which lies in Los Angeles County, to include them in the planning process and to coordinate efforts to protect the watershed.

Ventura County has a population of over 817,000 people and is located north and west of Los Angeles County, east of Santa Barbara County and south of Kern County. The Pacific Ocean forms its southwestern boundary. Virtually the entire north half is within the Los Padres National Forest, although there are in-holdings scattered throughout the Forest area. Residential, agricultural and business uses comprise the southern portion of the Region. The County has a total area of 1,199,748 acres (1,843 square miles), of which some 550,211 acres are in the National Forest. There are 42 miles of coastline.

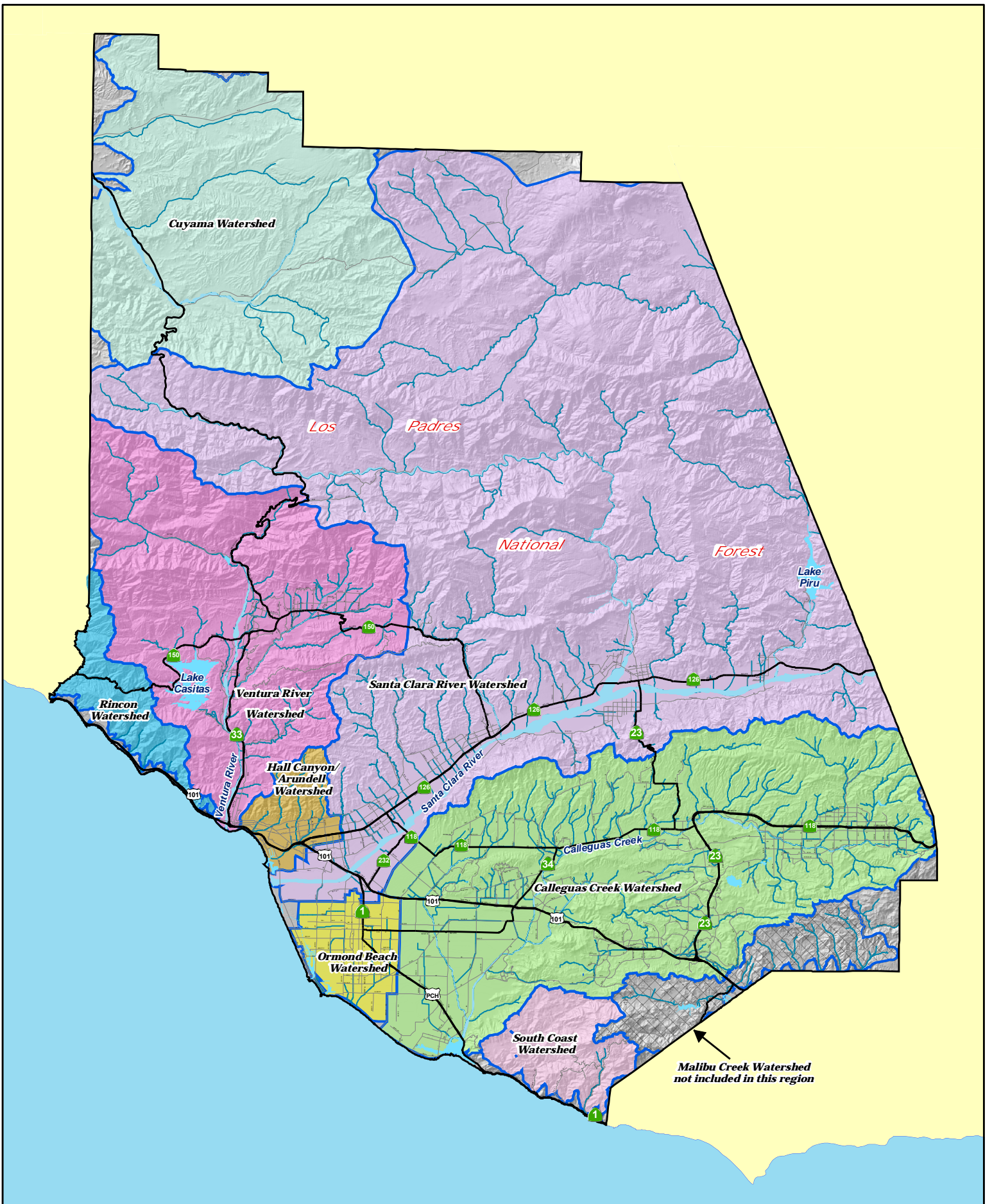
Of the estimated 330,000 acres of agricultural land in the Region, there are approximately 125,000 acres of irrigated land. The Calleguas Creek Watershed contains the highest number of irrigated acres (roughly 60,000), followed by the Santa Clara River Watershed (approximately 50,000) and Ventura River Watershed (approximately 15,000).

The Region encompasses three major Watersheds, six smaller Watersheds, and twenty-six groundwater basins. There are ten Cities, three wholesale water agencies and over 170 retail water purveyors, two groundwater management agencies, and five sanitary districts. Under these circumstances, effective regional and integrated water management planning is crucial. Please see Map #1 for an illustration of the Region with Watershed and National Forest boundaries.

Ventura County also includes two offshore islands which are part of the Channel Islands, Anacapa and San Nicolas. These islands are also Areas of Special Biological Significance. Anacapa Island is entirely within the Channel Islands National Park, and San Nicolas Island is under the jurisdiction of the U. S. Navy. For these reasons, the islands are not included within the Region for the purposes of this plan.

Since 1969, Ventura County and the ten Cities within the County have worked together in land use decision-making. The County, the ten Cities, and the Local Agency Formation Commission (LAFCO) cooperated by adopting a landmark set of policies entitled the "Guidelines For Orderly Development." These policies clarified the land use planning relationship between the County and the Cities and has resulted in confining urban development within Cities' boundaries, which are much better prepared to deliver urban services.

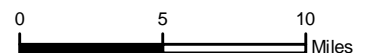
Additionally, the County, Cities and other agencies came together in 1974 to adopt the Regional Land Use Program. This program bound the Cities and County with such issues as population forecasting, transportation planning, spheres of influence planning, air quality planning, and water



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**WATERSHEDS COALITION
 OF VENTURA COUNTY
 MAP 1**



quality planning. Many of these early planning efforts have directly resulted in continued cooperative efforts today, not the least of which is water management.

Local water agencies have maintained this tradition of cooperation, exemplified by the countywide Association of Water Agencies (AWA). The AWA includes major water districts, the Cities with water delivery responsibilities, the County, county water districts, investor-owned water utilities, mutual water companies, groundwater management agencies, a water treatment research center, and business members. It was formed in the late 1970s to provide a forum for the exchange of information on local and regional water issues; its mission statement is “to develop and encourage cooperation among entities for the development, protection, conservation and improvement of the total water resources for Ventura County.” Its membership covers the range of water stakeholders in the county: agriculture, municipalities, water districts, small systems, industrial water uses, and concerned citizens.

The Region demonstrated its ability to cooperate on water issues through the 1980 **208 Water Quality Management Plan**, a Federally mandated EPA Section 208 requirement, and the subsequent update, the **Ventura County Water Management Plan**, prepared in November 1994. These comprehensive documents were the result of a coordinated effort between the County and most of the water management stakeholders in the Region including citizen and environmental groups, water districts and State and Federal agencies. These plans covered nearly all water management issues, except for flood control. The current process has added flood control and other important components to the integrated water management effort such as habitat protection and wetlands enhancement.

The Watersheds Coalition of Ventura County (WCVC) has made significant progress in identifying watershed-wide objectives, determining appropriate implementation projects and programs to meet those objectives, and working together on the Integrated Regional Water Management Plan. As an additional benefit, the WCVC functions as a forum where stakeholders come together to resolve conflicts and work on common issues. Prior to the formation of the WCVC, several other groups (the Ventura Countywide Integrated Regional Water Management Planning Group and the Calleguas Creek Steering Committee) have focused on these issues as well (see Section 1).

Watersheds in Ventura County – Brief Overview

There are three major Watersheds in the Region. Please see Map 1 for an illustration of Ventura County’s Watersheds. The upper reaches of the Santa Clara River, which lie in Los Angeles County, and the areas within the Los Padres National Forest, are anticipated to be incorporated into future planning efforts, in cooperation with Los Angeles County and the U.S. Forest Service.

The Cuyama Watershed, located within the Los Padres National Forest and which extends westerly into Santa Barbara County, has not been included in this Plan.. The South Coast and Malibu Creek Watersheds are largely public open space and are being addressed by a group in the North Santa Monica Bay.

Ventura County has nine watersheds. Four are large and regionally significant: Ventura River, Santa Clara River, Calleguas Creek and Ormond Beach/Mugu Lagoon Wetlands. Five are smaller and have received far less attention within the County: Rincon, Cuyama, Hall Canyon/Arundell, South Coast Ventura coastal streams, and Malibu Creek streams, though the Rincon and Hall/Arundell watersheds are generally, and for the purposes of this Plan, grouped together with the

Ventura River Watershed. Calleguas Creek and the Ventura River Estuary have watershed management plans in place.

The **Calleguas Creek** Watershed is approximately 343 square miles and lies in the most heavily populated area of eastern Ventura County. The Creek has relatively small natural flows, augmented by the treated effluent from several wastewater treatment plants and urban runoff from the areas tributary to the Creek. The communities in the Watershed are served largely with imported water from the State Water Project, delivered by the Calleguas Municipal Water District. The Calleguas Creek has received the greatest amount of sustained attention and is among the most studied water bodies in the Region. Planning efforts commenced in 1996. They were driven by water quality concerns but attempted to address watershed issues in a more comprehensive way, especially flood management and habitat restoration. A number of entities have been working together to create an action plan for improvements to the Calleguas Creek Watershed. These entities are listed in Section 3.

The **Santa Clara River** Watershed is the largest, approximately 1634 square miles, natural river remaining in the Southern California. Areas located in the National Forest portion of the Watershed are home to California condors and other rare species. The River travels through two counties - Los Angeles and Ventura – and efforts are underway between the two Counties to work collaboratively to address issues of mutual concern and benefit, such as water quality improvement. Recent concerns have been raised regarding the impact of large-scale housing developments proposed in the upper Watershed within Los Angeles County. In the mid 1990s a 26-member stakeholder group was established in Los Angeles County and Ventura County to develop the Santa Clara River Enhancement and Management Plan (SCREMP) which includes reach-by-reach and river-wide recommendations. The SCREMP was finalized in June 2005. In September 2004, the U. S. Army Corps of Engineers, the Ventura County Watershed Protection District, and Los Angeles County Department of Public Works signed an agreement to begin a feasibility study on the Santa Clara River. The Nature Conservancy and the Coastal Conservancy have acquired river parkway lands on the lower reaches of the River.

The **Ventura River** Watershed located in the western portion of Ventura County encompasses 228 square miles. Its three principal tributaries are San Antonio Creek from the east, Coyote Creek from the west, and Matilija Creek from the north. Some key issues in the Watershed have included periodic flooding (most recently in 2005), removal of the Matilija Dam, construction of the Robles Fish Passage Facility and the Robles Canal, removal of invasive plants (arundo), steelhead recovery, recreation enhancement, sediment flows (to improve beach nourishment) and other habitat restoration issues. The Matilija Dam Ecosystem Restoration Study, undertaken by the Ventura County Watershed Protection District and the United States Army Corps of Engineers, was completed in September 2004. This study focused on identification of: ecosystem restoration for terrestrial and aquatic habitat to benefit native fish and wildlife (including the Federally listed endangered southern California steelhead trout) to the Ventura River and Matilija Creek in the vicinity of Matilija Dam; and improvements to the natural hydrologic and sediment transport regime to support Ventura River's coastal beach sand replenishment. Enhancement of recreational use along the Ventura River and Matilija Creek compatible with the ecosystem restoration was also considered.

The **Rincon Creek**, near its terminus at the Pacific Ocean, represents the dividing line between Ventura County and Santa Barbara County. The Rincon Point residential community, which consists of 72 existing homes, has utilized on-site septic systems to manage wastewater since the homes were first developed. Over the past decade, septic tank effluent has been implicated in

several studies as contributing to impairment of surface waters in Rincon Creek and the nearshore ocean environment.

Surfzone monitoring on the Ventura County side of Rincon Creek has resulted in repeated beach closures and postings. There is extensive water quality monitoring data that points toward significant sources of bacterial contamination the Rincon Creek watershed north of US 101.

As mentioned previously, the Hall/Arundell Watersheds are generally, and for the purposes of this Plan, grouped together with the Ventura River Watershed.

The **Ormond Beach/Mugu Lagoon** area is among the most significant coastal wetlands complexes in the Region. Mugu Lagoon sits on Naval Base Ventura County; protection has focused largely on endangered species issues. The Coastal Conservancy is working on a wetlands restoration project at Ormond Beach, which is further described in Section 5.2.

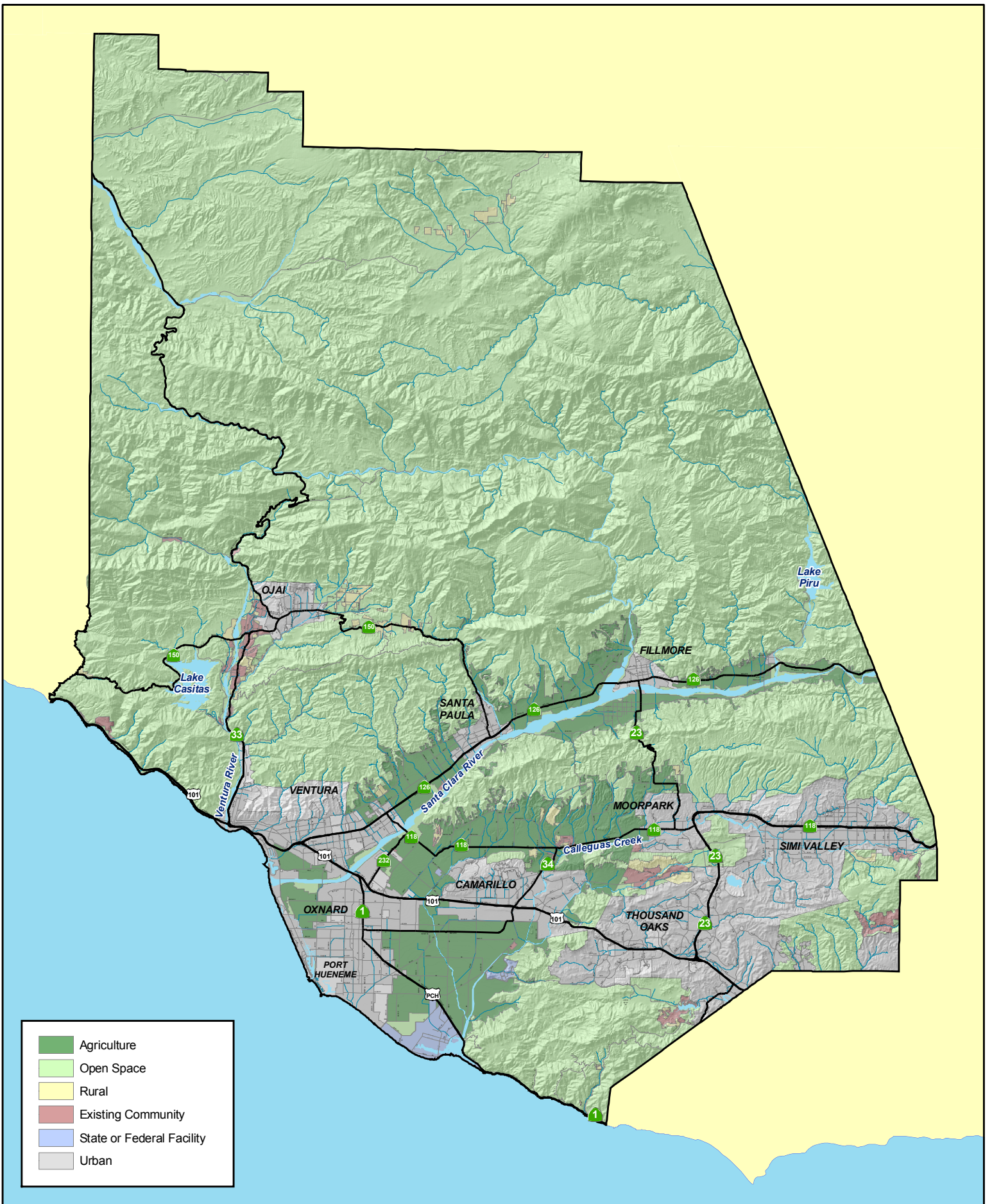
2.1.1 Major Land Use Categories







As noted in the Region Description, the County and the ten Cities have worked together to confine urban development within City boundaries and preserve the unincorporated area for agriculture and open space. Map #2 illustrates the major categories of land use as designated in local general plans.

Agricultural: The “Agricultural” designation is applied to irrigated lands which are suitable for the cultivation of crops and the raising of livestock. Because of the inherent importance of agriculture as a land use in and of itself, agriculture is not subsumed under the “Open Space” land use designation but has been assigned a separate land use designation.

Open Space: The Open Space designation encompasses land as defined under Section 65560 of the State Government Code as any parcel or area of land or water which is essentially unimproved and devoted to an open space use as defined in this section, and which is designated on a local, regional or State open space plan as any of the following:

- Open space for the preservation of natural resources including, but not limited to, areas required for the preservation of plant and animal life, including habitat for fish and wildlife species; areas required for ecologic and other scientific study purposes; rivers, streams, bays and estuaries; and coastal beaches, lakeshores, banks of rivers and streams, and watershed lands.
- Open space used for the managed production of resources, including but not limited to, forest lands, rangeland, agricultural lands not designated agricultural; areas required for recharge of groundwater basins; bays, estuaries, marshes, rivers and streams which are important for the management of commercial fisheries; and areas containing major mineral deposits, including those in short supply.
- Open space for outdoor recreation, including but not limited to, areas of outstanding scenic, historic and cultural value; areas particularly suited for park and recreation purposes, including access to lakeshores, beaches, and rivers and streams; and areas which serve as links between major recreation and open-space reservations, including utility easements, banks of rivers and streams, trails, and scenic highway corridors.
- Open space for public health and safety, including, but not limited to, areas which require special management or regulation because of hazardous or special conditions such as earthquake fault zones, unstable soil areas, floodplains, watersheds, areas presenting high



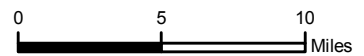
	Agriculture
	Open Space
	Rural
	Existing Community
	State or Federal Facility
	Urban



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**WATERSHEDS COALITION
 OF VENTURA COUNTY
 LAND USE DIVISIONS
 MAP 2**



- fire risks, areas required for the protection of water quality and water reservoirs and areas required for the protection and enhancement of air quality.

For local planning purposes, and in support of the Guidelines For Orderly Development, Ventura County's General Plan also uses "Open space" for the following purposes:

- Open space to promote the formation and continuation of cohesive communities by defining the boundaries and by helping to prevent urban sprawl.
- Open space to promote efficient municipal services and facilities by confining urban development to defined development areas.

Rural: The "Rural" designation identifies areas suitable for low-density and low-intensity land uses such as residential estates of two acres or greater parcel size and other rural uses which are maintained in conjunction with agricultural and horticultural uses or in conjunction with the keeping of farm animals for recreational purposes.

The "Rural" designation also identifies institutional uses such as boarding and non-boarding elementary and secondary schools. Additionally, the designation is utilized for recreational uses such as retreats, camps, recreational vehicle parks and campgrounds. The designation of areas for "Rural" land uses is intended to accommodate the need for low density rural residential development, which, in conjunction with the higher density development of the Urban designated land uses, will provide a full range of residential environments.

The areas considered for inclusion in the "Rural" designation are existing clusters of rural development and areas deemed appropriate for future rural residential development. This category is mainly applicable in the unincorporated County

Existing Community: The Existing Community designation identifies existing urban residential, commercial or industrial enclaves located outside Urban designated areas. An Existing Community may include uses, densities, building intensities, and zoning designations which are normally limited to Urban designated areas but do not qualify as urban centers. This designation has been established to recognize existing land uses in unincorporated areas which have been developed with urban building intensities and urban land uses; to contain these enclaves within specific areas so as to prevent further expansion; and to limit the building intensity and land use to previously established levels. This category is mainly applicable in the unincorporated County.

State or Federal Facility: The "State or Federal Facility" land use designation recognizes Federal or State facilities, excluding forest and park lands, over which the County or Cities have no or limited land use authority. Areas so designated include lands under Federal or State ownership on which governmental facilities are located. Major examples of these facilities are Naval Base Ventura County and the California State University at Channel Islands. This category is mainly applicable in the unincorporated County.

Urban: The "Urban" land use designation is utilized to depict existing and planned urban centers which include commercial and industrial uses as well as residential uses where the building intensity is greater than one principal dwelling unit per two acres.

This designation has been applied to all incorporated lands within a City's Sphere of Influence as established by the Local Agency Formation Commission (LAFCO), and unincorporated urban centers within their own Areas of Interest which may be candidates for future incorporation.

- An *Unincorporated Urban Center* is an existing or planned community which is located in an Area of Interest where no City exists. The unincorporated urban center represents the focal center for community and planning activities within the Area of Interest. For example, the Community of Piru represents the focal center in the Piru Area of Interest.
- An *Area of Interest* is a major geographic area reflective of community and planning identity. Within each Area of Interest there should be no more than one City or Unincorporated Urban Center, but there will not necessarily be a City or Unincorporated Urban Center in each Area of Interest.
- A *Sphere of Influence* is an area determined by LAFCO to represent the "probable" ultimate boundary of a City.

2.1.2 Land Use Policies

Please see Map #3 for City boundaries, population and acreages. There are ten incorporated Cities within the County; Camarillo, Fillmore, Moorpark, Ojai, Oxnard, Port Hueneme, Santa Paula, Simi Valley, Thousand Oaks, and Ventura (officially known as San Buenaventura). The ten Cities and the County, which together control land use across the south half of the County, are united by a common land use ethic: that urban development should occur within the boundaries of the incorporated Cities, while land outside City boundaries should be reserved for agriculture, open space, and very low intensity rural uses. The north half of the County is primarily under the jurisdiction of the U.S. Forest Service.

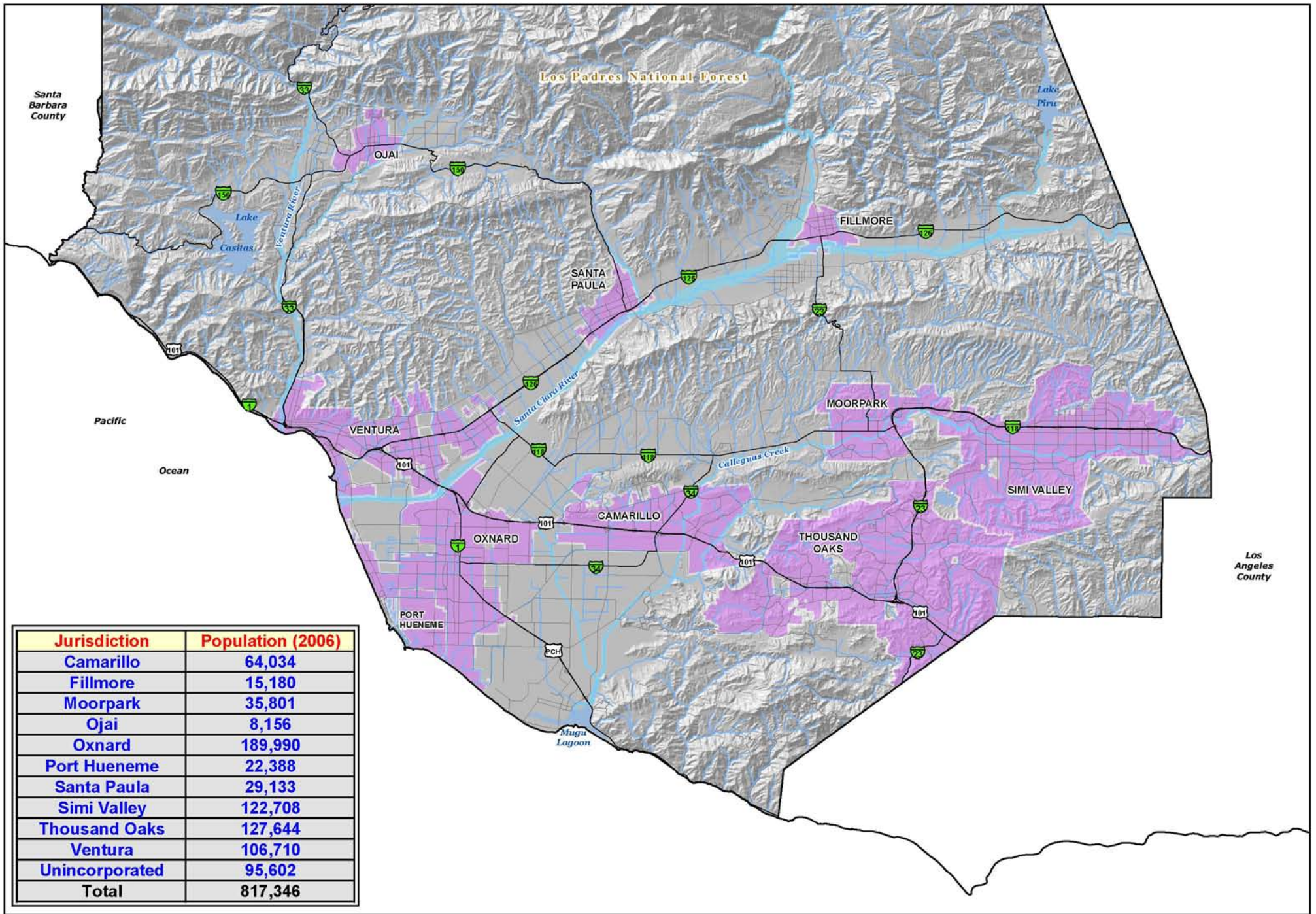
This ethic was first set forth in the Guidelines for Orderly Development, adopted in 1969 and subsequently implemented and reinforced through the adoption of seven greenbelts and ten Save Our Open Space and Agricultural Resources (SOAR) and City Urban Restriction Boundary (CURB) measures. These regulations have created a development pattern, unique in Southern California, wherein urban development is largely confined to the ten Cities, which are separated by greenbelts of agriculture and open space. Within the confines of these agreements and restrictions, each City and the County determine their own land uses through the traditionally required general plan and zoning and development ordinances.

This land use model creates unique patterns and issues of water demand, water infrastructure, ecosystem/habitat management, and virtually all other aspects of water management.

Contained within the individual General Plans of the County and Cities are policies or programs which govern the decision-making of that entity as to how they review and condition individual development projects and formulate their own future improvements.

Typically such policies and programs are grouped together into topical areas, such as "Air Quality" and "Transportation." The same is true for "Water Supply" and "Water Quality" and other water-issue areas. Different jurisdictions have differing levels of detail on such topical areas, and complete unity has not, nor will it likely be achieved.

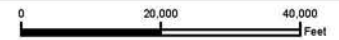
One of the results of this Plan will be an inventory of water-related policies and programs that will be created in order to assist each jurisdiction in their thinking relative to what additional water management efforts they may wish to undertake. Such an inventory will be collected, discussed, and redistributed to the jurisdictions through the City/County Planning Association, a committee of the Planning Directors of the County and the ten Cities that meet regularly. It is expected that by



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WATERSHEDS COALITION OF VENTURA COUNTY INTERNAL BOUNDARIES - CITIES MAP 3



Disclaimer: this map was created by the Ventura County Resource Management Agency, Mapping Services - GIS, which is designed and operated solely for the convenience of the County and related public agencies. The County does not warrant the accuracy of this map and no decision involving a risk of economic loss or physical injury should be made in reliance therein



heightening the awareness of those directly responsible for the jurisdictions' General Plans, that additional and more effective policies and programs will be introduced into their decision-making/review processes.

For example, the County, in its General Plan and development review process, has a number of adopted programs, policies and procedures which affect water management (many of the Cities have similar topical areas in their General Plans, albeit formatted differently).

- The General Plan, under the major heading of "Resources" contains specific policies governing water supply, water conservation, water quality and biological resources (wetlands).
- The General Plan, under the major heading of "Hazards" contains specific policies governing flood control, dam inundation, and hazardous materials and waste (including wastewater).
- The General Plan, under the major heading of "Public Facilities and Resources" contains specific policies governing water supply facilities, waste treatment and disposal (including wastewater) and flood control and drainage facilities.
- The County's Initial Study Assessment Guidelines contain environmental review procedures for assessing individual projects concerning groundwater quantity, groundwater quality, surface water quantity, surface water quality, biology (including wetlands), water supply quality and quantity and waste treatment and disposal (including individual sewage disposal systems and sewage treatment).
- The County has an adopted Water Management Plan (1994) which the County General Plan requires individual projects to be consistent with.

This review process by the County is fairly complete, but it is recognized that additional strategies may be available to further efficient water management. This is true for the Cities, as well. The opportunities to be discussed at the meetings of the City/County Planning Association will help the jurisdictions working together to better manage water resources.

In addition to the authority vested in public land use planning agencies, water purveying agencies also adopt policies and programs which can influence land use. Under State law (SB 221), land use planning agencies must consult with local water agencies to determine if adequate supplies of water are available to serve proposed land developments. Additionally, water agencies must coordinate with land use planning agencies in the development of their urban water management plans which include projections of future water demand and water supply availability during normal and dry periods. Water agencies and land use planning agencies within California are partners in assuring adequate management and planning for water supplies to meet the needs of growing communities.



2.1.3 Ecological Processes and Environmental Resources

The natural ecosystem, with the many species of plants and animals, is an important resource of Ventura County. All the natural resources (land, water, air, and biology) are part of the ecosystem. Disruption of one part may affect the others. Effects are intimately intertwined and the significance of those effects is difficult to determine without consideration of the whole system. All native species and ecosystems are of aesthetic, ecological, educational, historic, recreational and scientific value to the people of Ventura County. Natural ecosystems which are conserved are productive, and many of these products are utilized by the human population. Of major concern in Ventura County are water production and watershed protection. Hunting, fishing, and many forms of outdoor recreation are water dependent. It is important to recognize that wildlife are publicly owned and are not held by owners of private land where wildlife are present. The habitat including the vegetation is, however, generally under the control of the individual land owners and the supervision of County and other governmental agencies. It is the protection of this habitat which is most critical to maintenance of a healthy ecosystem and protection of fish and wildlife species, especially those which are *rare, threatened or endangered*.

Various species of fish, wildlife and plants in Ventura County have become extinct while other species have been depleted in numbers and have experienced a loss of habitat and disruption of the ecosystem of which they are a part. This habitat destruction occurs most often as a result of human activity, such as 1) urban growth, 2) exploitation of natural resources, and 3) the introduction of non-native species to an environment.



Endangered, Threatened, or Rare Species

Ventura County is host to over 100 special status species. These are species of plants and animals that are designated endangered, threatened or rare by the California Fish and Game Commission or the Department of the Interior and Department of Commerce; additionally, there are many species whose survival and reproduction in the wild are in immediate jeopardy and are considered to be sensitive to further intrusion upon their habitat. Species that are not listed under the Federal Endangered Species Act or the California Endangered Species Act, but which nonetheless are declining at a rate that could result in a designation of endangered, threatened, or rare, are classified as species of *special concern*.

Wetland Habitat

Wetland habitats are lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is periodically covered with shallow water. Wetlands may also include open water habitats like lakeshores. Many of Ventura's special status species are dependent upon wetland habitats for their survival. Wetlands include, but are not limited to, marshes, bogs, sloughs, vernal pools, wet meadows, river and stream overflows, mudflats, ponds, springs, and seeps. Wetlands and riparian areas support high species diversity and abundance and are consequently the most valuable wildlife habitats.



Coastal Habitat

Environmentally sensitive coastal habitats in Ventura County's Coastal Zone include coastal waters, intertidal areas, estuaries, lakes,

wetlands, and sand dunes which support plant or animal life. There are approximately 42 miles of coastline in Ventura County, much of which is within the County's jurisdiction. Along the coast, intertidal and subtidal diversity creates feeding habitat for a variety of water birds and the sandy beaches serve as resting habitats for shorebirds. Additionally, subtidal rock outcrops provide anchorage for kelp, which in turn provides habitat for a multitude of organisms. Approximately 80 acres of coastal dune habitat is located in unincorporated Ventura County.. Coastal wetlands foster a variety of habitats for unique flora and fauna in the Region.

Migration Corridors for Fish and Wildlife

Migration corridors connect two large habitat areas and allow freedom of movement for animals. In addition, they often provide the only available habitat for species that occupy the corridor area. Biologists have identified areas that experience recurrent aquatic, riparian, or terrestrial species movement that are crucial to these species as migration corridors or habitat linkages. These migration corridors encourage preservation of plant and animal populations by allowing greater access to food and a larger gene pool. Barriers in Ventura County include large developed areas, barren lands, and roadways.

Ventura County hosts a wide diversity of wildlife including mammals, birds, amphibians, reptiles, fish and invertebrates. Some of these species migrate along ridgelines in the mountainous terrain where there are fewer interfaces with urban uses. Other species migrate along the arroyos, rivers and other riparian and wetland corridors, where urban development is nearer, and the potential for adverse impacts much greater when these natural habitats are encroached upon.

Several hundred sensitive species of vertebrates occupy the varied habitats and topography of the Los Padres National Forest. The Los Padres National Forest is occupied by a wide range of species that are deemed sensitive by the U.S. Forest Service. These species are identified on the U.S. Forest Service's *List of Threatened, Endangered, and Sensitive Species of Los Padres National Forest*, dated January 2004.

Locally Important Species and Communities

The diverse topography and climate of Ventura County provide an environment where a number of plant and animal communities exist. Locally important communities include types of coastal sage scrub, sub-alpine forest, riparian woodland, and desert chaparral, among others.

Unique species range from mammals and invertebrates to various species of birds, fish, and reptiles. Some of these are locally important species or communities that have been identified by local biologists to be characteristic of or unique to the Region. Others are considered candidates for a designation of endangered, threatened, or rare by the California Fish and Game Commission or the U.S. Secretary of Commerce.

Ecological processes in the Region which are impacted by water management measures are numerous and listed here in a very general way. The County's rivers are prone to flooding, and in fact flooding along the Santa Clara River during the 2004-05 rainy season damaged many agricultural and urban properties, including the Santa Paula Airport. Flooding along the Ventura River during that same year, caused serious damage to infrastructure facilities, roadways, homes and properties located in the floodplain. Flood control and prevention measures frequently have negative impacts on natural habitat, particularly riparian habitat.

Urban and agricultural land uses create pollutants which impact water quality. Most of the Impaired Waterbodies listed in Section 2.1.6 and in Appendix C resulted from such runoff.

Implementation of programs such as the National Pollutant Discharge Elimination System (NPDES) and the Nonpoint Source Pollution Control Program are key to integrated water management.

Development of water supply for human use has traditionally been done without due regard for habitat preservation/restoration, but increasing priority is being given to changing the process of water resource development and human use to conduct these activities in ways which will not damage our natural resources and to restoring damaged natural habitats so that they not only survive but thrive. Ventura County has a large and growing wetlands preservation and restoration movement, which advocates for habitat preservation.

2.1.4 Areas of Special Biological Significance

Areas of Special Biological Significance (ASBS) are designated by the State of California, under the Public Resources Code 36700 (f). Ventura County has two Areas of Special Biological Significance; ASBS 22 and ASBS 24.

ASBS 22. This includes two Channel Islands, Anacapa and Santa Barbara Islands. Both are entirely within Channel Islands National Park, along with San Miguel, Santa Cruz, and Santa Rosa Islands. While the County works with the National Park Service on issues of mutual concern, it is unlikely that the County's water management programs and projects would significantly impact the Areas of Special Biological Significance around these islands.

ASBS 24. This area runs along Ventura County's southern coastline, from south of Mugu Lagoon past the border between Ventura and Los Angeles Counties. It extends from the beach into the Pacific Ocean for varying distances along the coast. At its northern tip, this ASBS would be affected by runoff from the Calleguas Creek Watershed. Because there are substantial urban areas and agricultural operations within this Watershed, urban pollution sources and agricultural runoff are issues that will require consideration and have been addressed in the IRWMP. Farther south, the South Coast Watershed (the Santa Monica Mountains portion within Ventura County) drains into ASBS 24. Much of this Watershed is public open space, including Point Mugu State Park and parts of the Santa Monica Mountains National Recreation Area (SMMNRA). Scattered among the SMMNRA holdings are a substantial number of privately owned properties. These properties are developed at very low intensity, with scattered houses, some livestock, and very little agriculture; however they are all on private wells, and all use individual septic system sewage disposal. Water management in this Watershed must take into consideration the impacts on ASBS 24.

2.1.5 Marine Protected Areas

The areas around the five island Channel Islands National Park (some 12 to 15 miles offshore) are a National Marine Sanctuary. In addition, there is a strip of the Pacific Ocean, at least three miles wide, extending along the County's entire coastline, which is a Marine Protected Area. The Ventura River, Santa Clara River, and Calleguas Creek Watersheds all drain into these areas, with resulting impacts on the water. These are among the issues that must be addressed by Watershed Management Plans in the County.

2.1.6 Impaired Water Bodies

SECTION 303(D) LIST OF WATER QUALITY LIMITED SEGMENTS

Under Section 303(d) of the 1972 Clean Water Act, states, territories and authorized tribes are required to develop a list of water quality limited segments. These waters on the list do not meet water quality standards, even after point sources of pollution have installed the minimum required levels of pollution control technology. The law requires that these jurisdictions establish priority rankings for water on the lists and develop action plans, called as Total Maximum Daily Loads (TMDL), to improve water quality.

The Section 303(d) Impaired Waterbodies in Ventura County (adopted in 2003) are listed, by watershed, in **Appendix C**. There is a proposed updated 303(d) list being considered by the State Water Resources Control Board. *Δ The next update to this IRWMP will include the new adopted 303(d) list.*

A summary of the key issues follows:

1. The Calleguas Creek Watershed (CCW) has perhaps the most serious impairment problems; it has 14 impaired bodies with a wide variety of chemical pollutants from agricultural and urban uses.

Four TMDLs have been approved in the CCW by EPA to meet Consent Decree requirements. The Chloride TMDL was approved by EPA in 2002. However, the Chloride TMDL was not adopted by the State; as such no implementation plan has been developed. The Nutrients TMDL was adopted by the State and approved by EPA in 2003. The Toxicity TMDL and the Organochlorine Pesticides and PCBs TMDL were adopted by the State and approved by EPA in 2006.

The Metals TMDL was adopted by the State on October 25, 2006 and will undergo State Office of Administrative Law (OAL) review and then must be approved by the EPA. Approval of the Metals TMDL by EPA is expected in March 2007 to meet Consent Decree requirements. A TDS, Sulfate, and

Boron TMDL, which will include an implementation plan for Chloride, is currently under development and is expected to be completed by Stakeholders in 2007. A Bacteria TMDL is currently under development and is expected to be completed by Stakeholders in 2008.

2. The Santa Clara River Watershed is also experiencing significant chloride levels, from agricultural uses and wastewater effluent discharges into the River. TMDLs are completed for chlorides and nutrients.
3. The Ventura River Watershed's impairments are partly mechanical, such as fish barriers and pumping/water diversions, partly biological such as from coliform, and partly chemical. There are ten listed impaired waterbodies, but no TMDLs have been completed yet.
4. There are also impaired waterbodies within the small coastal Watersheds. Many of the local beach areas are impaired due to coliform bacteria levels, while McGrath Lake and Port Hueneme Harbor have chemical pollutant concerns. TMDLs are complete for McGrath Beach coliform. TMDLs are scheduled for pesticides and coliform for the Ventura Marina in FY 08/09.
5. The Santa Monica Bay Watershed Management Area includes four impaired waterbodies within Ventura County, largely related to intense urban uses. No TMDLs have been completed for these four impaired waterbodies in Ventura County.

2.1.7 Social and Cultural Make-Up of Regional Community

Demographics and Population

Ventura County is a diverse and thriving region. Based on 2004 State Department of Finance information, the County had a total population of approximately 817,000 people, of whom 660,070 or 88 percent live within the incorporated Cities. Some 57 percent are non-Hispanic white, while Hispanics represents the largest minority community with 33 percent of the total. Asians represent the second largest minority community with 5 percent of the population. According to the 2000 census, median household income was \$59,666 Countywide, and ranges from a low of \$41,651 in Santa Paula to \$76,815 in Thousand Oaks.

As described in the SCAG (Southern California Association of Governments) 2004 report, Ventura County is projected to have 990,000 people by 2030, which is an increase of 230,000 people during the forecast period. The annual population growth rate is about 1 percent. Following the Southern California trend, Ventura County is projected to be more racially and ethnically diverse by 2030 than it is today. The Hispanic population is projected to increase dramatically, and the share of the Caucasian population is expected to decrease. The Hispanic population is projected to be 421,000, which is a 66 percent increase from the 2000 census and an annual growth rate is about 2.2 percent. African Americans are projected to have a very small increase, adding only 5,000 people over the forecast period. The Asian population is projected to add 38,000 to Ventura County, which is about a 63 percent increase from the 2000 census.

SCAG projections indicate that a total of 128,000 jobs will be added to Ventura County by 2030. Jobs in service and retail sectors will grow rapidly within Ventura County during the 2000-2030 period. It is projected that those two sectors will contribute 95,000 jobs or about 75 percent of the total job growth in the County. Ventura County has the highest number of agriculture jobs in Southern California. In the year 2000, the County had 30,000 agriculture jobs, twice the agriculture jobs in Imperial County. The major change that will occur in the Ventura County economy over the forecast period is urbanization, which will result in a continuing decline in agricultural employment. SCAG is also projecting that Ventura County will lose 8,500 jobs, or decrease 29 percent in agricultural jobs, over the forecast period.

Economic Factors

Ventura County's economic base is as diverse as its population. Ventura County's mild Mediterranean climate combined with the prime agricultural soil of its river valleys, create optimum farming conditions, and the agricultural sector forms a key part of the County's economy. Agricultural production generated \$1.4 billion in gross sales in 2004, placing the county 9th in a statewide ranking of California's 58 counties and 10th in a nationwide ranking of all U.S. counties. Ventura County was ranked as one of the top 5 counties in California for 13 agricultural commodities in 2004.

Table 2-1. Ventura County's Leading Agricultural Commodities – 2004

Commodity	Gross Value (\$)
1. Strawberries	363,646,000
2. Nursery Stock	221,999,000
3. Lemons	176,361,000
4. Avocados	124,661,000
5. Celery	122,832,000
6. Tomatoes	71,735,000
7. Flowers, Cut	65,663,000
8. Raspberries	48,586,000
9. Peppers	34,628,000
10. Oranges, Valencia	20,525,000

Source: USDA, National Agricultural Statistics Service, California Field Office. *Summary of County Agricultural Commissioners' Reports, Gross Values by Commodity Groups – California 2003-2004*. October 2005.

In addition to generating significant economic benefits, agricultural lands in Ventura County also provide habitat for various species, provide buffers between urban areas and natural habitats, and are part of the cultural landscape. Preservation of agricultural land uses in the County is therefore recognized as an important tool to contribute to water quality management and open space protection.

Military bases contribute significantly, through Naval Base Ventura County and the California Air National Guard Base. The civilian portion of Port Hueneme Harbor, an excellent deep-water facility, accommodates a growing volume of sea traffic and commercial commodities. Technology companies such as Thousand Oaks' Amgen and Camarillo's Vitesse provide a highly educated workforce with well-paying jobs. The mild climate, proximity to Los Angeles, and spectacular natural resources, such as the Channel Islands National Park and Los Padres National Forest, attract significant numbers of tourists. A key economic issue for County residents, as elsewhere in Southern California, is the high price of housing, with a median home price of over \$600,000 in 2006.

The U.S. Department of Housing and Urban Development (HUD) reported that the 1998 median household (four persons) income for the County of Ventura was \$65,300. In comparison, HUD estimated that the overall County median income in 1979 was \$21,243 and in 1987 was \$36,700. According to the 2000 Census, the median income level in the County, was \$59,666 per year.

HUD defines the categories of income as follows:

- Very low-income – 50 percent or less of County median household income.
- Low-income – 80 percent or less, but greater than 50 percent, of County median household income.
- Moderate-income – 120 percent or less, but greater than 80 percent, of County median household income.
- Upper-income - greater than 120 percent of County median household income.

The term “lower-income” includes both “low-income” and “very low-income” categories.

The 1998 - 2005 Regional Housing Needs Assessment (RHNA) indicated that in the unincorporated County in 1998 there were approximately 6,275 very low-income households, 3,136 low-income households, 2,481 moderate-income households, and 17,612 upper-income households.

There are several “disadvantaged” communities within the County. As defined by Proposition 50 Grant Guidelines, a disadvantaged community is one with an annual median household income that is less than 80 percent of the statewide annual median household income.

Social and Cultural Values

The County’s social and cultural values are as varied as its population and economy. However, as noted above, the County’s residents are united in their determination to minimize the pace of urban growth and to preserve the County’s agricultural and open space resources. Of the County’s ten Cities, eight (Camarillo, Fillmore, Moorpark, Oxnard, Santa Paula, Simi Valley, Thousand Oaks, and Ventura) have approved Save Our Open Space and Agricultural Resources (SOAR) measures which define and limit where growth can occur and require voter approval of any development outside those areas. There are two Cities which do not have these measures. Port Hueneme is completely surrounded by the City of Oxnard and the Pacific Ocean, and therefore cannot expand. The City of Ojai is known for its determined no-growth sentiment and limits growth through its General Plan and zoning approval process. Finally, County residents adopted a Countywide SOAR measure which effectively limits urban development on Open Space and Agricultural areas.

2.1.8 Water Supply

Overview of Supplies

Ventura County has a diverse variety of water supply sources although the mix of supplies vary greatly by Watershed. The County’s water supplies are primarily obtained from three major sources: groundwater (65 percent), surface water (8.5 percent), and imported State Water (25 percent). A small amount of recycled water (approximately 1.5 percent) is also used when and where it is available. Currently there are no desalination projects in place.

Major Water Issues and Problems

The following list of issues and problems was recently developed by the WCVC and acknowledges the challenges that have been recognized by local water agencies and others since the early 1970s.

- Quantity of water available locally not adequate to meet local water needs.
- Agricultural and urban runoff (point and nonpoint sources) have degraded some local water bodies and groundwater basins thereby reducing the potential uses of these water sources – including septic tank leaching, runoff from agricultural areas, stormwater runoff. These problems are most pronounced on the Oxnard Plain, but are also present in the Ojai Valley area of the Ventura River Watershed.
- Localized problems with high TDS, chlorides and TMDLs.
- Seawater has intruded into a critical aquifer on the Oxnard Plain.

- Periodic flooding events threaten or destroy property and habitats.
- Wetlands and habitats (including fisheries) have been lost or degraded due to reduced flows/pollution.
- Lack of comprehensive studies in some watershed areas – supply, demand, flows.
- Untapped opportunities to maximize use of treated effluent from local wastewater treatment plants (some of which runs into the ocean and is not captured for beneficial use) and increased water use efficiency through implementation of statewide standardized best management practices.

Groundwater

Groundwater is the largest single source of water and is pumped extensively by individual well owners and by a majority of the 166 public water purveyors within the County. Purveyors either wholesale water to other purveyors or make deliveries directly to individual users. Since more groundwater is used than is replaced, overall, the County's groundwater reserves are slowly decreasing. Groundwater provides about 65 percent of the water utilized in the County. Agricultural demand accounts for 80 percent of the total demand for groundwater in the County. See Figure 2-1 for boundaries of each groundwater basin in the County.

There are 32 separate groundwater areas or recognized groundwater basins in Ventura County.

Figure 2-1

Groundwater Basins of Ventura County



Source: Ventura County Watershed Protection District. The map also includes Zones 1-4, which are designated by the Watershed Protection District for their planning purposes.

Of the total County water demand, [approximately 430,500 acre feet (AF)], about 279,800 AF came from local groundwater sources. Because it is estimated that the local groundwater basins can safely supply only about 275,000 AF Countywide, water users extracted nearly 4,800 AFY (acre feet per year) more than was naturally and artificially replenished. However, overdraft was not evenly distributed. While some basins experienced more replenishment than extraction, overdraft of between 30,000 to 35,000 AFY persists for the Oxnard Plain and Pleasant Valley. This compares with at least 31,000 AFY of overdraft estimated in 1988.

Most (50-60 percent) of the groundwater supply in the County is contained within five major aquifers beneath the Oxnard Plain-Pleasant Valley area. These aquifers are, in order of increasing depth, the Oxnard, Mugu, Hueneme, Fox Canyon, and Grimes Canyon aquifer zones. Both the Oxnard aquifer in the Oxnard Plain area, and the deeper Fox Canyon aquifer which effectively extends from the present day coastline to inland areas northeast of the City of Moorpark, were previously, or are currently, being overdrafted or “mined” of their resource. This overdrafting of the local water supply has caused a number of problems, most notably seawater intrusion in the Upper Aquifer System (UAS) and Lower Aquifer System (LAS) of the Oxnard Plain. The UAS consists of the Oxnard and the Mugu aquifers. The LAS is comprised of the Hueneme, Fox Canyon and Grimes Canyon aquifers.

Beneath the Oxnard Plain, the gross overdraft of the Oxnard aquifer has been largely eliminated in recent years through effective management practices and constant recharge activities. However, even with targeted improvements, some areas still remain impacted by saline waters previously drawn into the aquifer. Projects such as the Pumping Trough Pipeline (1986), the Freeman Diversion (1991) and the Noble Pit spreading basin (1995), coupled with wet-to-average climatic conditions and reduced pumping, contributed to improving conditions in the UAS. Conditions in the UAS have improved partially at the expense of the LAS, which has been pumped heavily in recent years. The LAS is seriously overdrafted in the southern Oxnard Plain and Pleasant Valley basins, where the intrusion of saline water continues. The United Water Conservation District has constructed a new UAS well field near Saticoy to utilize UAS water that is more easily replenished. This allows an increase in water deliveries, while at the same time helping to alleviate the seawater intrusion problem in the overdrafted areas by providing an underutilized source of water. The Fox Canyon Groundwater Management Agency (FCGMA) has also tightened restrictions and instituted strict management procedures on all groundwater extractions and well operators located on parcels above the Fox Canyon aquifer. For more information about the FCGMA and related management procedures, see the latest draft FCGMA Groundwater Management Plan located on their website at: <http://publicworks.countyofventura.org/fcgma/index.htm>

Of the groundwater pumped in Ventura County, less than one-third is delivered by a water system. Individual well owners do most of the groundwater pumping in Ventura County and use it mostly for irrigation.

Many farmers obtain water from their own wells. Water demand from the agricultural sector is decreasing, primarily due to land conversion to urban uses. This trend is expected to continue. Countywide demand for agricultural water is forecasted to decline by about 35,000 AFY by the year 2010. Another 20,000 to 25,000 AF decline may be anticipated between the years 2010 and 2020. Within the boundaries of the Fox Canyon Groundwater Management Agency (FCGMA), a 25 percent reduction in groundwater extractions is being implemented for well owners. Well owners have had to reduce their extractions by 5 percent in 1992, 1995 and 2000,. In October 2006 a revised draft Groundwater Management Plan was released by the FCGMA which contains recommendations for revised policies regarding pumping in the GMA area.

The Calleguas Creek Watershed includes several significant groundwater basins. Water rights have not been adjudicated in every one of these basins, so groundwater production is not comprehensively controlled or maintained. However, groundwater extractions are regulated in the Oxnard Plain, Pleasant Valley Basin, the western portion of the Arroyo Santa Rosa Basin, and all three of the Las Posas Basins (West, East, and South) by the FCGMA. In some basins, groundwater is being over drafted and, as a result, portions of the Pleasant Valley Basin and the Oxnard Plain have experienced up to two feet of subsidence. In other basins, such as the Simi Valley and South Las Posas Basins, groundwater storage has increased significantly in the last several decades, necessitating dewatering operations in order to protect development in the western portion of the city of Simi Valley. This increase is due to a combination of an overall decrease in agricultural use of groundwater because of high total dissolved solid (TDS) levels and return flows from applied imported water supplied to Simi Valley.

Data Needs

A great deal has been learned in the past 20 years about groundwater basin storage, yield, and well locations, however much more has yet to be discovered or determined. Current estimates of the safe yield of the 32 recognized groundwater basins is currently being evaluated, since the historic information is not sufficient or adequate enough to perform individual basin balance equations. Improved monitoring has been implemented. Many private wells do not have meters, so pumping quantities must be estimated based on energy use and crop consumption factors, however, the FCGMA will be enforcing this in the future.

Current and future projects proposed for funding as part of the IRWMP would help to solve the lack of data that presently exists in the areas of surface flows, return flows of applied water, natural recharge and more accurate metering of groundwater usage. In essence, a very good base of data has been compiled, but current gaps need to be addressed through more research and observation.

Surface Water

Surface water resources in Ventura County are divided into major hydrological units or drainage basins such as the Ventura River Watershed and Santa Clara River Watershed, and the Calleguas Creek Watershed. These main units are further subdivided into dozens of subunits.

Surface water is obtained from Lake Casitas, Lake Piru and from diversion projects along the Santa Clara River, Ventura River, Santa Paula Creek, Piru Creek, Sespe Creek and Conejo Creek. Local surface water provides approximately 8.5 percent of the total water utilized in Ventura County.

Conejo Creek: Camrosa Water District operates the Conejo Creek Diversion immediate south of U.S. Highway 101. The diversion was completed in 2002. Through a series of agreements between the City of Thousand Oaks, Calleguas Municipal Water District, the Pleasant Valley County Water District and Camrosa, Camrosa purchases the recycled surface water diverted from Conejo Creek from the City of Thousand Oaks who discharges the tertiary treated water into the creek from their Hill Canyon Treatment Plant well upstream of the diversion. The diversion is governed by a SWRCB water right decision that limits the area of use to Camrosa and Pleasant Valley County Water District's service areas. Recycled surface water surplus to the District's needs is delivered to PVCWD and stored in the PVCWD reservoir located near Camarillo airport.

Lake Casitas (Casitas Reservoir): With a capacity of 254,000 acre feet, Lake Casitas is the largest local reservoir. The approximate safe yield is 20,000 acre feet per year without the Matilija Dam and 20,800 acre feet with the Matilija Dam. About a half of the water that fills Lake Casitas comes from diversions off of the Ventura River from the Robles Fish Passage Facility, which is located a few miles north of Lake Casitas. The water then travels through the Robles Canal to Lake Casitas. The remainder of water supply to Lake Casitas comes from the Coyote and Santa Ana Creeks that both flow into the lake. The Casitas Municipal Water District serves about 65,000 people. Over forty-percent of Casitas' water goes to agricultural customers. Casitas has about 3,200 customers and is considered both a retail and wholesale water agency. Casitas operates one well, the Mira Monte well. It provides a water supply of about 300 acre feet per year. The high quality surface water from Lake Casitas' is mixed with the well water to improve its water quality.

Lake Matilija With less than 500 acre feet of remaining storage, provides approximately 800 acre feet of water per year to Lake Casitas on average through multiple releases during the raining season. Lake Matilija's water supply capacity is diminishing due to silt built-up. It will cease to exist when either completely silted or after the Matilija Dam removal project is complete.

Lake Piru (Piru Reservoir): United Water Conservation District (UWCD) operates and maintains Lake Piru, diversion structures on Piru Creek and the Santa Clara River (Freeman Diversion), and the associated spreading grounds along the Santa Clara River in Piru, Saticoy and El Rio. Several water purveyors and individuals utilize water diverted from the Santa Clara River by UWCD.

Lake Piru is UWCD's storage reservoir for water which is later released into spreading grounds to percolate into underground aquifers. Subsequent uses are wholesaling to retail purveyors, agricultural use, and recharge. The capacity of Lake Piru, which has declined somewhat in the past 10 years, is 83,200 acre feet, with an annual safe yield of 15,000 acre feet per year. UWCD also diverts Santa Clara River water at the Freeman Diversion. Typically around 10,000 to 50,000 AF of water is released downstream each year. Average releases are about 27,000 AFY.

Santa Clara River: UWCD diverts natural surface flows in the Santa Clara River to spreading basins in the Oxnard Forebay basin to replenish the aquifers beneath the Oxnard Plain. UWCD also supplies diverted surface water to agricultural users on the Oxnard Plain and Pleasant Valley area via its Pumping Trough Pipeline (PTP). Releases from Lake Piru in the later summer or fall, when sufficient supplies are available, provide surface flows that act as groundwater recharge but also enhance agricultural deliveries at a time when the Santa Clara River is normally dry.

Ventura River: Ventura River surface water is diverted by the City of Ventura via an in-stream underground dam and group of shallow extraction wells at Foster Park for use in the City's delivery system. A few individual property owners also divert some water from the Santa Clara and Ventura Rivers.

Surface water is also diverted for agricultural use by private individuals along the Ventura and Santa Clara Rivers. Several small mutual water companies, the U.S. Forest Service, and private individuals use wells and springs as their source of water supply.

Imported Water

For the purposes of this Plan, imported water is considered to be water from the State Water Project, delivered to Southern California from the Bay-Delta. State Water is obtained locally by Calleguas Municipal Water District (Calleguas) from the Metropolitan Water District of Southern California (Metropolitan) for delivery to retail purveyors primarily serving the southern and eastern portions of the County, including the Cities of Thousand Oaks, Simi Valley, Moorpark, Camarillo, Port Hueneme and Oxnard and agricultural entities in the region. In recent years, imported water, which is State Project Water from the Sacramento Delta area, amounted to about 25 percent of the water utilized in the County. However, because water quality challenges require imported water to blend with local groundwater supplies, more than 75 percent of the County's population relies on imported water for part or all of its supply.

The UWCD, Casitas MWD, County of Ventura, and the City of Ventura have jointly studied the feasibility of constructing conveyance facilities to import additional State Project Water, to which they collectively hold a yearly entitlement of 20,000 acre feet. Pursuing this entitlement remains a supply option for these agencies; however, analysis of the appropriate institutional and financial arrangements must take place before the participants can plan any facilities construction. The only other way that State Project Water can enter Ventura County, other than through Calleguas via Metropolitan, is from releases out of Lake Pyramid, down Piru Creek, through Lake Piru, and either overflows or planned releases from Santa Felicia Dam into the Santa Clara River. Such imports are arranged by UWCD when conditions are appropriate to facilitate storage and aid in basin management.

The Port Hueneme Water Agency (PHWA) has a long-term lease for 1850 acre feet of UWCD's annual State Water Project entitlement of 5000 AF. PHWA obtains this entitlement indirectly from Calleguas via the City of Oxnard. UWCD has, in recent years, been buying the remaining 3150 AFY from the State Department of Water Resources, which delivers the water from Pyramid Lake via Piru Creek to UWCD's Lake Piru Reservoir. UWCD has, under certain hydrologic conditions, also begun to acquire a portion of the City of Ventura's unused allocation of State Water Project Water.

To further augment local supplies through conjunctive use, Calleguas is constructing the Las Posas Aquifer Storage and Recovery (ASR) Project. The project is jointly funded by Calleguas and Metropolitan (Calleguas/Metropolitan) and will include 30 dual-purpose extraction and injection wells in three fields within the East Las Posas Groundwater Basin. The ASR project will store up to 300,000 acre feet of imported State water for use during peak periods, droughts, scheduled shutdowns or emergencies. The ASR project will have a maximum replenishment rate of 80 cubic feet per second (cfs) and maximum extraction rate of 100 cfs. The project also includes several miles of large diameter pipeline to connect the wells to the Calleguas transmission system, a new pump station in the City of Moorpark to convey water to the Lake Bard Water Filtration Plant and rehabilitation of the Conejo Pump Station, to deliver ASR water to upper elevation zones east of the Moorpark sewage treatment plant during an emergency.

To date, Calleguas has constructed 16 wells and the project currently stores more than 60,000 acre feet of water in the Las Posas Basin. Completion of the final phase is planned for 2012. Calleguas relies both on injection of treated State Project Water and on in lieu supplies provided by retailers that accept direct deliveries of Calleguas/Metropolitan water in lieu of pumping groundwater from the basin.

The ASR project presents several advantages for the management of water supply and demand. State Project Water (originating near the Sacramento Bay-Delta area) can be purchased when available during winter months. Further, storage of this water underground in aquifers several hundred feet beneath the surface of the ground requires no construction of surface reservoirs, the land use is not disrupted, evaporation is not a factor, and costs are substantially less.

When needed during summer months or during times of drought, the stored underground supplies can be easily tapped by extracting the water through the same injection wells.

The initial facilities of the SWP, completed in the early 1970s, were designed to meet the original needs of the SWP contractors. It was anticipated that additional SWP facilities would be built over time to meet projected increases in contractor delivery needs. However, as decisions on these additional facilities were repeatedly deferred, public attitudes and environmental regulations changed. In addition, the contracted needs for water from the SWP have increased. As a result, the SWP is not capable of delivering full contractor entitlement each and every year. DWR reports in its 2005 SWP Delivery Reliability Report that existing SWP contractors will, on average, receive 69 percent of their full Table A amount for 2005 demand conditions and 77 percent of their full Table A amount for 2025 demand conditions.

2.1.9 Water Quality

Water quality is a significant issue affecting the overall available water supply in the Region. Water quality issues include point and nonpoint sources. Point sources are those that are from a well defined source of origin, while nonpoint sources are more difficult to define and originate from more widespread sources. Point sources include wastewater treatment plants, urban stormwater runoff and package treatment plants. Nonpoint source pollution issues in the Region include seawater intrusion, individual sewage disposal systems (septic tanks), , abandoned water wells, agricultural runoff, aggregate resource management and naturally occurring contaminants.

This section includes a discussion of surface and groundwater water quality issues and concerns in each Watershed.

SURFACE WATER QUALITY

Surface water quality is regulated by several State and Federal regulatory agencies. The Federal Clean Water Act (CWA) requires the California Regional Water Quality Control Board (Regional Board) to develop water quality standards which include beneficial use designations and criteria to protect beneficial uses for each water body found within its region. The Regional Board carries out its CWA responsibilities through California's Porter-Cologne Water Quality Control Act and establishes water quality objectives designed to protect beneficial uses contained in the Water Quality Control Plan for the Los Angeles Region (Basin Plan).

As approved by USEPA, the State's official evaluation of its surface water quality is the State Water Resources Control Board's (SWRCB's) biennial water quality assessment and the Clean Water Act 303(d) List of Water Quality Limited Segments. In 2002, California listed 685 water bodies on the 303(d) list, which exceed established water quality objectives. In some cases, a water body is listed for more than one pollutant, and in total, there are currently 1883 polluted water-body listings. About 13 percent of the total miles of California's rivers and streams, and about 15 percent of its lake acreage, are now listed as limited under the 303(d). As of 2002, advisories warning against fish consumption, an indirect indicator of surface water quality, were posted for 18 percent of

California's lakes, while less than 1 percent of the state's rivers were similarly posted (2005 California Water Plan).

As described in the Regional Water Quality Control Board (L.A. Region) Watershed Management Initiative (WMI), current strategies by the State to improve water quality are now approached on an integrated, watershed level:

“For the initial implementation of the WMI, during the late 1990s, each Regional Board identified the watersheds in their Region, prioritized water quality issues, and developed watershed management strategies. These strategies and the State Board's overall coordinating approach to WMI are contained in the Integrated Plan for Implementation of the WMI which is updated annually. In following years, the Regional Boards have continued to build upon their early efforts to utilize this approach. The full version of our WMI Chapter outlines our ongoing efforts to continue implementation of the WMI.”

Surface Water Quality Monitoring and Assessment

Only a small percentage of California water bodies are regularly monitored and assessed for water quality or for the appropriate contaminants of concern. Once data is collected, it is too often not assessed or evaluated. To address this need the State Legislative created the Surface Water Ambient Monitoring Program (SWAMP) in order to integrate existing water quality monitoring activities of the State Water Resources Control Board, and Regional Water Quality Control Boards, with other monitoring programs. One of SWAMP's key objectives is to create a coordinated statewide monitoring effort to assess the conditions of surface waters throughout the state of California, and capture monitoring information collected under the State's TMDL, Nonpoint Source, Agricultural Waiver and Stormwater Programs.

Beginning in 1999, a new law (AB411) required public health officials in coastal counties to conduct weekly testing, between April 1 and October 31, at beaches visited annually by more than 50,000 people and at adjacent storm drains (including natural creeks, streams, and rivers, that flow during the summer). The County of Ventura Environmental Health Division, monitors numerous locations on a weekly basis from April through October, from Rincon Beach south of the creek (near the Santa Barbara County line) to Staircase Beach, located at the north end of Leo Carrillo State Beach. In addition, samples are collected by the City of Oxnard, Channelkeepers and others.

For the sixth year in a row, overall water quality at Ventura County beaches in 2005 was excellent and proved to be the best water quality in Southern California for that year, though there were beach closures throughout the year. Of the water quality monitoring locations during summer dry weather, 98 percent of the locations received good-to-excellent water quality marks. The only Ventura County beach to receive a summer dry weather grade lower than a B was San Buenaventura Beach south of the drain at San Jon Road. For the second year in a row, the Hobie/Kiddie Beach monitoring locations in Channel Islands Harbor have seen improved water quality. There were no known sewage spills that led to beach closures in Ventura County in 2005.

The following discussion is taken from Regional Water Quality Control Board Watershed Management Initiatives for local watersheds.

Excerpt from RWQCB website:

(http://www.waterboards.ca.gov/losangeles/html/programs/regional_programs.html#Watershed):

To protect water resources within a watershed context, a mix of point and nonpoint source discharges, ground and surface water interactions, and water quality/water quantity relationships must be considered. These complex relationships present considerable challenges to water resource protection programs. The State and Regional Boards are responding to these challenges with the Watershed Management Initiative (WMI). The WMI is designed to integrate various surface and ground water regulatory programs while promoting cooperative, collaborative efforts within a watershed. It is also designed to focus limited resources on key issues and use sound science.

Ventura River Watershed - Water Quality Problems and Issues

The Ventura River and its tributaries drain a coastal Watershed in western Ventura County. The Watershed covers a fan-shaped area of 228 square miles, which is situated within the western Transverse Ranges (the only major east-west mountain ranges in the continental U.S.). From the upper slopes of the Transverse Ranges, the surface water system in the Ventura River Watershed generally flows in a southerly direction to an estuary located at the mouth of the Ventura River. Groundwater basins composed of alluvial aquifers deposited along the surface water system are highly interconnected with the surface water system and are quickly recharged or depleted, according to surface flow conditions. Topography in the Watershed is rugged, and as a result, the surface waters that drain the Watershed have very steep gradients, ranging from 40 feet per mile at the mouth to 150 feet per mile at the headwaters.

Beneficial Uses in Watershed:	
<i>Estuary</i>	<i>Above Estuary</i>
Navigation	Municipal supply
Commercial & sportfishing	Industrial service supply
Estuarine habitat	Industrial process supply
Marine habitat	Agricultural supply
Contact & noncontact water recreation	Contact & noncontact water recreation
Warmwater habitat	Warmwater habitat
Wildlife habitat	Wildlife habitat
Preservation of rare & endangered species	Preservation of rare & endangered species
Migratory & spawning habitat	Migratory & spawning habitat
Wetlands habitat	Wetlands habitat
Shellfish harvesting	Coldwater habitat
	Groundwater recharge
	Freshwater replenishment

The majority of water quality problems involve eutrophication (excessive nutrients and effects), especially in the estuary/lagoon although some DDT and metals have been found in mussel and fish tissue. A large storm drain enters the river near the estuary and homeless persons live in and frequent the riverbed. Sediment in the estuary, however, appears relatively uncontaminated and in laboratory tests conducted through the Bay Protection and Toxic Cleanup Program (BPTCP), little sediment toxicity was found. In some subwatersheds, high TDS concentrations impair the use of

water for agriculture. The Watershed's water quality problems are, for the most part, nonpoint source-related, and some incidents of releases of toxic materials from storm drains entering the lower river.

There is only one major discharger, the Ojai Valley Sanitary District, a small Publicly Owned Treatment Works (POTW) (3.0 MGD) in the middle reach of the Ventura River with tertiary treatment which produces a high quality effluent.

- | The Ventura River Watershed |
|---|
| <ul style="list-style-type: none"> • Eutrophication concerns, especially in lagoon • Some bioaccumulation of DDT and metals • TDS concerns in some subwatersheds • Impediments to steelhead trout migration (but much high quality habitat) • More nonpoint source rather than point source problems |

The most recent monitoring has shown the quality of the effluent has significantly improved. Most of the seven NPDES permittees in the Watershed discharge to the main river. Of the 37 dischargers enrolled under the general industrial stormwater permit in the Watershed, the majority are in the city of Ventura. Wineries and oil-related activities are most prominently represented. Most of the facilities are under ten acres in size.

Water diversions, dams, and groundwater pumping also are thought to limit surface water resources needed to support a high quality fishery. Reduced water supplies affect water quality and thus beneficial uses, particularly with regards to the endangered steelhead trout (steelhead trout are known to utilize the River and some of its tributaries historically supported annual steelhead runs of 5000 – 6000 adults).

Water diversions, dams, and groundwater pumping also are thought to limit surface water resources needed to support a

Increased nutrient levels are also a concern along the watershed, due to private and commercial equestrian operations.

Sanitary Sewer Line Breaks

There have been eight major sewage spills due to storm damaged lines over the past 40 years. Most of the sewer lines were constructed in the 1960s and many were placed in locations subject to storm flows without adequate protection. These lines have been damaged resulting in sewer spills of million of gallons over several days. These result in lost use of the Watershed and beaches for recreation, and the City of Ventura must curtail taking water from the Ventura River until the waters have been confirmed to be clear of contamination.

Santa Clara River Watershed - Water Quality Problems and Issues

The Santa Clara River is the largest in Southern California (1634 square miles) that remains in a relatively natural state. The approximately 84-mile long river originates in the northern slope of the San Gabriel Mountains in Los Angeles County, traverses Ventura County, and flows into the Pacific Ocean between the Cities of Ventura and Oxnard.

Extensive patches of high quality riparian habitat are present along the length of the river and its tributaries. The endangered fish species, the unarmored stickleback and southern California steelhead, are resident in the river. One of the largest of the Santa Clara River's tributaries, Sespe Creek, is designated a wild trout stream by the State of California and supports significant spawning and rearing habitat. The Sespe Creek is also designated a wild and scenic river. Piru and Santa Paula Creeks, which are tributaries to the Santa Clara River, also support good habitats for steelhead. In addition, the river serves as an important wildlife corridor. A lagoon exists at the mouth of the river and supports a large variety of wildlife.

Beneficial Uses in Watershed:	
<u>Estuary</u>	<u>Above Estuary</u>
Contact & noncontact water recreation	Contact & noncontact water
Wildlife habitat	Wildlife habitat
Preservation of rare & endangered species	Preservation of rare &
endangered species	
Migratory habitat	Migratory habitat
Wetlands habitat	Wetlands habitat
Spawning habitat	Municipal supply
Estuarine habitat	Industrial service supply
Marine habitat	Industrial process supply
Navigation	Agricultural supply
Commercial & sportfishing	Groundwater recharge
	Freshwater replenishment
	Warmwater habitat
	Coldwater habitat

Threats to water quality include increasing development in floodplain areas which has necessitated channelization, resulting in increased runoff volumes and velocities, erosion, and loss of habitat. In many of these highly disturbed areas the exotic giant reed (*Arundo donax*) has become rampant and represents a significant threat.

There are four major NPDES dischargers (all Publicly Owned Treatment Works (POTWs), 11 minor dischargers, and 15 enrolled under general NPDES permits (non-stormwater). Included in the latter facilities are POTWs which discharge to percolation or evaporation ponds.

Various reaches of the Watershed are 303(d)-listed as impaired for nutrients (and related effects), bacteria, salts, trash, and legacy pesticides.

The Santa Clara River Estuary and Beach is on the 2002 303(d) list for coliform while a portion of the river upstream of the estuary is listed for ammonia and coliform. Portions of the river have chloride exceedances. The Estuary is also listed for toxaphene and residual amounts of other legacy pesticides in fish tissue. Two small lakes in the Watershed are also on the 303(d) list for eutrophication, trash, DO, and pH problems. Natural oil seeps discharge significant amounts of oil into Santa Paula Creek. Despite their comparatively good overall water quality, there are elevated levels of salts in some large tributaries which may be in some cases from natural sources or in others may be remnant discharges of brine from abandoned oilfields.

The following list of efforts are underway to address water quality

- Upper Santa Clara River Chloride TMDL – Implementation plan in development.
- Nutrient (nitrogen compounds) TMDL – Identified wastewater treatment facilities as the major contributor of nitrogen compounds loadings with nonpoint sources and minor point sources contributing a much smaller fraction of these loads. In addition, agricultural runoff and malfunctioning or leaking septic systems contribute to high nutrient levels.
- Fillmore Wastewater Treatment Plant – Surface water discharge will phase out by 2008 and become a groundwater discharge (percolation) or a reclamation plant.
- Santa Paula Wastewater Reclamation Plant – Will become Title 22 compliant and go to full reclamation sometime after 2008.

- The Ventura Water Reclamation Facility has been reclaiming water for landscape irrigation since the mid 1960's and has been providing tertiary treatment for irrigation water since 1973. Since that time a portion of the effluent has been discharged to the Santa Clara River Estuary. Operating under a habitat enhancement exemption since 1976, it is currently mandated by its NPDES permit to discharge at least 5.6 MGD to the estuary for habitat support. The Los Angeles Regional Water Quality Control Board is reconsidering the enhancement demonstration and minimum discharge requirement as part of the renewal process for the NPDES permit.

Calleguas Creek Watershed – Water Quality Problems and Issues

Calleguas Creek and its major tributaries, Revolon Slough, Conejo Creek, Arroyo Conejo, Arroyo Santa Rosa, and Arroyo Simi drain an area of 343 square miles in southern Ventura County and a small portion of western Los Angeles County. This Watershed, which is elongated along an east-west axis, is about 30 miles long and 14 miles wide. The northern boundary of the Watershed is formed by the Santa Susana Mountains, South Mountain, and Oak Ridge; the southern boundary is formed by the Simi Hills and Santa Monica Mountains.

Land uses vary throughout the Watershed. Urban developments are generally restricted to the city limits of Simi Valley, Moorpark, Thousand Oaks, and Camarillo.

Mugu Lagoon, located at the mouth of the Watershed, is one of the few remaining significant saltwater wetland habitats in southern California.

Naval Base Ventura County Point Mugu is located in the immediate area, and the surrounding Oxnard Plain supports a large variety of agricultural crops. The Lagoon borders on an Area of Special Biological Significance (ASBS) and supports a great diversity of wildlife including several endangered birds and one endangered plant species. Except for the military base, the lagoon area is relatively undeveloped.

Beneficial Uses in Watershed:	
<i>Estuary</i>	<i>Above Estuary</i>
Wildlife habitat	Wildlife habitat
Contact & noncontact water recreation	Contact & noncontact water recreation
Estuarine habitat	Industrial service supply
Marine habitat	Industrial process supply
Preservation of rare & endangered species	Preservation of rare & endangered species
Navigation	Agricultural supply
Preservation of biological habitats	Groundwater recharge
Wetlands habitat	Wetlands habitat
Migratory & spawning habitat	Freshwater replenishment
Shellfish harvesting	Warmwater habitat

Aquatic life in both Mugu Lagoon and the inland streams of this Watershed has been impacted by pollutants from nonpoint sources. DDT, PCBs, other pesticides, and some metals have been detected in both sediment and biota collected from surface waterbodies of this Watershed. Additionally, ambient toxicity has been revealed in several studies from periodic toxicity testing in the Watershed (ammonia from POTWs and pesticides such as diazinon and chlorpyrifos are implicated). Fish collected from Calleguas Creek and Revolon Slough exhibit skin lesions and have been found to have other histopathologic abnormalities. High levels of minerals and nitrates are common in the water column as well as in the groundwater. Sediment toxicity is also elevated in some parts of the lagoon.

Overall, this is a very impaired Watershed. It appears one source of these pollutants are agricultural activities (mostly through continued disturbance and erosion of historically contaminated soils), which cover approximately 25 percent of the Watershed along the inland valleys and coastal plain, although the nearby naval facility has also been a contributor. Other

nonpoint sources include residential and urban activities, which are present over approximately 25 percent of the Watershed.

Primary issues related to POTW discharges include ammonia toxicity and high mineral content (i.e., salinity), the latter, in part, due to imported water supplies.

Discharges are fairly evenly spread around the Watershed; 6 of the 24 NPDES discharges go to the Arroyo Conejo, while discharge to Revolon Slough and lesser numbers discharge to the Creek's various reaches.

Of the 73 dischargers enrolled under the general industrial stormwater permit in the Watershed, the largest numbers are located in the cities of Simi Valley and Camarillo. There is a diverse mix of industries represented including auto wrecking, sand and gravel operations, production of electronics, transit, and trucking.

Other Ventura Coastal Watershed Management Areas – Water Quality Problems and Issues

The Watershed Management Areas is composed of four separate coastal drainage areas located along coastal Ventura County typified by either small coastal streams, wetlands, or marinas.

Channel Islands Harbor: The Harbor is on the 2002 303(d) list for lead and zinc. During the early to mid-1980s, the State Mussel Watch Program (SMWP) found low to intermediate levels of metals and organics except for one especially high accumulation of DDT. Sediment sampling for metals in 1988 revealed slightly to moderately elevated levels. Copper at one site was nearly 50 ppm and zinc was as high as 76 ppm. Arsenic was slightly elevated (4 ppm) at a sampling site located next to a drain possibly connected to a nearby agricultural field.

Port Hueneme Harbor: The Harbor is on the 2002 303(d) list for PAHs, DDT, PCBs, TBT, and zinc. The SMWP has found elevated levels of Cu, Zn, PAHs, and PCBs. Zinc was at elevated levels on the commercial side while PCBs were very high on the Navy side. Sediment core samples were collected in 1985 and 1996 as part of a proposed dredge project. Relatively low levels of metals were found and no pesticides were detected.

- | |
|--|
| <p>The harbors</p> <ul style="list-style-type: none"> • One deepwater harbor and two small-craft marinas • Accumulation of metals, PCBs, and historic pesticides in sediment and tissue • S • support considerable marine life <p>The wetlands and coast</p> <ul style="list-style-type: none"> • Historic pesticide contamination • Loss of quality habitat • Impacts from oil spills • Use by endangered species |
|--|

Ventura Marina: The Ventura Keys, a residential development with small boat channels adjacent to the Marina, is on the 2002 303(d) list for coliform problems. The City of Ventura monitors six stations within the Keys and the nearby Arundell Barranca for coliform on a regular basis. The

SMWP has found moderately elevated levels of metals, DDT, and chlordane in the marina from sampling conducted in the late 1980s; however, it is not listed as a site of concern under the BPTCP.

McGrath Lake: The Lake is on the 2002 303(d) list for pesticides. The BPTCP found varying amounts of sediment toxicity and sediment levels of many pesticides were very high; the lake is listed as a toxic hot spot due to sediment concentrations of DDT, chlordane, dieldrin, toxaphene and endosulfan above sediment quality guidelines. A major crude oil spill into the lake occurred in late 1993 and runoff from nearby agricultural fields is ongoing.

Open Coastline: In the past, little is known of water quality in the Ormond Beach area. The Oxnard Treatment Plant discharges secondary effluent to the ocean off adjacent to the City of Oxnard. The City of Oxnard now tests the water at various locations along the Ormond Beach area.

Of the 82 dischargers enrolled under the general industrial stormwater permit in the Watershed, the majority occur in the city of Oxnard. Many of these businesses are involved with trucking, food packing, or watercraft maintenance.

GROUNDWATER QUALITY

In contrast with most of California, approximately 67 percent of the water needs in Ventura County are supplied by groundwater resources. The quality and protection of this vital resource is therefore of considerable interest, attention and concern. Most groundwater is pumped from 10 major groundwater basins and 7 minor groundwater basins. There are 15 additional areas in the county where groundwater is considered to exist in recoverable quantities.

Statewide – Groundwater Quality

In each of the state's hydrological regions, 24 percent to 49 percent of public water supply wells exceeded one or more MCLs, usually for inorganic chemicals or radioactivity. As a result of manmade contamination from agricultural practices and septic tanks, nitrate, which presents a known, short-term health risk, has closed more public water wells statewide than any other contaminant. Other groundwater contaminants of concern, including arsenic and hexavalent chromium (or chromium-6), are chronic (i.e. long-term health risks, such as cancer or reproductive and endocrine system dysfunction). Another common groundwater contaminant, salinity—is a concern for taste as well as water facility longevity. A different indicator of groundwater contamination caused by leaking underground fuel tanks, has steadily declined after peaking in 1995, due primarily to the success of regulatory action. In addition to underground storage tanks, older landfills and hazardous waste disposal sites are also common sources of groundwater contamination, and abandoned wells can provide a ready conduit for aquifer contamination (2005 California Water Plan).

Groundwater Quality Records and Sampling

Currently the Groundwater Resources Section of the Ventura County Watershed Protection District (VCWPD) obtains and coordinates analysis of approximately 120 groundwater samples in selected areas. This practice started in the mid-to-late 1930s by the California Department of Water Resources (DWR) and continued by the predecessor agency to the local United Water Conservation District (UWCD), the Santa Clara River Water Conservation District. The County of Ventura

officially assumed the task in 1970 when a formal water well permitting and monitoring program was begun.

To date, over 10,000 individual water quality records have been entered into the County's database. Another 1000 or more records predating 1970 are contained within paper copy format. These water quality records reflect general mineral constituents found in most groundwater basins within the County.

In May 2005, VCWPD conducted groundwater sampling at 56 locations throughout the County. Samples collected were analyzed for general minerals (calcium, magnesium, potassium, sodium, carbonate, bicarbonate, sulfate, chloride, nitrate, phosphate, fluoride, boron, copper, iron, manganese, zinc) pH, lab E.C., and SAR along with some specialized tests for heavy metals or radio chemistry (gross alpha, and uranium count). Some samples were also analyzed for Title 22 metals.

Water Quality in the Fox Canyon Groundwater Management Agency (FCGMA) Area:

The following information has been excerpted from the Draft FCGMA Groundwater Management Plan Update (October 2006). For more information the document can be found on the GMA website at:

<http://publicworks.countyofventura.org/fcgm/index.htm>

Seawater intrusion has long been the primary water concern within the FCGMA and was the problem for which the FCGMA was originally formulated to help fix. The intrusion occurs exclusively along the coastline in the Oxnard Plain basin. The U.S. Geological Survey also identified another type of saline intrusion on the Oxnard Plain – salts moving from the surrounding marine clays and older geologic units as pressure in the aquifers is reduced from overpumping. This type of intrusion may also be occurring on a minor scale in the Pleasant Valley basin. Chloride has also become a problem along Arroyo Las Posas, where groundwater from an area in the East and South Las Posas basins must be blended with lower-chloride water to meet irrigation suitability. This problem appears to have migrated downstream, with some of the City of Camarillo's wells now affected.

Chloride is also a problem in the Piru basin near the Los Angeles County line, where high chlorides from discharge of wastewater treatment plants along the Santa Clara River have degraded the recharge water for the basin. This chloride problem is currently isolated to the Piru basin, although long-term recharge of poorer quality water could eventually move through the groundwater basins along the Santa Clara River and reach the Freeman Diversion.

High nitrate concentrations in groundwater are a localized problem in the Oxnard Plain Forebay and Santa Rosa basins. In and adjacent to the Forebay, nitrates affect drinking water wells of UWCD's Oxnard-Hueneme wellfield, mutual water companies, and the City of Oxnard, particularly during and following dry periods.

Seawater Intrusion on the Oxnard Plain

The significant water quality issue on the Oxnard Plain basin is saline intrusion from both seawater and from surrounding marine sediments. See Figure 2-2 below.

High chloride levels were first detected on the Oxnard Plain in the vicinity of the Hueneme and Mugu submarine canyons in the early 1930s (California Department of Water Resources, 1954,

1971) and became a serious concern in the 1950s. Early monitoring programs used only existing production wells and abandoned wells as monitoring points; sampling of these wells indicated a widespread area of elevated chloride concentration in the Hueneme to Mugu areas. Current efforts to reduce groundwater extractions and replace previous water demands with diverted surface water or imported water have significantly improved the situation in the Oxnard and Mugu aquifers.

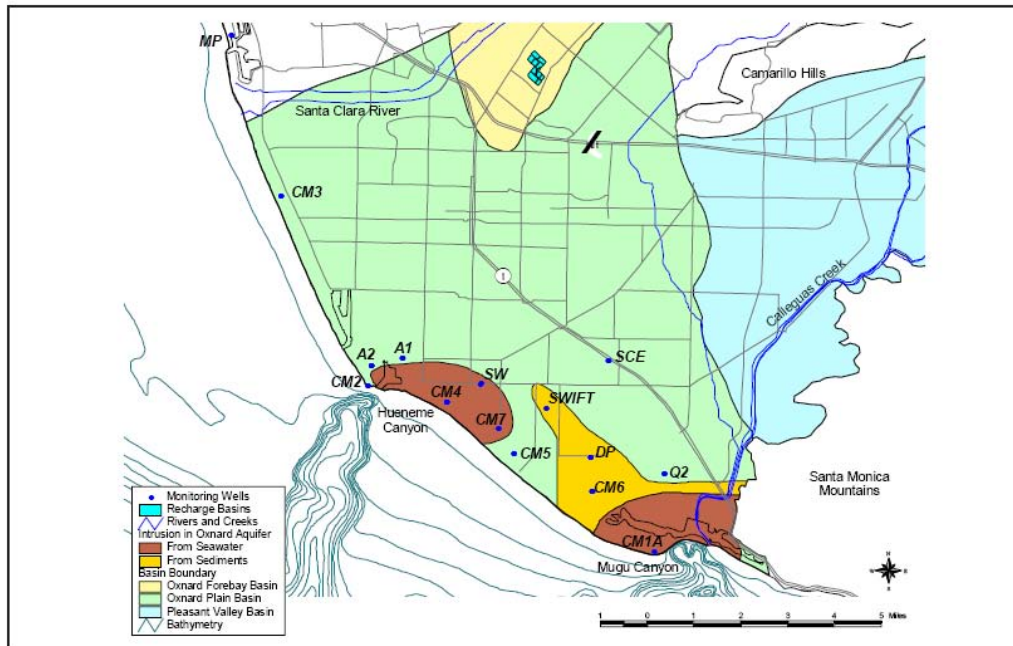


Figure 2-2 Seawater Intrusion on the Oxnard Plain

Nitrate in Groundwater

The primary sources of nitrate are septic systems (especially if they are poorly maintained or being used above design capacity) and agricultural fertilizer.

The Oxnard Forebay is a prime groundwater recharge area that is impacted by nitrogen discharges, mainly from densely populated communities using septic systems, and agricultural areas. The Forebay is a vital part to the County's water resources. Approximately 250,000 people obtain at least a portion of their water supplies from water originating in the Forebay. The County of Ventura and Regional Board undertook a study of septic systems in the area and in August 1999 the Regional Board adopted a Basin Plan amendment to prohibit septic systems in the unincorporated areas of El Rio. The amendment prohibits the installation of new septic systems or the expansion of existing septic systems on lot sizes of less than five acres. Discharges from septic systems on lot sizes of less than five acres must cease by January 1, 2008. This prohibition will affect up to 3000 septic systems and 10,000 to 15,000 people.

Department of Defense Cleanup Program/Naval Base Ventura County

The Regional Board is working with the Department of Toxic Substances Control (DTSC) to investigate soil and groundwater quality at Naval Base Ventura County from past practices. Sites currently under assessment/remediation at the Naval Base include Mugu Lagoon, a former landfill,

the Navy Exchange gas station, numerous underground storage tanks sites, and the former oxidation sewage ponds.

Underground Storage Tank Program

The Leaking Underground Fuel Tanks (LUFT) Program is the local oversight program and lead agency that regulates soil and groundwater cases within Ventura County involving releases from underground storage tanks (UST's) that contain gasoline, diesel, waste oil and other petroleum hydrocarbons. The County of Ventura has entered into a contract with the State Water Resources Control Board to be the lead agency that regulates cleanup of unauthorized releases from UST's within Ventura County.

GROUNDWATER QUALITY BY BASINS

Oxnard Plain Pressure Basin

A short summary of each of those aquifers (listed by increasing depth) and the accompanying water quality that exists within each particular zone has been included below:

- **Perched/Semi-perched aquifer** – Water quality is usually classified as unsuitable for almost all uses in this very shallow unconfined zone. Only a couple of known active water extraction wells are perforated in this zone due to contamination from pesticides, herbicides, leaking underground petroleum and chemical tanks, surface spills, and a high dissolved salt content. Total dissolved solids (TDS) average 2700 mg/l in most areas. Perched water can often be found only a few feet beneath the surface in many locals within the Oxnard Plain.
- **Oxnard aquifer** – This is the shallowest of the confined aquifers, and therefore the least expensive to drill into for purposes of obtaining acceptable quality water in sufficient quantity. Iron counts can be elevated, and total dissolved solids typically average 800 to 1200 mg/l.

The Oxnard aquifer is intruded by saltwater near the coastline, between Port Hueneme and Point Mugu. Plumes of excessive nitrate are not uncommon in the northern portion of the Basin, and usually appear or develop during late summer or fall when rainfall is at a minimum.

- **Mugu aquifer** – The Mugu has many of the same characteristics and quality compared to the Oxnard aquifer. This lowest layer of the Upper Aquifer System averages 900 mg/l TDS and differs from the Oxnard aquifer by its slightly higher base temperature and an occasionally higher chloride concentrations.
- **Hueneme aquifer** – The first of the Lower Aquifer System layers, the Hueneme, has a slightly higher water temperature than aquifers closer to the surface, and generally shows somewhat elevated sulfate, iron, and manganese. Nitrate and hydroxides are very low in most samples analyzed. Water quality ranges from 370 to 2880 mg/l TDS, with a mean value of 920 mg/l.

- **Fox Canyon aquifer** – Average TDS values are usually in the 580 mg/l range, with the best water just over 200 mg/l, however, some samples have produced TDS readings of 900 mg/l or higher. Generally not penetrated by wells until they exceed 600-700 feet in depth, this water is expensive to access, but the cost is offset by good water quality and high flow rates. For more information about the FCGMA and related management procedures, see the latest draft FCGMA Groundwater Management Plan located on their website at: <http://publicworks.countyofventura.org/fcgma/index.htm>)
- **Grimes Canyon aquifer** – Like the Fox Canyon zone immediately above, the Grimes shares many of the same water quality and has similar production rates. Average total dissolved solids are 510 mg/l, with bicarbonate being the dominant anion.

Oxnard Plain Forebay Basin

Acting as the principal recharge area for the much larger Oxnard Plain, the Forebay (or Montalvo Basin) has generally acceptable water quality. Average TDS values in groundwater are typically in the 800 to 1600 mg/l range. The average TDS level for all samples on file at the County Water Resources Division is 900 mg/l.

West Las Posas Basin

The water quality of the West Las Posas Basin currently meets standards for irrigation and drinking water use. Within the pumping depression in the far eastern portion of the Basin, samples from two wells have had increased chloride concentrations since 2004. It is not clear if this is the beginning of a trend or if these chlorides were transported into the Basin from the shallow aquifer is generally located along Arroyo Las Posas in the East Las Posas Basin.

East Las Posas Basin

High chloride levels in the portion of the Basin along the Arroyo Las Posas continue to be a problem in the East Las Posas Basin. These high chloride concentrations are associated with historically high groundwater levels that apparently leach salts from previously unsaturated sediments in the shallow aquifer along the Arroyo. The groundwater that contains these chloride-rich salts recharges the Lower Aquifer System by moving downward from the shallow aquifer into the LAS, then northward into the Basin. This recharge has formed a chloride-rich recharge mound beneath the Arroyo Las Posas.

South Las Posas Basin

Water quality in the South Las Posas Basin is dominated by the movement of salts discussed in the previous section. The progressive filling of the shallow aquifer of the South Las Posas Basin progressed from the upstream to the downstream portions. Two wells completed in the shallow aquifer beneath the Arroyo that have had elevated salts for 20 years have shown a lessening of salinity in the past two years.

Primarily agricultural in land use, the South Las Posas Basin has generally good groundwater quality. TDS typically ranges between 600 and 1400 mg/l depending upon well depth and location, with the average for all samples on file at 709 mg/l. The deeper Fox Canyon and Grimes Canyon aquifer waters yield the best groundwater quality in the 600-700 mg/l TDS range, with shallow river alluvium producing the less desirable water. (2005 WPD Sampling).

Pleasant Valley Basin

Saline intrusion from surrounding sediments and salinity associated with high groundwater levels are the primary water quality concern in the Pleasant Valley Basin. The potential for saline intrusion continues in the depressed groundwater elevations in the Lower Aquifer System of the Pleasant Valley Basin (2006 GMA Management Plan).

Average TDS values in groundwater cover a broad range and are generally found to be 700-1250 mg/l in most samples. During drought years however, TDS levels in some wells can range up to 2000 mg/l, and values as high as 3500 mg/l have even been recorded. The average TDS value for all samples on file equals 1110 mg/l. (WPD 2005 Sampling).

Piru Basin

Similar to the Fillmore Basin directly downgradient, the Piru Basin contains groundwater with TDS values averaging 1430 mg/l. Sulfate often exceeds the MCL for drinking water, but is tolerated by the primarily agricultural groundwater uses (citrus irrigation). Calcium carbonate and TDS values can become excessive within certain wells. None of the 2005 sampled wells showed gross alpha readings above the maximum contaminant level (MCL) for drinking water and only one showed nitrate concentration above the MCL, but 11 wells had TDS concentrations greater than the MCL and 4 of those were more than double the MCL.

The best quality groundwater can be found in shallow river alluvium. However, TDS values of 2000 mg/l or higher have been detected in some wells near the edge of the Basin.

Salinity issues are a concern in the Piru Basin near the Los Angeles County line, as well as in the Fillmore and Santa Paula Subbasins of the Ventura County portion of the Santa Clara River Watershed. There are currently 12 salinity-related section 303(d) listings for chloride, total dissolved solids (TDS), Sulfur and Boron for surface water bodies in the Ventura County portion of the Santa Clara River Watershed. A regional solution needs to be considered to manage these salt issues and concerns in the Santa Clara River Watershed.

Fillmore Basin

Water quality is considered acceptable for almost all agricultural uses, with TDS typically between 800 and 1600 mg/l in most well samples. Average TDS for the Basin is 1096 mg/l. Certain wells perforated only in the deeper San Pedro formation have shown surprisingly good quality water. Shallow wells less than 100 feet in total depth located in or near the Santa Clara River have also produced good quality water.

Santa Paula Basin

Water quality in the Santa Paula Basin average 1089 mg/l for all TDS samples taken. Typical TDS values range from 800 to slightly over 2000 mg/l in the Basin. Calcium carbonate, a measure of water hardness, and alkalinity levels remains high with sulfate and bicarbonate being major contributors to overall water quality. Occasional high manganese readings can be found at selected wells.

The best quality water is usually found near the center of the Basin or in shallow wells located in or near the Santa Clara River. Wells around the perimeter of the Basin, especially those located near Wheeler Canyon or Aliso Canyon on the north side, or South Mountain on the south side, show markedly inferior water quality caused by underflows from surrounding bedrock.

Mound Basin

The Mound Basin is generally divided into the Upper Zone (from ground surface to 300 feet) and the Lower Zone (from 450 to over 1000 feet below grade). Most active water wells (regardless of use) are perforated in deep (Lower) water bearing zones.

TDS values typically range from 1100 to 1900 mg/l in the lower aquifers, with certain layers producing notably better quality water than others. Wells perforated below 250 feet generally show TDS values of about 1,230 mg/l. Irrigation, municipal, and domestic wells in the Mound Basin usually produce groundwater with a calcium sulfate character making this a “hard” water area.

Cuyama Valley Basin

Sparsely settled, the southern end of the Cuyama River Valley lies within Ventura County. The rock types surrounding the Cuyama Basin are high in evaporate minerals such as calcium carbonate, boron, silica, and various salts. These bedrock formations have a direct influence with average TDS of 1660 mg/l and unsuitable for most potable and agricultural needs.

Thousand Oaks Basin

The Thousand Oaks Groundwater Basin consists of a shallow, linear, alluvial fill accumulation located mainly along the U.S. Highway 101 freeway corridor. Like Simi Valley, this area was once agriculturally based with many small farms and ranches. Shallow domestic wells were very common in the Basin often heavily clustered and competing for limited groundwater supplies. Data collection over the last 15-20 years has therefore been limited since most of these old wells have been destroyed to make room for new development. Only one water well was sampled in 2005 showing elevated concentrations (greater than MCL) of TDS, sulfate and iron.

Arroyo Santa Rosa Basin

The Arroyo Santa Rosa Basin receives most of its water replenishment from Conejo Valley and Thousand Oaks Basin surface runoff, including discharges from the Thousand Oaks Hill Canyon Wastewater Treatment Plant. Iron, nitrate and sulfate levels are usually high, and TDS concentrations typically range from 750-1000 mg/l with 817 mg/l the overall average.

Because of the high number of individual septic disposal systems (the area is not served by sewers), and the widespread use of agricultural fertilizers, groundwater nitrate (NO_3) levels are usually high, and many exceed the MCL for drinking water of 45 mg/l. Of the five wells sampled in Arroyo Santa Rosa Basin in 2005, four showed nitrate concentrations of over 45 mg/l, and one had TDS concentration greater than the MCL. High pH, with values in the 8.2-8.6 range are commonly detected in area groundwater.

Lockwood Valley Basin

The Lockwood Valley Basin is really a collection of several small stream channels with shallow sedimentary fill and a couple of small, flat “valley” floors created by alluvial fans from the surrounding foothills. TDS averages 821 mg/l for all wells tested to date with individual sites ranging from 350 mg/l to over 1900 mg/l. Some wells in the north half of the county show high fluoride concentrations. High gross alpha counts have recently been detected in at least four wells in the Boy Scout Camp Road area west of Lockwood Valley Road. Analytical testing laboratories have determined that the radioactivity source is uranium. High pH is common in the samples on file, many in the 7.9-9.2 range.

Tierra Rejada Basin

Groundwater recharge is slow here due to fine-grained silt and clay dominated surface soils, a shallow alluvium, and minimal fractures in the relatively hard underlying volcanic basalts. Average TDS in the Basin is 674 mg/l, with a range of 330-930 mg/l. Naturally occurring iron and nitrates are current threats to continued better-than-average groundwater quality.

Conejo Valley Basin

The Conejo Valley Basin is comprised of shallow fine-grained alluvium (50-100 feet thick) overlying fractured volcanic basalts. TDS values range from 405 to 1620 mg/l in all wells tested with a 790 mg/l average. Iron and calcium carbonate levels often approach the limit for drinking water standards.

Gillibrand or Tapo Canyon Basin

Primarily a sand and gravel mining area, the Gillibrand or Tapo Basin’s TDS concentration in groundwater average 693 mg/l for all samples on file.

Lower Ventura River Basin

The Lower Ventura River Basin is at the downstream end of several significant surface and groundwater drainage areas and as such is subject to variable water quality inputs. Some of this input water is of very poor quality due to human activity and land use (livestock ranches, oil fields, urban runoff, etc.), but some quality problems can be attributed to surrounding natural rock types and soil constituents. Despite the various inputs, groundwater TDS quality remains relatively acceptable at 900 mg/l throughout most of the year. TDS values can range between 1100 and 3000 mg/l during extended dry spells.

Upper Ventura River Basin

The Upper Ventura River Basin is characterized by thin alluvial deposits with the Ventura River as the dominant recharge source and contributions from San Antonio Creek (which drains the Ojai Valley), Lion Canyon Creek (which drains the Upper Ojai Valley), and Matilija Creek (which drains the mountain areas to the north). Groundwater TDS average 680 mg/l. Groundwater quality does vary however, with elevated nitrate from ranching operations common along San Antonio Creek and occasional high fluoride, iron, potassium, and manganese concentrations in other portions of the Basin.

Ojai Basin

Groundwater is the dominant supply source in the unconfined eastern three-quarters of the valley and around the valley perimeter. Overall water quality is considered good for most intended uses with typical TDS values ranging between 500 and 800 mg/l with average TDS for all wells tested in 2005 equaling 691 mg/l. Past sampling results indicate medium to high nitrate concentrations in many areas but with low boron, manganese, and iron. One tributary canyon north of the valley has shown elevated fluoride levels from groundwater extraction wells located there.

In 1991, the Ojai Basin was placed under the jurisdiction of the Ojai Valley Basin Groundwater Management Agency (OVBGMA) by the California Legislative.

Upper Ojai Basin

The Upper Ojai Basin is a small linear valley located southeast of, and at a higher elevation than, the larger Ojai Valley Groundwater Basin directly adjacent to the northwest. The total range for TDS in all samples taken is 250-1425 mg/l, with average TDS for all samples on file at 549 mg/l.

Average thickness of water-bearing deposits is approximately 60 feet, and the total groundwater-in-storage is estimated at less than 5000 acre feet most years. Elevated levels of nitrate, iron, or chloride can also occur in Upper Ojai Basin wells, making this an impaired groundwater Basin.

2.1.10 Water Demand

Ventura County water users consume more water than is locally available, which has resulted in an overdraft of groundwater resources and increasing dependence on imported water supplies. Countywide water demand is over 430,000 acre feet per year (AFY). Approximately 68 percent is used by agriculture, 22 percent is used by residential demands, and 10 percent is used by commercial and industrial activities. As a result of the recent droughts, County water users have generally become more water efficient. Countywide per capita water use has fluctuated between 58,680 gallons per year (.18 AFY) to 74,946 gallons per year (.23 AFY). Per capita water use includes residential, commercial, industrial, and government use divided by population.

Municipal and Industrial Uses:

Municipal and industrial (M&I) water use encompass residential, commercial, governmental and industrial water uses. M&I water use accounts for approximately 32 percent (136,800 AFY) of the countywide water demand. Groundwater provided slightly less than one-third of the water used for M&I uses Countywide. The remaining two-thirds was obtained primarily from imported supplies (State Water Project) and from surface water (primarily Lake Casitas). This ratio is expected to

continue to the year 2010 unless additional imported supplies become available. Groundwater demand for M&I uses is expected to increase more slowly than demand on surface and imported water uses.

Table 2-2 depicts municipal and industrial water use for the ten incorporated Cities plus the unincorporated County as of the year 2000.

Table 2-2

**Ventura County Water Survey
Per Capita Water Use By City 2005**

City	Population ⁴	Persons Per Household ⁴	M&I Water Use (Acre/feet)	Average per Capita Water Use (Acre/feet per year) M&I Only	Average gal/person/day
Camarillo ³	64,034	2.652	18273.2	0.29	173.56
Fillmore ²	15,180	3.606	2548.81 ²	0.17	195.36
Moorpark ^{1,3}	35,801	3.535	8776.1	0.25	193.52
Unincorporated ⁶	95,602	3.095	9513.61	0.20	249.90
Ojai ³	8,156	2.515	1953.88	0.24	218.62
Oxnard ^{5,2}	189,990	3.898	28944.18	0.15	114.92
Port Hueneme ^{5,2}	22,388	2.885	4547.5	0.20	118.36
Santa Paula ²	29,133	3.529	5045.9 ²	0.17	128.36
Simi Valley ³	122,708	3.074	29027.29	0.24	217.87
Thousand Oaks ³	127,644	2.788	33960.8	0.27	275.10
Ventura ³	106,710	2.590	17,930	0.17	149.46
Total or Average	817346	3.106	160521.27	0.21	185.00

1 AF = gal

Notes:

- 1 - Includes 300 meters outside city limits.
- 2 - Based on Reporting to UWCD.
- 3 - Based on reporting to State Dept of Water Resources.
- 4 - Information from California Dept of Finance City/County Population and Housing Estimates, 1/1/2006
- 5 - Assumed all deliveries are M&I
- 6 - M&I and per capita use were calculated from several representative water providers.

Per-Capita Water Use:

The amount of water used by or introduced into the system of an urban water supplier divided by the total residential population; normally expressed in gallons per-capita-per-day (gpcd).

Agricultural Water Uses: Currently, compared to residential, commercial and industrial water demands, countywide agricultural water demand appears to be more efficient, partly as a result of the efforts in the Fox Canyon Groundwater Management Agency, as a result of the Conditional Ag Waiver required and administered by the Regional Water Quality Control Board, and also as a result of increased energy costs. Future demand for agricultural water use is expected to decline by about 12 percent (35,000 AFY) by the year 2010. This projected decline is based on an expected reduction in agricultural acreage. However, if high-water-use crops such as strawberries, celery and the irrigation of turf, replace low-water-use crops, agricultural water demand may actually increase even with fewer acres being farmed.

Due to increased surface water diversions from the Pumping Trough Pipeline and Freeman Diversion projects, extractions for agriculture may have declined substantially. To the extent recycled water is developed for irrigation use and more farmers become familiar with and implement efficient water use practices, a decrease in groundwater use may occur. Use of groundwater may remain somewhat constant or increase if high water use crops are grown.

There are a variety of local programs addressing agricultural water use efficiency including those operated by the Natural Resources Conservation Service and the Resource Conservation District.

For more information about agricultural water use, see 1994 Ventura County Water Management Plan, pages 33-36.

2.1.11 Watershed Flooding Problems and Issues



Ventura River Watershed

The Ventura River Watershed has the highest annual rainfall and rainfall intensities of the rivers in the County. It is also characterized by steep slopes in the Watershed with a relatively high percentage of slope failure areas that can contribute sediment to the streams during runoff events. The high sediment loads decrease the ability of the Ventura River and its tributary streams to convey the storm flow within their normal channels, and lead to flooding damages in developed areas. The potential flooding problem is increased by the fact that the Ojai area development is built on ancient alluvial fans that have experienced periodic significant debris flows over time. Alluvial fans are characterized by braided stream systems that are not easily channelized into one stream, and thus have a tendency to form new channels during extreme storm events and debris flows.

The intense rainfall and steep slopes in the Watershed yield high peak flows with large erosive potential, as can be seen by tens of feet of scour observed in channels such as the San Antonio Creek. Because the rainfall events causing this scour to occur relatively infrequently, channels are dry most of the year and damaging floods have occurred relatively infrequently. This has led to encroachment of development into historic floodplain areas during periods between floods, and increases the potential for flood damages when storm events occur. Some homes along the lower San Antonio Creek are located very close to the stream in the 100-year floodplain. Homes located along smaller creeks such as Thacher, Canada Larga, and McNell are subjected to flooding damages during storm events as well. High flows have damaged creek pipeline crossings, leading to pipeline breaks and large volume sewage spills. Fossil fuel pipelines can also be threatened by the storm flow.

The Ventura River ultimately receives all of the runoff from its tributaries, and combined with imbalances in its sediment equilibrium due to Matilija Dam and other debris basins, has the potential to cause significant scour and bank erosion. Even banks that have been armored with bank protection can be damaged by floods, with levee breaches occurring and threatening adjacent homes and businesses. Neighborhoods built on bluffs adjacent to the river have seen their backyards disappear due to bend scour and meandering of the river during storm events. Near the outlet of the river, the Highway 101 river crossing does not have adequate capacity for extreme storms and is subject to flooding and closures at fairly low flow levels. An adjacent RV park is flooded at even smaller flow levels and requires evacuation on a frequent basis.

Santa Clara River Watershed

The Santa Clara River is the largest Watershed in the County and also has the lowest percentage of development. The main tributary to the River is the Sespe Creek, which can contribute almost half of the river's ultimate flow at the ocean during storm events. The sediment load coming out of the Sespe, Pole, Hopper, and Santa Paula Creeks is extremely high due to a high percent of slope failure areas in the Watershed and steep slopes, and it is common for channels to fill with sediment during storm events, reducing their conveyance capacity to almost nothing and causing breakouts and flooding damage. The breakouts then wash across the main roads in areas such as Highway 126, causing road closures and isolating communities from medical help during storm events. Breakouts of Hopper Creek have also threatened a water treatment plant located downstream. The Sespe Creek is also known to break out of its channel upstream of levees that have been built to reduce flooding upstream of the City of Fillmore, damaging the homes behind the levee.

The combined influence of sediment and water runoff from the tributary Watersheds have a significant impact on the Santa Clara River and lead to severe bank erosion along the river. Areas such as the Santa Paula Airport adjacent to the river are commonly threatened by storm flow and require significant resources to protect between storm events. Downstream areas of the river are also flooded by relatively low-storm flows; the access roads near the Highway 101 bridge crossing flood during storm events. Slopes are so low in the downstream portions of the Watershed that culvert outlets into the river are commonly equipped with flapgates to prevent high river flows from flooding adjacent agricultural land and developed areas. However, if high river flows close the flapgates, runoff from adjacent Watersheds cannot be drained, leading to localized flooding in the downstream areas of the river.

Calleguas Creek Watershed

The Calleguas Creek system has the highest percentage of development of the river systems in the County. Lined channels in the developed areas confluence with the generally unlined Calleguas Creek. Although annual rainfalls and rainfall intensities are generally lower than other areas of the County, the high degree of development has outpaced the drainage system upgrades, and channels are generally undersized to convey flows from significant storm events leading to potential flooding damages of adjacent development. Although slopes and slope failure areas are smaller than in other Watersheds, the channel capacity is also affected by the sediment inflows from the relatively frequent wildfires that can occur in the undeveloped areas of the Watershed during the dry season.

A number of detention and debris basins have been built on the tributaries to reduce peak flows and trap sediment during storms, but the basins increase the erosive power of the flows downstream from the dams when the sediment is removed. This, combined with continuous clear water discharges from several wastewater treatment plants along the creek, has led to significant scour in the upstream portions of the Arroyo Simi. Attempts to stabilize the streambed have led to the installation of numerous grade stabilizers, but the stabilizers have been undermined and damaged during storm events, leading to further erosion in the channel and potential damage to adjacent development. Also threatened are the bridge crossings for streets and railroads such as those located near the City of Moorpark with one railroad crossing destroyed during recent storms.

The sediment scoured from the stream in the upper portions of the creek is deposited in the downstream reaches in the relatively flat areas of the Oxnard Plain. The deposition reduces the conveyance capacity of the channels requiring construction of levees to channelize the flow. However, the deposition has occurred faster than the levee construction, so that flows overtop the levees during relatively low flows, causing breakouts in the Oxnard Plain and causing flooding damage to adjacent agricultural fields and increasing developed areas in the Watershed. Conejo Creek breaks out of its channel downstream of Highway 101 at flows as low as 5000 cfs, threatening a nearby wastewater treatment plant. Road closures are common due to Calleguas Creek flooding in the lower portions of the Creek near California State University at Channel Islands, isolating the university.

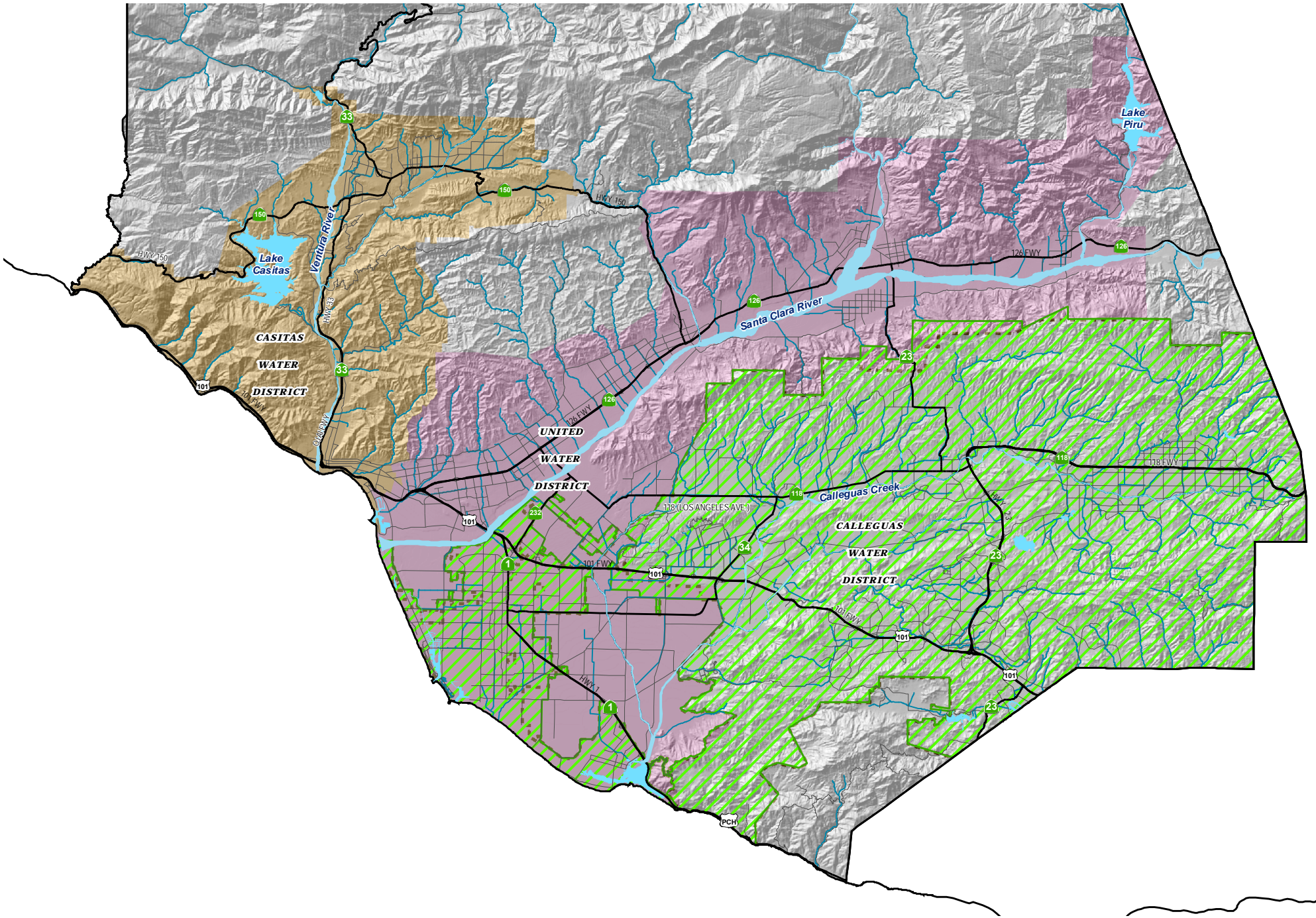
Malibu Creek Watershed

Although a significant portion of the Watershed is undeveloped, the steep terrain, incised canyons, and steep stream gradients contribute to large increases in flows during periods of significant precipitation. During periods of high rainfall, flooding is possible in Hidden Valley due to flows exceeding channel capacity. Portions of Medea Creek are also flood-prone, due to undersized culverts on Hollytree Drive and nearby streets. On Potrero Creek, the existing drop structures and bank slope protection are vulnerable to damage during high flow events.

2.1.12 Major Water Related Infrastructure

Wholesale Water Agencies

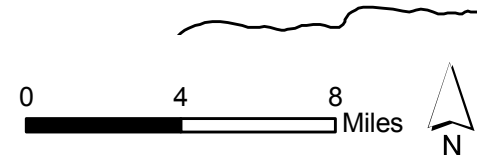
Ventura County has three major water districts which manage and supply water to the ten Cities, numerous retail water agencies, and to agricultural irrigators. These districts and their boundaries are illustrated on Map #4.



VENTURA COUNTY
 RESOURCE MANAGEMENT AGENCY
 MAPPING SERVICES - GIS



**WATERSHEDS COALITION VENTURA COUNTY
 INTERNAL BOUNDARIES WATER DISTRICTS
 MAP 4**



Calleguas Municipal Water District provides imported State water for wholesale purposes to retail water purveyors serving municipal/industrial customers in the southeastern portion of the County. It serves an area of approximately 350 square miles, including the Cities of Camarillo, Moorpark, Oxnard, Port Hueneme, Simi Valley, and Thousand Oaks, and the unincorporated communities of Oak Park, Santa Rosa Valley, Bell Canyon, Lake Sherwood, Somis, Camarillo Estates, and Camarillo Heights. The population served is over 520,000. Annual water delivery is in excess of 130,000 acre feet.

Casitas Municipal Water District provides wholesale and retail water distribution from Lake Casitas and has the primary responsibility for delivery of surface water from Lake Casitas. The District manages Lake Casitas which has a storage capacity of 254,000 acre feet of water, serving approximately 65,000 people. Approximately 45 percent of the inflow to the Casitas reservoir comes from runoff in the 34-square-mile surrounding drainage area. The remaining 55 percent is diverted to Casitas from the 74-square-mile Ventura River-Matilija Creek Watershed through the Robles-Casitas Canal.

United Water Conservation District is responsible for groundwater recharge in the Ventura County portion of the Santa Clara River Valley and on the Oxnard Plain, and for the wholesale distribution of water to purveyors on the Oxnard Plain. UWCD operates Lake Piru, with 83,000 acre feet capacity, as a storage reservoir. Lake Piru water is released to the Santa Clara River for recharge of the Piru, Fillmore, and Santa Paula basins as it moves downstream. The Piru diversion on Piru Creek recharges upstream groundwater basins at recharge ponds in Piru. The Freeman Diversion in Saticoy conveys river water to spreading grounds where it recharges groundwater for subsequent use by municipal and agricultural pumpers. The Freeman diversion has an average yield of approximately 69,000 AFY, diverted from the river. Total groundwater pumping within United's service area is approximately 180,000 AFY.

Other Water Purveyors

In addition to the major wholesalers, there are numerous public and private water retailer districts which provide water to agricultural users and rural residents. Many of the Cities operate water treatment facilities. As of year-end 2002, there were 166 licensed water purveyors in Ventura County. This includes 7 City-owned and operated systems, 22 special water districts, 25 public water purveyors, 5 Public Utility Commission (PUC) regulated water companies, 63 mutual water companies and 59 other privately owned systems of varying sizes. The Ventura County Watershed Protection District recently completed a database entitled "Inventory of Public and Private Water Purveyors in Ventura County." This database is available in printed form and on compact disc. The database provides information on the location and contacts,; the wholesale water district area in which it lies; officers, governing board; staff; website; wells; connections; and comments.

In addition to the 500 or so water wells owned or operated by the retail and wholesale water providers, it is estimated there are about 2500 additional individual well owners within the County who obtain their own water directly from groundwater sources. Of the groundwater pumped in Ventura County, less than one-third is delivered by an organized water system. Individual well owners do most of the groundwater pumping in Ventura County and it is mostly used for irrigation.

2.2 Watersheds

2.2.1 Calleguas Creek Watershed Description (Map 5)



The Calleguas Creek Watershed encompasses an area of approximately 343 square miles, predominantly in southeastern Ventura County. The Watershed includes Conejo Creek, Arroyo Santa Rosa, Arroyo Simi, Arroyo Las Posas, and Calleguas Creek, as well as Revolon Slough and Mugu Lagoon. The northern boundary is formed by the Santa Susana Mountains, South Mountain, and Oak Ridge Mountains. The southern boundary is distinguished by the Simi Hills and Santa Monica Mountains. Presently 50 percent of the Watershed is undeveloped open space, 25 percent is agricultural, and the remaining 25 percent is in urban land use. The Watershed ultimately drains to the Pacific Ocean through Mugu Lagoon.

Prior to the 1940s, Calleguas Creek and its main tributaries provided drainage for stormwater and irrigation discharge with rare occurrences of year-round flow. However, over the past 50 years, steadily increasing wastewater discharges and urban runoff now provide portions of Calleguas Creek and its tributaries with constant flow.

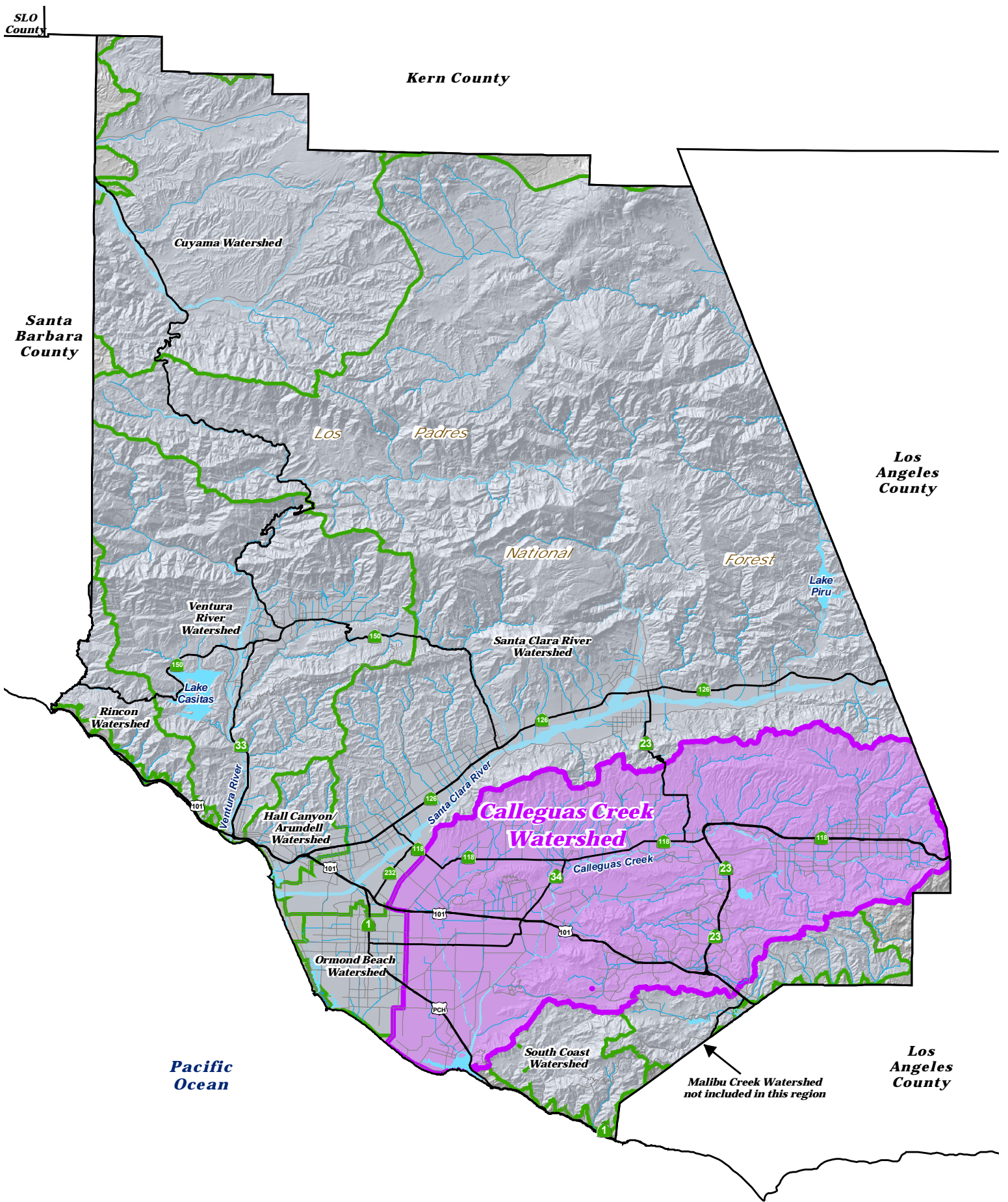
Urban development and agricultural activities within the Watershed have resulted in the degradation of water resources, loss of sensitive ecosystems, floods, and erosion and sedimentation problems. In 1996, a broad coalition of local property owners, water and wastewater agencies, environmental groups, agricultural parties, governmental agencies, and other private interests joined together to openly develop a management plan for the Watershed. The Calleguas Creek Watershed Management Plan (CCWMP) was completed in July 2004 to address the issues impacting the Watershed. The CCWMP recommended 20 action items in the areas of water resources and water quality, habitat and recreation, flood protection and sediment management, agricultural, land use, and public outreach and education.

Issues and Needs in the Watershed

The following were identified as significant issues for the Calleguas Creek Watershed.

Critical Needs

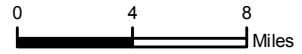
- Water quality
- Water supply
- Water reliability
- Flood control
- Habitat



**WATERSHEDS COALITION
OF VENTURA COUNTY
CALLEGUAS CREEK WATERSHED
MAP 5**



VENTURA COUNTY
RESOURCE MANAGEMENT AGENCY
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Water Quality

- Surface: TMDL – Metals, Salts, Toxicity, Bacteria, Sediment, Pesticides
- Groundwater: Salts, Iron, Manganese

Water Supply

- Better groundwater quality would help reduce the amount of imported water, lessen dependence on outside water and increase groundwater reliability
- Utilization of recycled water
- Public education towards utilization of recycled water
- Development of local supplies
- Development of a drought-proofing plan
- Public education for conservation

Water Reliability – See also Water Supply List

- A need for self- sufficiency

Flood Control

- Building in floodplains
- Planning and land development
- Erosion control to reduce sediment
- Channel capacity – levee construction

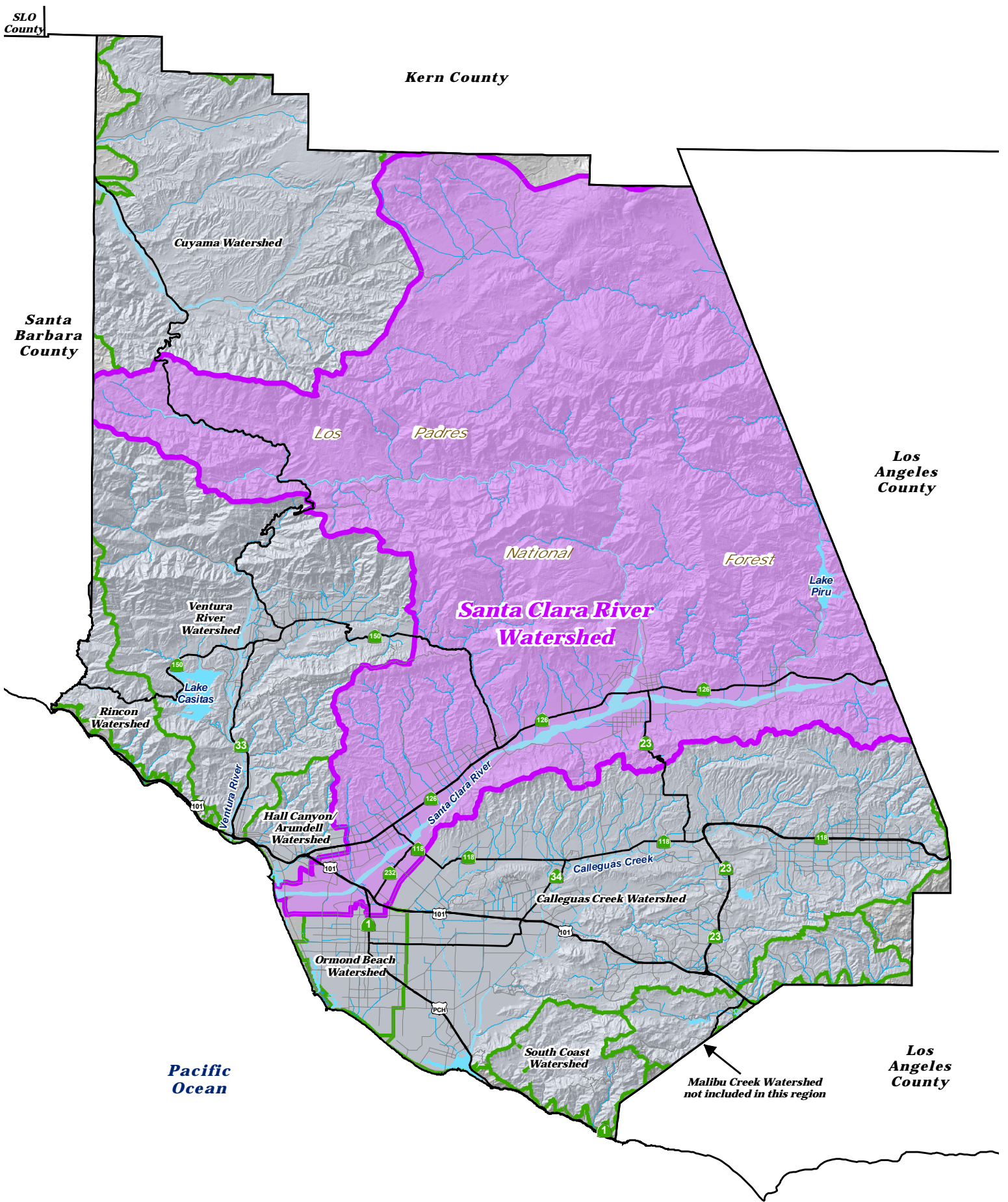
Habitat

- Mugu Lagoon – sediment quality and quantity
- Wetlands areas within the Watershed

2.2.2 Santa Clara River Watershed Description (Map 6 and 6a)



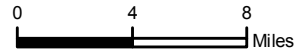
The Santa Clara River is the largest river system in Southern California remaining in a relatively natural state. The Santa Clara River headwater is at Pacifico Mountain in the San Gabriel Mountains. It flows in a generally western direction for approximately 84 miles through Tie Canyon, Aliso Canyon, Soledad Canyon, the Santa Clarita Valley, the Santa Clara River Valley, and the Oxnard Plain before discharging to the Pacific Ocean near the Ventura Harbor. The Santa Clara River and tributary system has a Watershed area of about 1634 square miles. Major tributaries include Castaic Creek and San Francisquito Creek in Los Angeles County, and the Sespe, Piru, and



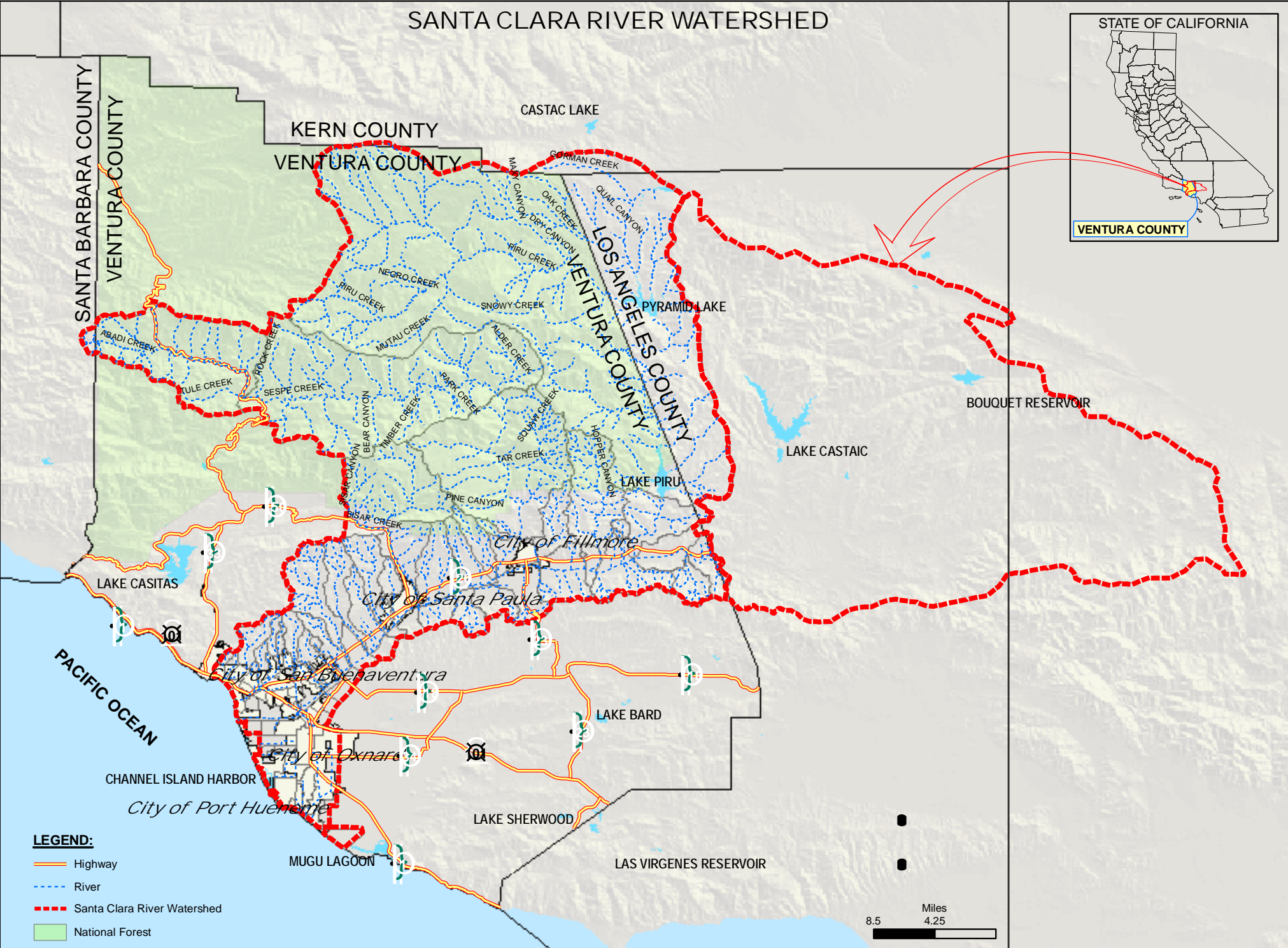
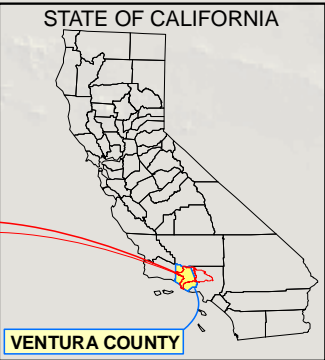
**WATERSHEDS COALITION
OF VENTURA COUNTY
SANTA CLARA RIVER WATERSHED
MAP**



VENTURA COUNTY
RESOURCE MANAGEMENT AGENCY
MAPPING SERVICES - GIS



SANTA CLARA RIVER WATERSHED



Santa Paula Creeks in Ventura County. Approximately 40 percent of the Watershed is located in Los Angeles County and 60 percent is in Ventura County. Please see Map 6a for a map of the entire Santa Clara River Watershed.

About 90 percent of the Watershed is to the east and north of the floodplain in the mountainous terrain of the San Gabriel Mountains, the Sierra Pelona, and the Topatopa Mountains of the Sespe back-country to headwaters near Pine Mountain and Mt. Pinos, and to the south of the river including the Santa Susana Mountains, Oak Ridge, and South Mountain. Much of this area is in the Angeles National Forest and Los Padres National Forest. The remaining 10 percent of the Watershed is largely the relatively flat terrain of the Oxnard Plain, the Santa Clarita Valley, Castaic Valley, the Santa Clara River Valley, and the floors of the larger canyons, including the upper Soledad, and lower Sand, Mint, Bouquet, Placerita, San Francisquito, Piru, Santa Paula, and the Sespe.

Historic records indicate that the climatic and basin characteristics of the Santa Clara River Watershed generally produce an intermittent flow regime in the mainstem; however, flows can increase rapidly in response to high intensity rainfall with the potential for severe flooding. At certain times of the year, the river may have continuous surface flow to the Pacific Ocean from natural watershed discharge. Controlled releases of water from Lake Piru supplement surface flows in the river reach in Ventura County. Incidental flows are supplied from water reclamation plant discharges and imported water runoff in the middle reach from the Santa Clarita vicinity to the Los Angeles County and Ventura County line. It is important to note that the current and future amounts of effluent discharges from these facilities can fluctuate due to several factors including seasonal variations, changes in treatment requirements, population growth, and effluent reuse. These flows are not considered a component of the natural base flows for the river; however, they do constitute a component of the comprehensive hydrological regime (i.e., surface and recharge waters) and are included for planning purposes.

Issues and Needs In the Watershed

Agencies and districts with projects within the Ventura County portion of the Santa Clara Watershed provided information on the key issues of concern with respect to water supply, water quality and environmental/habitat concerns. Following is the list of those issues organized within these three general categories.

Water Supply

- Groundwater and imported water supply
- Water distribution system reliability – interconnection
- Water conservation
- Water recycling – education of end users
- Enhancement of local supply – improved reliability
- Lack of public education on all of the above

Water Quality

- Seawater intrusion
- Septic system pollution – TMDL for nitrogen and chloride or salt loading
- Waste water treatment plant – nitrogen and chloride

- Agricultural runoff – TMDL
- Agricultural and urban erosion – sediment loading/hydrology model
- Stormwater/urban runoff – quality and management
- Basin plan objectives
- RWQCB fines/penalties
- Permit compliance

Environment/Habitat

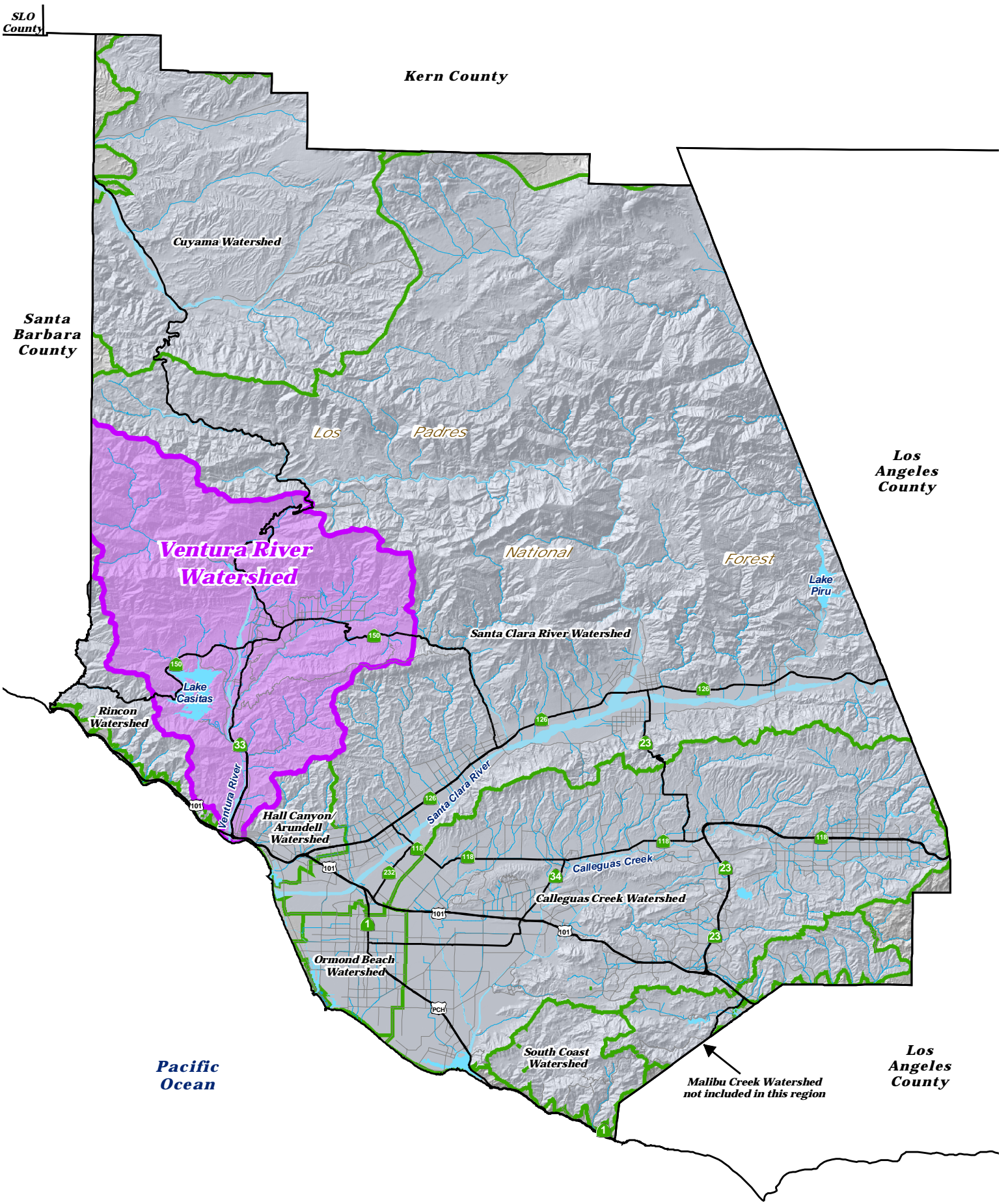
- Floodplain development and land use planning
 - Steep slopes and sensitive areas
 - Hydrology – peak flow
 - Structures and damage
 - Habitat loss
- Infrastructure
- Habitat restoration
 - Endangered species and fish
 - Invasive species
- Disadvantaged communities

2.2.3 Ventura River Watershed Description (Map 7)



The Ventura River Watershed is a coastal Watershed located in the northwestern portion of Ventura County draining an area of 228 square miles roughly half of which is on Forest Service land (USFS, 1997). The Ventura River has several major tributaries including Matilija, North Fork Matilija, San Antonio and Canada Larga. Lake Casitas serves as the primary water supply for the area within the Watershed. The Rincon and Hall/Arundell Watersheds are generally, and for the purposes of this Plan, grouped together with the Ventura River Watershed.

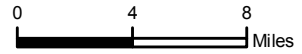
From the upper slopes of the Transverse Ranges, the surface water system in the Ventura River Watershed generally flows in a southerly direction to an estuary located at the mouth of the Ventura River. Groundwater basins composed of alluvial aquifers deposited along the surface water system, are highly interconnected with the surface water system and are quickly recharged or depleted according to surface flow conditions. Topography in the Watershed is rugged, and as a result the surface waters that drain the Watershed have very steep gradients ranging from 40 feet per mile at the mouth to 150 feet per mile at the headwaters.



**WATERSHEDS COALITION
OF VENTURA COUNTY
VENTURA RIVER WATERSHED
MAP 7**



VENTURA COUNTY
RESOURCE MANAGEMENT AGENCY
MAPPING SERVICES - GIS



Malibu Creek Watershed
not included in this region

Precipitation varies widely in the Watershed. Most occurs as rainfall during just a few storms between November and March. Summer and fall months are typically dry. Although snow occurs at higher elevations, melting snowpack does not sustain significant runoff in warmer months. The erratic weather pattern, coupled with the steep gradients throughout most of the Watershed, result in high flow velocities with most runoff reaching the ocean.

The Watershed is minimally developed and compared to other Watersheds of the Los Angeles Region has large areas of good water quality and excellent aquatic habitat. About 30 miles of the upper main Fork Matilija and its tributaries are designated as Wild and Scenic Rivers (USFS, 1997).

While much of the water quality is considered good, the Watershed has been degraded, particularly in the lower areas by both nonpoint and point sources. Beach closures due to bacterial pollution are common. The major point source is the Ojai Valley Wastewater Treatment Plant which was recently upgraded, and septic systems in the Ojai Valley. Nonpoint sources include urban runoff, road building, agriculture and grazing (including confined animal facilities), air deposition, and recreation. Water quantity is an important issue in this Watershed. Groundwater is used for domestic and irrigation purposes and the alluvial basins must be carefully managed and recharged. Groundwater basins generally are aligned with the surface flows and are made up of alluvial material that is quickly recharged and depleted and is highly interconnected with surface flows. The southern California steelhead and other fisheries are restricted or diminished by diversions and dams that have cut off important spawning areas by diminished flow in the main stem of the river and by poor water quality.

Issues and Needs in the Watershed

Agencies and districts with projects within the Ventura River Watershed provided information on the key issues of concern with respect to water supply, water quality, and environmental/habitat concerns. Following is the list of those issues organized within four general categories.

Water Supply Management Optimization

- Water quantity
- Water distribution system reliability – interconnection
- Source protection- providing security and protection
- Additional water supplies and/or increased efficiency

Habitat Restoration

- Steelhead recovery
- Arundo removal

Water Quality

- Pollution prevention
- Stormwater/urban runoff – quality and management
- Septic system pollution

Flood Control

- Channel maintenance
- Watershed assessment of flooding