

Appendix C

Ventura River Watershed Section

Submitted by the Ventura River Watershed Council

Executive Summary Attached

Please see link below for full copy of the Watershed
Management Plan

<http://venturawatershed.org/the-watershed-plan>

Executive Summary



www.venturawatershed.org

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Lake Casitas Intake Structure Under Construction, 1958

Photo courtesy of Casitas Municipal Water District



Executive Summary

The Ventura River watershed is a rare and remarkable coastal southern California treasure; it is water-self-reliant, providing clean water to many farms and residents both within and outside its boundaries.

The Watershed's Story

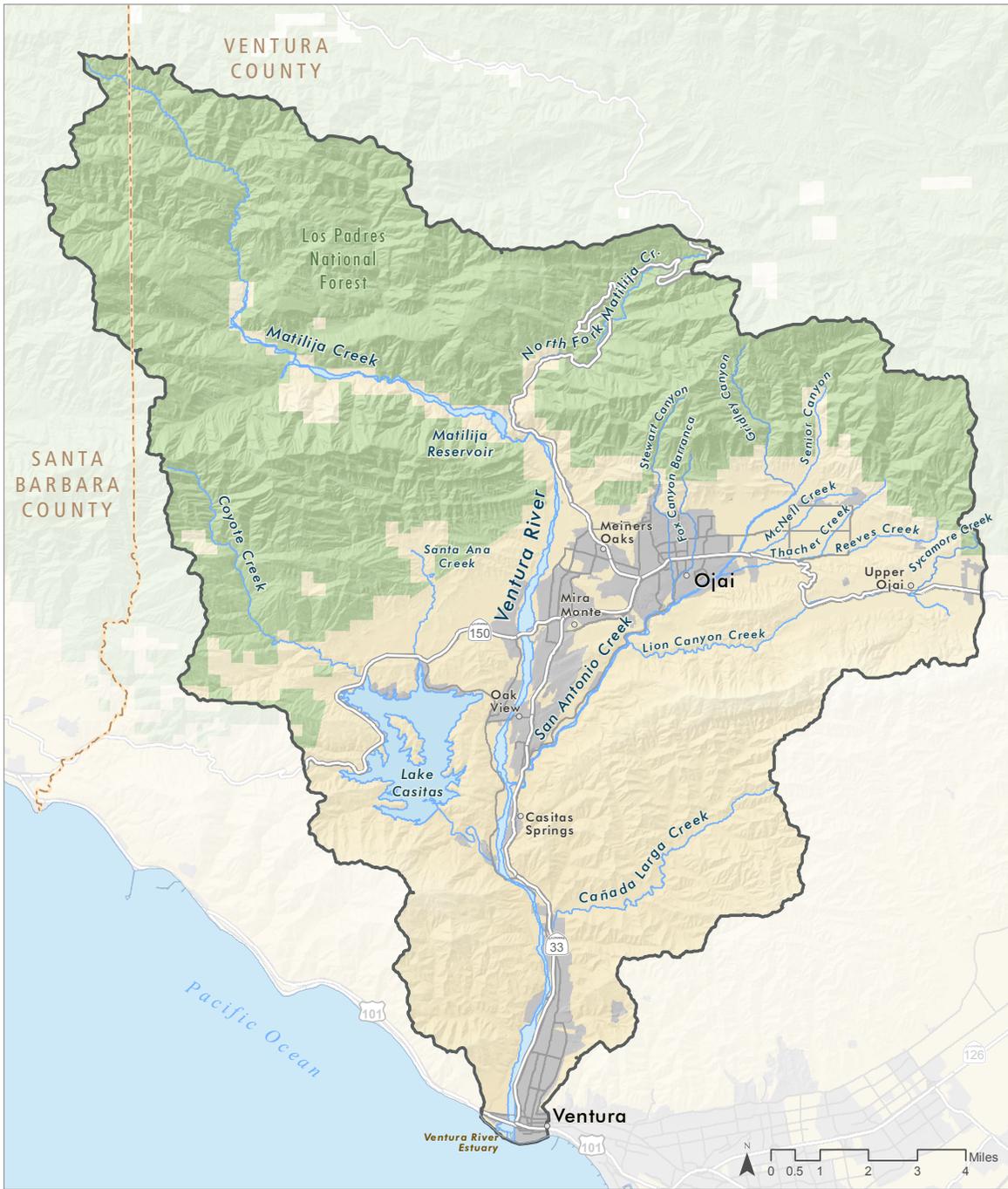
The Ventura River watershed is a rare and remarkable coastal southern California treasure; it is water-self-reliant, providing clean water to many farms and residents both within and outside its boundaries. Stream networks in surrounding watersheds are often channelized and hard to recognize as streams; in the Ventura River watershed river and streams are largely unchannelized. Urban development dominates much of the landscape of southern California; yet cities comprise only three percent of the Ventura River watershed, and developed land only 13%. A unique set of circumstances has left this small watershed with a relatively healthy ecosystem, containing over 100 special status plant and animal species.

At 226 square miles (144,833 acres), the Ventura River watershed is the smallest of Ventura County's three major watersheds. The watershed extends from its Matilija Creek headwaters in the steep Transverse Ranges of the Matilija Wilderness to the Pacific Ocean, 33.5-miles downstream. The beginning of the Ventura River itself is marked by the confluence of Matilija Creek with North Fork Matilija Creek, 16.2 miles from the Pacific Ocean.

The river flows south along the western edge of the Ojai Valley; past the City of Ojai and the communities of Meiners Oaks, Mira Monte, Oak View, Casitas Springs, and through the edge of the City of Ventura. In its final stretch, the river flows through the Ventura River estuary, and if the sandbar is breached, proceeds to the ocean. Along the river's route it picks up water from tributaries, the most significant being San Antonio Creek.

What is a watershed?

A watershed is a basin that catches rain and snow and drains into a central waterbody—in this case, the Ventura River. Every area of land is part of a watershed. Watersheds come in all shapes and sizes and often contain smaller "subwatersheds." There are complex interrelationships among the streams, aquifers, lakes, habitats, people and economies that make up a watershed system, such that changes or impacts to one part of a watershed can ripple through and affect other parts.



Watershed Overview

-  Ventura River Watershed
-  U.S. Forest Service
-  Urban Areas



Data Source:
 California Protected Areas Database v1.8
 Urban Areas: FMMP
 Map Created by GreenInfo Network using Esri software
 October 2013 www.greeninfo.org

Watershed Overview Map

Cycles of drought and flood are the norm. Since 1906, 67% of the years have had less than average rainfall.

Major or moderate floods have occurred once every five years on average since 1933.

Agriculture is the dominant land use: including grazing, it comprises 18.5% of the land area.

Cities comprise only 3.17% of the watershed.

The watershed is comprised of five subwatersheds: Matilija Creek, North Fork Matilija Creek, San Antonio Creek, Cañada Larga Creek, and Coyote Creek.

Steep mountains and foothills comprise most of the land area, with altitudes ranging from 6,010 feet to sea level. Valley floors are home to communities and farms.

Rainfall varies geographically, seasonally, and from year to year. Cycles of drought and flood are the norm. Since 1906, 67% of the years have had less than average rainfall. Many parts of the stream network are typically dry during much of the year. Surface water readily disappears underground in some stream reaches (segments); in others, groundwater regularly feeds streamflow.

Rainfall in the Matilija Wilderness, the river's headwaters, is the highest in Ventura County, averaging 35.17 inches a year, which is over twice that of rainfall at the coast where the yearly average is 15.46 inches. This rain sometimes comes in large storms, which, when combined with the steep topography, can produce fast-moving floodwaters. Major or moderate floods have occurred once every five years on average since 1933.

Agriculture is the dominant land use: including grazing, it comprises 18.5% of the watershed's land area. About half of the water supply goes to agricultural users. The agricultural economy and the watershed's water supply system grew up together, and have a long history of interdependence. Fifty-four percent of the watershed is federally managed.

Limited land development and large areas of protected habitat help support water that is relatively clean; however, surface waters are still considered "impaired" for a number of factors, including trash, algae, water diversion/pumping, eutrophic conditions, low dissolved oxygen, nitrogen, fish barriers, coliform, bacteria, mercury, and total dissolved solids.

Cities comprise only 3.17% of the watershed. Residential land uses occupy 4% of the land area. 44,140 people live in the watershed. The population is 58% white, 37% Hispanic or Latino, 2% Asian, and 3% other races. Income varies widely, and several areas qualify as disadvantaged or severely disadvantaged communities. The strength of the community's existing stewardship is one the watershed's greatest assets.

Part 3 of this plan, the "Watershed Characterization," offers a much more detailed story of the watershed. In mostly nontechnical language, and with many photos and illustrations, the various factors influencing the watershed—from geology and climate to local policies and infrastructure—are described. The Watershed Characterization provides a reference for anyone wanting to know more about the watershed.

Chapter 2.3, “Campaigns,” also tells the watershed’s story—in this case the story of the work already underway to improve conditions in the watershed, the people doing it, the ways they are working together, and some of the key proposed projects and programs that would further advance this work.

Quick Facts

Main Tributaries & Subwatersheds	Matilija Creek, North Fork Matilija Creek, San Antonio Creek, Cañada Larga Creek, Coyote Creek
Jurisdictions	Of the watershed area in Ventura County: County of Ventura (49.1%), US Forest Service (47.7%), City of Ojai (1.9%), City of Ventura (1.2%). A small corner of the watershed is in Santa Barbara County (3.9% of the entire watershed).
Population	44,140
Headwaters	Transverse Ranges
Mouth	Pacific Ocean (Santa Barbara Channel)
Length	33.5 miles (16.2 miles of main stem, plus 17.3 miles of Matilija Creek headwaters)
Area	226 sq. mi., 144,833 acres
Average Annual Precipitation	15.46" (lower watershed) 21.31" (middle watershed) 35.17" (upper watershed)
Median Annual Precipitation	14.12" (lower watershed) 19.20" (middle watershed) 28.74" (upper watershed)
Discharge	Average – 65 cubic feet per second (cfs); Maximum – 63,600 cfs (1978)
Elevation	Highest: 6,010 ft. Lowest: sea level



Ventura River Estuary Looking out to the Santa Barbara Channel

Photo courtesy of Santa Barbara Channelkeeper

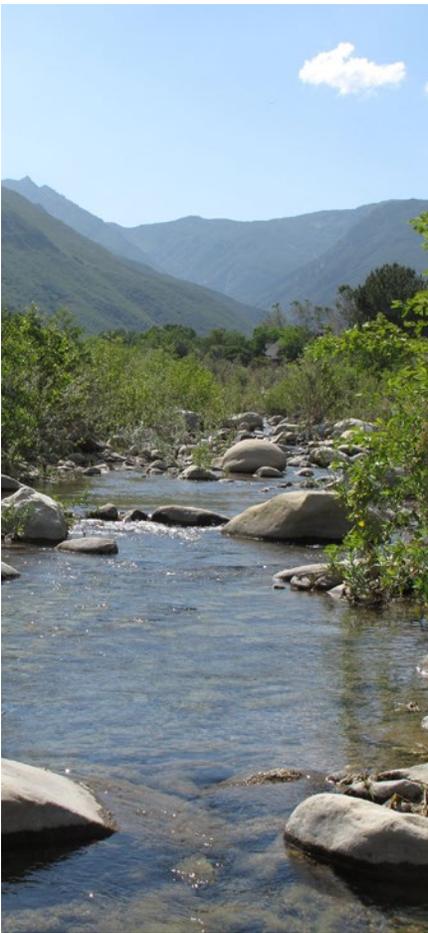
A Collective Management Strategy

Chapter 2.3, “Campaigns,” outlines a strategy to collectively solve shared watershed problems and manage shared resources. As an alternative to focusing on separate individual priority projects or programs, the Council chose to widen the perspective and focus on a short list of six priority regional “campaigns.” The campaigns build upon work already underway, and illustrate specific watershed interrelationships and why collaboration is so important at the watershed scale.

Advancing these priority campaigns depends upon implementation of a variety of different types of projects and programs, involving many different stakeholders at many different levels of effort. By presenting the Council’s priority projects and programs in this broader perspective, the campaigns offer a realistic framework for collectively achieving improvements.

The Council’s six implementation campaigns are:

- **River Connections Campaign.** Seeks to increase understanding, appreciation, and stewardship of the Ventura River and its watershed by connecting people with the river, with information about its history and issues, and with the community working to keep it vital.
- **Resiliency through Infrastructure Campaign.** Seeks to strengthen both infrastructure and local policy in order to reduce the vulnerability of the watershed and its residents to extended droughts, major floods, seismic hazards, and water supply contamination.
- **Extreme Efficiency Campaign.** Seeks to maximize the conservation of water by all water users by continually realizing greater water use efficiency from equipment, technology, and people; pursuing more opportunities to reuse water; and rewarding conservation.
- **Water Smart Landscapes and Farms Campaign.** Seeks to improve and innovate residential and commercial landscape and farm management practices in order to protect, supplement, and extend water supplies, and protect the long-term viability of farms.
- **Arundo-Free Watershed Campaign.** Seeks to remove, and keep at bay, the invasive non-native plant *Arundo donax*, which consumes excessive amounts of water, poses a major fire hazard, clogs flood control channels, and destroys native habitat.
- **Healthy San Antonio Creek Campaign.** Seeks to increase the flow of clean water in San Antonio Creek, increase recharge of the interconnected Ojai Valley Groundwater Basin, and improve the creek’s riparian and instream habitats.



Matilija Creek

Going Forward

Implementation of this plan through the six campaigns will be achieved by individuals and organizations working both independently and collectively. The extent of implementation will depend upon the availability of grant funds and the priorities and budget conditions of dozens of different organizations, as well as landowners and businesses.

The Council is committed to continuing its work on integrated watershed planning, and building upon the momentum and assets it has established thus far.

Goals and Core Findings

The Council developed and approved seven goals for the watershed management plan. All the goals put together form the Council's "vision" and big-picture priorities for the watershed. Each goal is supported by key findings, which describe the key factors that underlie that goal.

These goals are:

Sufficient Local Water Supplies. Sufficient local water supplies to allow continued independence from imported water and reliably support ecosystem and human (including urban and agricultural) needs in the watershed now and in the future, through wise water management.

Clean Water. Water of sufficient quality to meet regulatory requirements and safeguard public and ecosystem health.

Integrated Flood Management. An integrated approach to flood management that improves flood protection, restores natural river processes, enhances floodplain ecosystems, increases water infiltration and storage, and balances sediment input and transport.

Healthy Ecosystems. Healthy aquatic and terrestrial ecosystem structures, functions, and processes that support a diversity of native habitats.

Access to Nature. Ample and appropriate opportunities for the public to enjoy the watershed's natural areas and open spaces associated with aquatic habitats, to provide educational opportunities, and to gain appreciation of the need to protect the watershed and its ecosystems.

Responsible Land and Resource Management. Land and resources managed in a manner that supports social and economic goals and is compatible with healthy ecosystem goals.

Coordinated Watershed Planning. A Watershed Council that fairly represents stakeholders; collaborates on developing an integrated watershed management plan to guide watershed priorities; facilitates communication between public, private, and nonprofit stakeholders; educates and engages stakeholders; provides a forum for collecting, sharing, and analyzing information about, and creatively and proactively responding to, watershed issues; and maximizes grant funding opportunities.

Each of the seven goals has a set of objectives that identify the assumptions about what needs to be accomplished in order to achieve the goal. Section “2.1.2 Goals, Objectives, and Findings” lists each set of objectives.

Core Findings

A set of findings was developed for each goal. These findings are the backstory of each goal; they describe the current watershed characteristics, strengths, challenges, and other factors that give rise to the goal and its objectives. Section 2.1.2 contains the detailed list of findings; the core findings, a subset of the full list, are provided below.



Lake Casitas

Photo courtesy of Michael McFadden

Sufficient Local Water Supplies

- The Ventura River watershed is 100% dependent upon local water sources. Groundwater comprises almost half of the total water produced. The Lake Casitas reservoir is the watershed’s main source of surface water and was designed to maintain supplies during a multi-year dry period.
- Surface water and groundwater are closely connected. Subsurface conditions influence instream surface water levels and flows. Groundwater basins can be quickly recharged.
- There are currently 182 active wells in the Ojai Valley Groundwater basin, 64 of which have been drilled since 2000; in the Upper Ventura River Groundwater Basin, there are currently 149 active wells, 44 of which have been drilled since 2000.
- Wastewater is being beneficially reused. There is potential for and stakeholder interest in pursuing opportunities to expand its use.
- There are opportunities and widespread stakeholder support for supplementing water supplies by capturing additional rainwater and surface flows.
- Many large and small water suppliers serve the watershed, most of whom have some dependency on Lake Casitas.

- Because water supplies are 100% local and the amount of rainfall received annually is highly variable, supplies must be managed with caution.
- Water originating in the Ventura River watershed is used both inside and outside of the watershed, and use is divided roughly equally between the agricultural and urban sectors. Data on groundwater use are incomplete.
- State and federal requirements regulating the amount of surface water that must be available for endangered species affect management of the watershed's water resources. Potential requirements to provide increased instream flows could further reduce water available for municipal, agricultural, and other uses.
- Groundwater is estimated to provide almost half of the local water supply; however, the locations and volumes of groundwater extracted and the effects on streamflow are not accurately known. This data gap inhibits analysis and planning. The Sustainable Groundwater Management Act, signed into law in September, 2014, should result in more groundwater management plans with additional data gathering that will help fill this gap.
- The invasive exotic riparian plant *Arundo donax*, which can be found throughout the watershed, removes scarce water from stream channels at a rate three times that of native riparian plants.
- Increased demand for water has been relatively low; changes in this trend would present management challenges.
- While considerable improvements in conservation and efficiency have been made, significant potential for reducing water demand remains.



**Ojai Valley Sanitary District
Wastewater Treatment Plant**

Clean Water

- Surface water quality is good compared with more developed watersheds in the region and has improved notably in recent decades.
- Despite relatively good water quality, all of the watershed's major waterbodies are on the Clean Water Act Section 303(d) list of impaired waterbodies. Between these waterbodies there are 14 different types of impairments.
- Further efforts are required in order to improve instream water quality conditions and meet water quality regulations.
- The effort and resources devoted to compliance with water quality regulations are considerable and could benefit from better efficiencies, integration, and new funding sources.

- Groundwater quality is generally good enough for drinking and irrigating, though a few parameters exceed standards with some regularity and are monitored and managed accordingly.
- Casitas Municipal Water District and the Bureau of Reclamation maintain proactive programs to maintain good water quality in Lake Casitas.



East Ojai Flooding

Photo courtesy of David Magney

Integrated Flood Management

- Major or moderate floods have occurred once every five years on average since 1933.
- The steep terrain of the Ventura River watershed, coupled with intense downpours that can occur in the upper watershed, result in flash flood conditions where floodwaters rise and fall in a matter of hours.
- Besides riverine flooding, the watershed also experiences alluvial fan, coastal, and urban drainage flooding, and related hazards.
- Flood protection infrastructure, including all three levees, is in need of improvement. Important water and sewer facilities are vulnerable to flood damage because of their location.
- High sediment loads carried and deposited by local streams are a very significant factor in local riverine flood risk and present major challenges to flood management.
- Alterations in natural sediment transport regimes have exacerbated coastal erosion and increased coastal flooding risk.
- Restoring natural floodplain functions where feasible is favored by stakeholders as a least cost/greatest gain strategy for long-term flood management.



Red-Legged Frog

Photo courtesy of Chris Brown

Healthy Ecosystems

- The Ventura River watershed supports a remarkable array of healthy and biodiverse southern California natural habitats.
- The watershed's river and stream network remains largely unchanneled and is supportive of considerable wetland and riparian habitats. These riparian habitats are especially critical in dry southern California.
- The Ventura River estuary, a place where river water and ocean water converge, is an exceptionally valuable wetland habitat and ecological resource.
- Streamflow and pools support aquatic systems in some reaches; other reaches are typically too dry to sustain aquatic habitats.

- The watershed is home to numerous protected species and habitats, including 137 plants and animals protected at either the federal, state, or local level. The watershed is also challenged by invasive, non-native species.
- The federally endangered southern California steelhead is of particular significance. The streamflow and pools, and associated food chain, required for its survival are indicators of healthy aquatic ecosystems. Allocating that “environmental water,” given the watershed’s often dry and always variable climate, is challenging and a continuing source of stakeholder controversy.
- Controlling *Arundo donax* (giant reed) is a priority for habitat restoration, as well as fire prevention, flood protection, and water supply enhancement.
- Removing Matilija Dam is a priority restoration project with widespread stakeholder support. A coalition of stakeholders has been working to remove Matilija Dam since 1999.
- Local land conservancies have proven to be very effective at acquiring, protecting, and restoring strategic habitats for the benefit of the watershed.
- Facilitating the recovery of the steelhead is important to many stakeholders.
- Lack of funding is preventing the US Forest Service from effectively addressing important management issues of concern, including fish passage barriers, illegal and destructive marijuana farms, and the spread of invasive species.
- A changing climate could modify the biological diversity and viability of the watershed’s ecosystems.



Teens Relocating Crawdads, Lower Ventura River

Access to Nature

- Residents and visitors are more likely to gain appreciation of the need to protect the watershed when given the opportunity to visit and learn about the diverse ecosystem processes and services provided by its aquatic habitats. Access to nature is available, though educational opportunities could be substantially improved.
- The watershed is fortunate to have many organizations committed to providing the public with safe access to nature and nature-based recreation opportunities.
- The availability and ease of public access to nature-based activities varies in different parts of the watershed and for different user types.

- The vision of a “Ventura River Parkway”—a network of trails, vista points, and natural areas along the river—is being actively pursued by a coalition of stakeholders.



Ojai Valley’s East End

Responsible Land and Resource Management

- Developed land comprises only about 13% of the total land area in the watershed.
- Local policies and physical constraints have effectively limited development on the watershed’s privately owned land.
- Agriculture is the dominant land use and is a critical factor in the management and stewardship of the land and water.
- Agriculture plays a critical role in maintaining many services supportive of a healthy watershed.
- The viability of agriculture is seriously threatened by water supply issues, high land costs, continued threats from exotic pests, and the challenges of competing in the modern industrial-scale farming business.
- Residential land use makes up about 4% of the area of watershed, and much of this is rural and low density.
- Oil extraction is a significant commercial land use, making up about 3.5% of the area of the watershed.
- Wildfires can threaten local water quality and supply. Moderate wildfires occur once every 10 years on average, and extreme wildfires once every 20 years.
- The population of the watershed is relatively small and the rate of growth low.
- Employment opportunities are diverse. Leisure and hospitality jobs, which rely on the natural beauty and recreational assets of the watershed to attract visitors, dominate the employment landscape.



Coordinated Watershed Planning

- Coordinated watershed planning offers a wide range of fiscal and management benefits.
- Through their participation, Watershed Council members have demonstrated a commitment to the value of a collective approach.
- While participants clearly value the Watershed Council and understand the benefits of integrated watershed planning, process problems challenge the implementation of such planning.

The Plan and the Process

Watershed-level planning has taken hold across the globe as understanding grows that water is not bound by arbitrary jurisdictional authorities; water is bound by the watershed.

The Ventura River Watershed Management Plan was developed over the course of three years, from 2012 to 2015.

The Ventura River Watershed Council, a large and diverse group of stakeholders, put considerable effort into developing the plan: they met regularly as a group and in subcommittees; conversed in emails and on phone calls; faced disagreements; worked out compromises; edited and re-edited draft language.

This management plan is not mandatory and it has no regulatory teeth. It crosses multiple jurisdictions and authorities. Its implementation success depends upon the priorities and budget conditions of dozens of different organizations, as well as landowners and businesses.

Even so, watershed-level planning has taken hold across the globe as understanding grows that water is not bound by arbitrary jurisdictional authorities; water is bound by the watershed. The interconnected biological, chemical, and physical parts and processes that comprise watersheds do not correspond to the fragmented patchwork of land and water regulatory jurisdictions.

Ventura River near Meiners Oaks





The Ventura River, Looking Upstream from Main Street Bridge

Photo courtesy of Santa Barbara Channelkeeper

In California, watershed-level planning is not yet mandatory, but is “highly encouraged,” (for example with preferential access to grant funding) and there is a growing move to institutionalize the watershed-level view. Some water quality regulations are now issued by watershed.

This plan was developed to serve as a guiding document for the Council and to inform the public about the watershed and the factors that influence its conditions. The plan outlines the Council’s priorities for maintaining and improving the watershed’s health and sustainability for the benefit of the people and ecosystems that depend upon it. The plan initiates the integration of the many parts and processes of the watershed through recommendations for projects and programs developed with the complexity of the Ventura River watershed in mind.

The Ventura River Watershed Council was formed in 2006 to work on watershed planning. Twenty-one different organizations now serve on the Council’s Leadership Committee (voting members), representing a balance of perspectives and interests, including government, water and sanitary districts, land management and recreation organizations, environmental nonprofits, agricultural organizations, and businesses.



The Ventura River Watershed Council

Between 2011 and 2014, the Council established its Leadership Committee; developed a mission statement, a logo, and a governance charter; tripled stakeholder involvement and grew member diversity; developed a useful, content-rich website; compiled and inventoried over 500 documents, plans, and policies relevant to the watershed; professionally mapped 36 different aspects of the watershed and posted a Map Atlas online; and developed this plan. Over \$400,000 in local support and grant funding has been invested in building the Council’s capacity as an organization—and it shows. The Council has built capability; it has built confidence; and it has a plan.

The Council cultivates relationships and facilitates partnerships and collaboration.

The strengthening of the Watershed Council for the purposes of producing this plan is in itself an important achievement. The Council now provides a structure for continued input from and dialogue between stakeholders. The Council’s meetings, website resources, e-newsletters, and other services offer opportunities for improved community understanding, interest, and leadership in watershed issues. Compiled data and information help reduce duplicative work efforts and efficiently advance new research and analysis. The Council cultivates relationships and facilitates partnerships and collaboration.

The Council identified four primary purposes of the plan:

1. To tell the story of the watershed and its many interdependencies.
2. To identify and prioritize water-related concerns in the watershed.
3. To outline a strategy to collectively solve our shared watershed problems and collectively manage our shared resources.
4. To better position ourselves for funding.