

### **3.10 SONOMA WATERSHED MANAGEMENT AREA**

#### **Overview**

Region 2 includes the portion of Sonoma County south of the city of Santa Rosa, which contains the drainage basins of the Petaluma River, Sonoma Creek, and Tolay Creek. The northern portion of Sonoma County is located in the North Coast Regional Board's (Region 1) jurisdiction. Figure III-4 illustrates significant watersheds in the North Bay, including Sonoma County. These water bodies drain into tidal flats adjoining the north end of San Pablo Bay. The cities of Petaluma and Sonoma are within this management area. Sonoma County is one of the fastest growing counties in California. This growth is resulting in land use changes and associated environmental and water quality issues.

These watersheds support an array of land uses such as vineyards, livestock facilities, croplands, state parks and urban areas. The western part of southern Sonoma County is generally low, rolling hills. Reclaimed San Pablo tidal flats form the lower ends of the two valleys. The valley floors and adjacent hills are farmed intensively. The hills in southwestern Sonoma County are used largely for grazing dairy cattle and sheep.

#### **Watershed Descriptions**

##### Petaluma River

The Petaluma River and its tributaries drain an area of about 146 square miles in southeast Sonoma County and northeast Marin County. The Petaluma River proper is primarily a tidal slough extending from about the Payran Street crossing in the city of Petaluma to the confluence with San Francisco Bay. This tidal slough reach of the river flows through the extensive Petaluma Marsh which provides substantial fish and wildlife habitat and is one of the larger such habitats in San Francisco Bay.

Upstream of Payran Street the Petaluma River has very limited summer flow, but does support a good stand of riparian woodland habitat, although this is now confined to a relatively narrow corridor along the stream. From approximately the Rainsville Road crossing upstream, the Petaluma River is seasonal and supports an insignificant amount of riparian vegetation.

The northern extent of the Petaluma River watershed is dominated by the Denman Flats area to the north of the city of Petaluma. This area appears to have a strong connection between surface water and ground water. The streams in this area are all very small and ephemeral, and have poorly defined connections to the main channel of the Petaluma River, particularly during the dry season. While the upper reaches of these tributaries support some small amount of riparian vegetation, the lower reaches of the streams typically do not support riparian vegetation. These lower stream reaches flow through what appears to be an alluvial fan and the subsurface flow of the streams in this area is probably too far below the surface to support riparian vegetation. The upper reaches of the streams that flow into the Denman Flats area are mostly seasonal, but there are some reaches that have a small amount of perennial flow.

The areas to the east and west of the city of Petaluma are drained by a few small streams. On the west side of the city some of these streams support small stands of riparian vegetation. On the east side of the city, Adobe Creek, Willowbrook Creek, Lichau Creek, and Lynch Creek support good stands of riparian vegetation. Adobe Creek supports a small population of steelhead trout. A small number of juvenile steelhead has also been observed in Lynch Creek and Lichau Creek, but these streams have a very low potential to support these fish, due to extremely low summer flows.

### Sonoma Creek

Sonoma Creek and its tributaries drain an area of about 170 square miles in southeast Sonoma County between the Mayacamas Mountains to the east and the Sonoma Mountains to the west. Sonoma Creek has its headwaters in Sugarloaf Ridge State Park north of Kenwood and flows through the valley through the city of Sonoma to an extensive tidal marsh before discharging into San Pablo Bay. This tidal marsh reach of Sonoma Creek provides substantial fish and wildlife habitat and is contiguous with other similar habitats in the northern part of San Francisco Bay.

Rainfall ranges from about 23 inches per year in the valley to more than 50 inches in the Sonoma Mountains to the West and the Mayacamas mountains to the east. Approximately 30 percent of the watershed is forest; agriculture (mainly vineyards) account for another 30 percent; and 20 percent is grassland and rangeland. Only 15 percent of the watershed is developed. The watershed provides habitat for several native threatened or endangered species of concern, including steelhead trout (*Oncorhynchus mykiss*), Chinook salmon (*Oncorhynchus tshawytscha*), and California freshwater shrimp (*Syncaris pacifica*). The City of Sonoma, the largest city in the watershed, has a population of 9,128.

Upstream of the town of Glen Ellen the mainstem of Sonoma Creek supports spawning and rearing habitat for steelhead trout. The upstream extent of this habitat is restricted by waterfall in Sugarloaf Ridge State Park. Downstream of Glen Ellen the creek serves as a migration corridor for steelhead, but is generally too warm in the summer for successful rearing; fish in this area are primarily native warmwater species. Several tributary streams on both the east and west sides of the valley also support populations of steelhead trout. From the upper extent of tidal influence upstream to near the Kenwood area Sonoma Creek supports a population of the endangered California freshwater shrimp.

Much of the mainstem of Sonoma Creek in the area between Glen Ellen and Kenwood is very deeply incised and the bed has scoured into thick clay layer. This probably limits the ability of steelhead or salmon to spawn.

The lower portion of the watershed flows through a large alluvial fan formed from the very large amounts of sediment that come off Sonoma Mountain to the west. Old maps show that Sonoma Creek apparently flowed through multiple paths across the broad and very low gradient valley from the city of Sonoma to the tidal marshes to the south.

This large sediment load coming off Sonoma Mountain and effect it has on valley floor stream reaches is best seen in the area where Carriger Creek crosses Arnold Drive and Watmaugh Road south of Sonoma

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#### Tolay Creek

Tolay Creek drains about 10.9 square miles. There are no major tributaries, but there are springs and seasonal drainage ways in the watershed. The Sears Point Raceway is located within the Tolay Creek watershed.

#### **TMDLs (Total Maximum Daily Loads)**

The Sonoma Creek and Petaluma River Watersheds support beneficial uses for cold and warm freshwater habitat, fish migration, and preservation of rare and endangered species, fish spawning, wildlife habit, and contact and non-contract recreation. In addition, groundwater is a source of drinking and irrigation water in rural areas of the county. Impacts from agriculture runoff, construction, hillside development, and urban runoff have resulted in the 303(d) listing of impaired waterbodies for Sonoma Creek and Petaluma River for nutrients, pathogens, and sediment.

The Petaluma River including San Antonio Creek are identified as impaired on the Clean Water Act Section 303(d) list. These water bodies are listed as impaired for the following constituents: Diazinon, nutrients, pathogens, sedimentation/siltation, and trash. Only the tidal portion of the Petaluma River is listed for nickel.

Sonoma Creek and Calabazas Creek are identified as impaired on the Clean Water Act Section 303(d) list. These water bodies are listed as impaired for various constituents including; nutrients, pathogens, sediment, sedimentation/siltation, and Diazinon. The Water Board adopted a TMDL for pathogens for Sonoma Creek in June 2006, which was approved by the U.S. EPA in February 2008. The Sonoma Creek sediment TMDL was approved by the Board in December 2008 and was approved by the State Water Board and EPA. A nutrient TMDL is also under development, anticipated in 2012-13.

The pathogen TMDL cites animal waste (dairies and grazing lands), human waste (on-site disposal systems (OSDS) and sanitary sewer line), and municipal runoff as the primary sources of pathogen pollutants. The TMDL proposes density-based waste load allocations for E. coli, fecal and total coliform. Implementation actions include Water Board oversight of the County of Sonoma on OSDS regulation, development of regionwide Waste Discharge Regulations (WDRs) for sanitary sewer overflows, WDRs

or waiver for dairy facilities, planned WDRs for grazing activities, and increased focus on pathogen reduction measures through the County's and City's Phase II stormwater program. The TMDL also includes ongoing monitoring for compliance and evaluation of TMDL management measure effectiveness. For more information, see our website at [http://www.waterboards.ca.gov/sanfranciscobay/water\\_issues/programs/TMDLs/sonoma\\_crkpathogenstmdl.shtml](http://www.waterboards.ca.gov/sanfranciscobay/water_issues/programs/TMDLs/sonoma_crkpathogenstmdl.shtml)

The goals of the Sonoma Creek Watershed Sediment TMDL and Habitat Enhancement Plan (TMDL) are to: Conserve the steelhead trout population, Restore water quality to meet water quality standards, including attaining beneficial uses; enhance the overall health of the native fish community; protect and enhance habitat for native aquatic species; and enhance the aesthetic and recreational values of the creek and its tributaries. The TMDL sets targets for spawning gravel permeability, pool filling, and substrate concentration – percent fines. In order to achieve the TMDL, controllable sediment delivery resulting from human actions needs to be reduced by approximately 80 percent from current proportion of the total load. These required actions include channel erosion and incision, road and stream crossings, surface erosion (vineyards, grazing lands, etc.), and landslides. Implementation actions include vineyard management practices; grazing management; road design, construction and maintenance; and construction and industrial site management. The TMDL also includes a number of recommended actions for fishery enhancement, such as removal of fish passage barriers, channel enhancements, and maintenance of summer baseflows in streams. For more information, see the Water Board website at:

[http://www.waterboards.ca.gov/sanfranciscobay/water\\_issues/programs/TMDLs/sonoma\\_crksedimenttmdl.shtml](http://www.waterboards.ca.gov/sanfranciscobay/water_issues/programs/TMDLs/sonoma_crksedimenttmdl.shtml)

A large focus of Water Board staff effort in the Sonoma Creek watershed has on developing a Napa River-Sonoma Creek Conditional Waiver of Waste Discharge Requirements for grazing lands (i.e., a waiver of permit requirements based on complying with agreed-upon management practices and development of individual ranch plans) and on developing a joint Napa River-Sonoma Creek Conditional Waiver of Waste Discharge Requirements for Vineyard Facilities, which will include management practices to address road and hillslope erosion, application of fertilizers and pesticides, and so on. Staff will solicit input from stakeholders during both of these waiver development processes. The essential component of the Grazing and Vineyard Waivers will be the owner/operator's completion of a farm water quality plan (farm plan). A farm plan includes a comprehensive inventory and assessment of natural resources, agricultural lands, and management practices. The farm plan must address surface erosion, storm water runoff, sediment delivery from roads, pesticide use, nutrient management, and protection of stream areas. The grazing waiver was adopted by the Water Board in September 2011. Information on this waiver is available at [http://www.waterboards.ca.gov/sanfranciscobay/water\\_issues/programs/TMDLs/grazing/index.shtml](http://www.waterboards.ca.gov/sanfranciscobay/water_issues/programs/TMDLs/grazing/index.shtml)

The vineyard waiver is currently under development and is expected to be completed in 2012. For more information, please see the Water Board website at

[http://www.waterboards.ca.gov/sanfranciscobay/water\\_issues/programs/TMDLs/sonoma\\_crksedimentmdl.shtml](http://www.waterboards.ca.gov/sanfranciscobay/water_issues/programs/TMDLs/sonoma_crksedimentmdl.shtml) for a factsheet and status updates on the Vineyard Waiver program.

Efforts are also beginning on TMDLs for sediments and nutrients for the Petaluma River Watershed. Staff are working on an impairment assessment for the Petaluma River Watershed, developing detailed sampling plans and protocols for nutrient and pathogen impairment. Nutrient impairment is complicated by being caused by various factors and combinations of factors, so it is technically difficult. Basic sources of pollutants are anticipated to be primarily from agriculture and septic systems.

### **Wastewater Treatment and Water Recycling**

In 2009, the City of Petaluma opened a new Waste Water Treatment and Water Recycling Facility, which can treat up to 6.7 million gallons per day (MGD); this plant replaced the old wastewater treatment plant, which had reached capacity. The Ellis Creek Water Recycling Facility treats about 5 million gallons of wastewater each day. In the winter time, highly treated wastewater is introduced back into the Petaluma River. During the summer, the recycled water is introduced into the City's recycled water system and used for irrigation of agricultural lands, two golf courses, and a vineyard. The City annually produces about 600 million gallons of recycled water.

The Sonoma Valley Wastewater Treatment Plant treats approximately 2.5 MGD. The treated effluent is discharged into Schell Slough on San Pablo Bay between Nov. 1 and April 30, and is used for irrigating Carneros hayfields and vineyards during the rest of the year.

There are two municipalities with large water recycling programs: 1) the City of Petaluma and 2) Sonoma Valley CSD/Sonoma Water Agency. The former is regulated under the Water Board's General WRR Order 96-011; the permit will be reissued in 2011. The NPDES order for Sonoma County's program is currently outdated and coverage needs to be renewed.

There are also a number of decentralized Wastewater Systems under Waste Discharge Requirements: approximately 9 facilities with WDRs and about a dozen wineries that have submitted ROWDs (Reports of Waste Discharge), but have no formal WDRs in place.

The County is the lead agency for Onsite wastewater treatment systems. (OWTS or "septic systems"); the Water Board regulates large or non-standard facilities. The existing OWTS waiver with the County is due for renewal.

There are also two projects that apply biosolids (sewage sludge) to land, in the south County area.

### **Groundwater Issues and Activities**

Groundwater ambient data from GAMA (the Groundwater Ambient Monitoring and Assessment) program shows nitrates and arsenic in deep layers in areas of Sonoma County; need are more data on shallow aquifers as well. Staff have reviewed the GAMA data for Sonoma and Petaluma Valleys based on 2004 sampling and are in the process of reviewing and summarizing groundwater use data within the Sonoma, Petaluma, and Kenwood Valleys and lowlands. Use of groundwater occurs mainly by farmers, the cities of Sonoma and Petaluma, and domestic well owners. Staff are also reviewing Sonoma Valley's groundwater management plan to understand their supply and protection issues.

Other groundwater issues, activities, and defined needs at the Water Board include:

- Oversight of two closed landfill sites – Petaluma/Casa Grande (City of Petaluma) and Sonoma Landfill (County). The latter has TCE contamination, but pollutants are not leaving the property.
- Cleanup at a skeet shooting range with a low level of contamination; the Sonoma County Land Trust has volunteered to clean the site as part of the San Pablo Bay Wildlife Refuge project at Sears Point.
- Underground Storage Tank sites – leak detection, prevention, investigation and cleanup at service stations and other underground storage tanks containing petroleum fuel
- Need for shallow groundwater monitoring and groundwater-surface water interaction assessments
- Oversight of Site Cleanup Program (SCP) – investigation of recent and historic spills and leaks at various types of sites
- Oversight of a former Department of Defense (radar tower), which includes a future wetland restoration.

## **Watershed Groups and Watershed Management**

Many watershed management efforts are underway in the Sonoma Creek and Petaluma River watersheds. The Sonoma Ecology Center, as discussed below, has been a leader in watershed stewardship, outreach and education, and monitoring and assessment efforts. The Southern Sonoma Resource Conservation District (RCD) has also been very active in stakeholder outreach and restoration and pollution abatement projects. There is also a variety of active citizen stewardship groups focused on specific creeks or watersheds.

### Sonoma Ecology Center

The Sonoma Ecology Center (SEC) is a non-profit organization established in 1990, whose mission is to work with the community to enhance and preserve ecological health in Sonoma Valley. The SEC works on a broad range of programs, including education and outreach, creek mapping, creek restoration, and watershed organizing to help preserve and restore the natural areas and ecosystems of Sonoma County. The SEC has worked collaboratively with the Water Board, Sonoma RCD, and other partners over the years to promote watershed stewardship and protect habitats in the Sonoma Creek Watershed. Information at: [www.sonomaecologycenter.org](http://www.sonomaecologycenter.org)

### Southern Sonoma Resource Conservation District

The RCD's mission is to improve resource management while supporting sustainable agriculture and our urban communities. They provide technical assistance, education and funding sources to empower landowners to be committed stewards working to improve water quality, prevent soil erosion and improve natural habitat. The RCD also completed a "Petaluma River Watershed Enhancement Plan in July 1999. RCD information is at <http://sscrd.aviandesign.net/>

### Sonoma Creek Watershed Enhancement Plan

In 1997, after a two-year effort, the Sonoma Creek Watershed Enhancement Plan was drawn up in order to provide a local voice on watershed management issues and communicate needs. In 2008, the RCD began updating the plan, working with the Sonoma Ecology Center, vineyard owners, agricultural land owners, community members and local, state, and federal agencies to begin a one-year process updating the plan and incorporating into it new knowledge, as well as new awareness of the probable effects of climate change upon the area. This watershed plan will be put together to frame the key issues affecting the watershed, create a list of studies and projects that can be implemented, and identify projects that provide multiple benefits. Some of the areas they will be looking at include water supply and water quality, groundwater supply and retention, use of recycled water and other implement-able site-specific types of projects, such as stabilizing banks, re-vegetation, putting in buffers to slow erosion, assisting landowners in best management practices, and educating residents about a variety of soil and water conservation techniques.

### Sonoma County Water Agency Stream Maintenance Plan (SMP)

In June 2009, Sonoma County Water Agency (SCWA) staff presented an overview of SCWA's Stream Maintenance Plan (SMP) to Board staff. SCWA is currently applying to the Water Board for a permit to cover its maintenance activities related to flood control. SCWA's SMP works to minimize environmental impacts from their sediment and vegetation removal activities and bank stabilization projects. For example, SCWA is focusing on identifying specific sediment disposal sites where sediment consistently settles out in a stream, removing sediment from those targeted sites rather than removing sediments throughout an entire reach of a stream. SCWA has also prepared a vegetation management plan that details how it will assess the need to remove vegetation versus thinning or pruning. The vegetation plan also a new approach to both reduce the need for future sediment removal and restore native habitat by planting native riparian trees that will encourage canopy growth to shade out in-stream vegetation that traps sediment in the channel. SCWA also plans to plant native in-stream vegetation that will not reduce the hydraulic capacity of the stream channel as part of the SMP.

### Other Creek and Watershed Groups

Other Sonoma County watershed-related groups in Region 2 include the Friends of the Petaluma River <http://www.friendsofthepetalumariver.org/>, the Friends of Adobe Creek, and the Petaluma River Council.

## **Significant Watershed Issues and Needs**

### *Countywide*

- Baseflow issues in creeks, particularly in summer, which may be related to vineyard irrigation and storage.
- Septic system pollutant impacts, needing an inventory of systems and sampling efforts by the County.
- Elevated groundwater nitrates and relation to nutrient TMDLs

### *Petaluma River Watershed*

- The mouth of the Petaluma River is an area of very elevated metals (Ni, Cu, Pb, etc.) as identified in the Regional Monitoring Program reports. Water quality standards are regularly exceeded and are in some cases higher than anywhere else in the Region. Causes are unknown, possibly constant remixing of sediments from tidal action.
- Sedimentation problems in tributaries associated with new development, gullyng and agricultural land use practices
- Baseline watershed assessment targeting 303(d) impairment listing is needed, including coordination with stakeholder groups collecting water quality monitoring and watershed assessment data to update the 303(d) list and support TMDL development
- Water quality and habitat impacts due to waterway maintenance and hydromodificaton
- Implementation of Nonpoint Source Program Management Measures to address: Erosion and Sediment Control, Confined Animal Facilities, Grazing Management, Education/Outreach, Urban Areas, and Hydromodification
- Thorough hydrologic analysis of Petaluma River lower drainage area and impacts of land use changes
- Petaluma River headwaters hydrology study and assessment -- to protect headwaters areas from impacts of future development
- Saving the last intact, high quality riparian habitat sections of the Petaluma River
- Sonoma Baylands wetland restoration

### *Sonoma Creek*

- Development of hillside vineyards and associated erosion and runoff and resultant wastewater management issues
- Increasing water diversions to support increasing vineyard acreage may be affecting stream habitat and anadromous fish survival rate.
- Need to review Sonoma County on-site septic program, participate in quarterly meetings with the County, review proposals for large projects ( $\geq 1500$  gal/day) and projects requesting variances to siting requirements, respond to public concerns, issue permits and enforce as necessary
- Implementation of Nonpoint Source Program Management Measures:
- Erosion and Sediment Control; Grazing Management; Education/Outreach; Forestry; Urban Areas; and Hydromodification
- Development of grazing and vineyard waivers to implement pathogen and sediment TMDLs

### *Tolay Creek*

- Sears Point Raceway expansion and restoration project
- Animal waste management
- Recurrent flooding of homes and domestic septic systems in lower Tolay Creek requiring urgent corrective action
- Implementation of Nonpoint Source Program Management Measures: Erosion and Sediment Control; Confined Animal Facilities; Grazing Management; Education and Outreach; and Hydromodification
- Selective, prioritized enforcement related to TMDL implementation

### **Proposed Water Board Workplan for FY 2010/11 and 2011/12**

- Conduct Sonoma Valley and Petaluma NPDES inspections
- Take action on 401/404 certifications
- CEQA review and comments on general and local area plans
- Dairy inspections and enforcement as needed
- Review the Sonoma County on-site septic program, participate in quarterly meetings with the County, review projects requesting variances to siting requirements, respond to public concerns, and enforce as necessary
- Implementation of TMDLs, including stakeholder outreach, water quality monitoring and watershed assessment, coordination with volunteer monitoring activities
- Implement grazing waiver for Sonoma Creek Watershed
- Develop and implement vineyard waiver for Sonoma Creek Watershed
- Reissue NPDES and Waste Discharge Permits and Waivers of WDRs as needed, including renewal of Waiver of Waste Discharge Requirements for Confined Animal Facilities (primarily dairies), Resolution No. R2-2003-0094
- Implementation of Phase II stormwater permits and oversight by Water Board
- Oversight of construction sites under Statewide Stormwater Permit

### **High Priority Projects for Grant Funding**

Activities to implement TMDLs for Sonoma Creek pathogens and sediments:

- Develop and implement vineyard management plans.
- Develop third party or technical assistance programs to assist with farm/vineyard plan development and implementation.
- Develop Ranch Water Quality Plans (RWQPs) and implement Management Plans for grazing lands and dairies.
- Develop third party or technical assistance programs to assist with RWQP development and implementation.
- Sediment TMDL: implement reach scale habitat and sediment reduction projects
- Sediment TMDL: develop prioritization criteria for reach scale habitat enhancement and incision/erosion projects.
- Studies to complete nutrient TMDL in Sonoma Creek Watershed and to assess impairments in Petaluma River Watershed as part of TMDL development process.

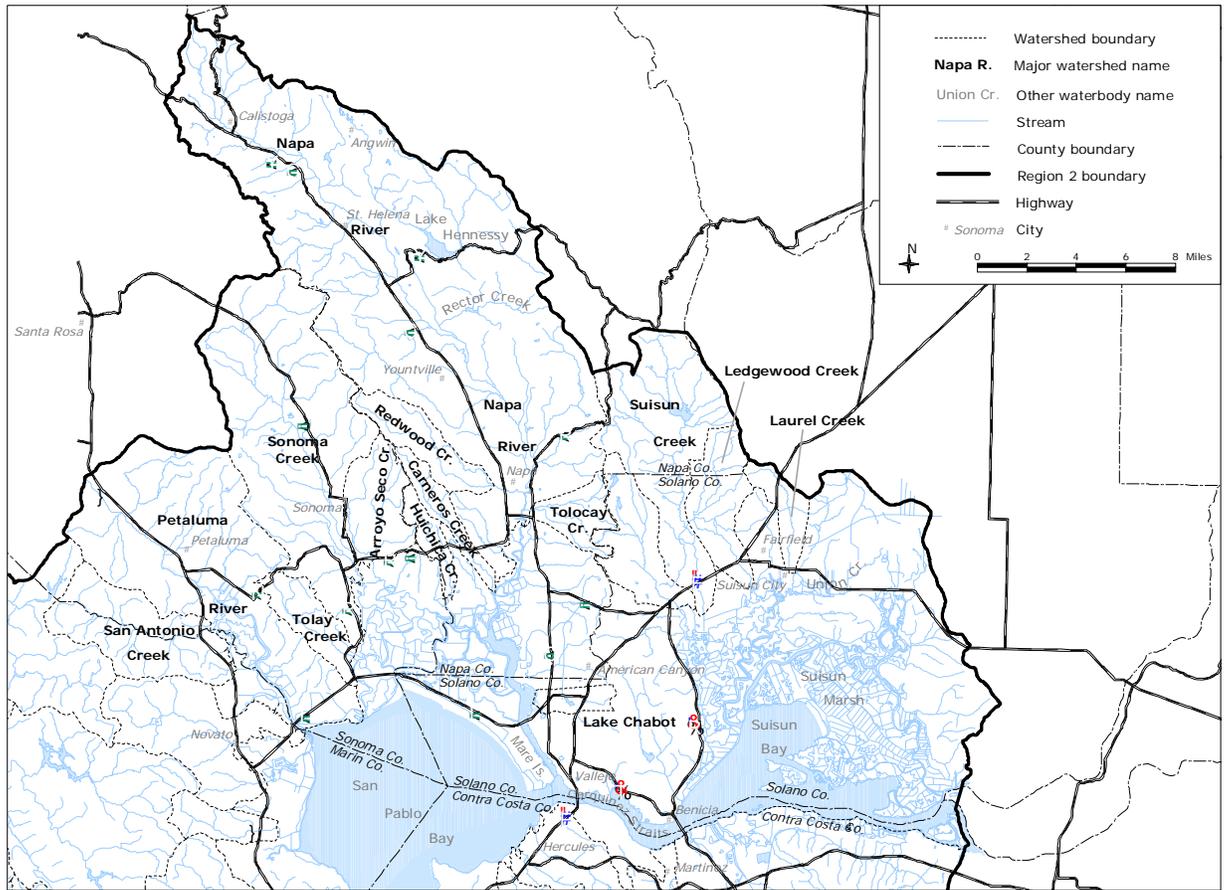


Figure 3-4. Watersheds in Napa, Sonoma, and Solano Counties