

3.4. Marin Watershed Management Area

Overview

Marin County covers 521 square miles and is bounded on the west and south by the Pacific Ocean, on the north by Sonoma County, and on the east by Richardson Bay and San Pablo Bay, the northern arms of San Francisco Bay (Figure 3-3). Marin offers a wide variety of topography, climate, and vegetation, from the tidal flats and wetlands of San Pablo Bay and the rocky intertidal coastline of the Point Reyes Peninsula to the oak woodland, coastal redwoods, and grasslands of Mt. Tamalpais. A significant portion of western and southern Marin County includes the 141,400 acres of open space of Mt. Tamalpais State Park, the Golden Gate National Recreation Area, and the Point Reyes National Seashore, which are recreational resources for the entire Bay Area.

The county can generally be divided into two parts, with differing land uses, population densities, and water quality issues. **East Marin** comprises the relatively heavily urbanized corridor along Highway 101 along San Francisco Bay, consisting of a series of small municipalities extending up the creek valleys. There are 10 incorporated cities or towns, plus unincorporated areas under the jurisdiction of the County of Marin. Land uses are primarily housing, commercial facilities, and light industry, with a few heavier industrial uses such as cement manufacturing, rock quarrying, and machine shops, mostly within or adjacent to the Cities of San Rafael and Novato. The area around Sausalito on Richardson Bay has a number of boatyards and marinas. East Marin is served by several publicly owned sewage treatment systems, including the Sewerage Agency of Southern Marin, Central Marin Sanitation Agency, Novato Sanitary District and the Ignacio Sanitary District, as well as several smaller treatment systems.

West Marin borders the Pacific Ocean and is largely rural, with the major land uses being agricultural (dairies, grazing, and some vineyards and specialty farming) and parklands (federal, state, and county). The area has several small unincorporated under the land use jurisdiction of the County. This area has a number of small wastewater treatment plants and on-site septic systems serving the small unincorporated towns along the coast and along Tomales Bay.

Watershed Descriptions

East Marin: San Francisco Bay

The major watersheds in eastern Marin County are (from north to south) Miller Creek, Gallinas Creek, Novato Creek, San Rafael Creek, Corte Madera Creek, and Arroyo Corte Madera del Presidio. Miller, Gallinas, San Rafael, and Novato Creeks flow eastward from semi-rural headwaters through urban areas and tidal wetlands into San Pablo Bay. Corte Madera Creek and Corte Madera del Presidio flow southeastward from steep hillside headwaters through highly urbanized valleys and discharge into San Pablo Bay and Richardson Bay, respectively. Novato, Corte Madera, and Corte Madera del Presidio Creeks have small steelhead populations. Marin County has extensive tidal and diked wetlands, particularly in the northern part of the county. A large wetland restoration project is underway at the old Hamilton Air Force Base in Novato, and large wetland areas at Bel Marin Keyes and Bahia have been preserved as public land through purchases within the past decade.

South and West Marin: Pacific Ocean and Tomales Bay

On the west side of the County is the 6800-acre Tomales Bay, one of the major estuaries on the Pacific Coast of California. Its diverse ecosystem supports abundant wildlife, and it is a very popular recreation area for kayaking, hiking, and sightseeing. Tomales Bay is an important haul out area for marine mammals and a migratory stop along the Pacific Flyway for many bird species. The Bay is one of four commercial oyster growing areas in California (the others are Drake's Estero, also in West Marin within the Point Reyes National Seashore on the Pacific Ocean, Humboldt Bay in Region 1, and Morro Bay in Region 3), and the Bay is also known for its commercial fisheries and recreational crabbing, clamming and fishing. The Bay is surrounded by significant areas of federal, state, and county parklands as well as by ranch and dairy lands on the east side, with several small communities on both east and west shores.

Lagunitas, Olema and Walker Creeks make up the greater Tomales Bay watershed. Lagunitas Creek watershed, the largest in the county, drains 103 square miles of west central Marin, from the headwaters on the north slope of Mount Tamalpais to the southern tip of Tomales Bay. Lagunitas Creek and its tributaries, including San Geronimo Creek, Devil's Gulch, and Olema Creek, provide prime habitat for coho salmon, steelhead, and California freshwater shrimp. The watershed has supported up to 10% of California's remaining coho salmon runs, approximately 500 fish, though numbers have dropped precipitately over the past few years. The first eight miles of Lagunitas Creek are dammed for municipal drinking water (21.5 sq. mi. of watershed) by the Marin Municipal Water District (MMWD), as the creek flows through a series of reservoirs to Peters Dam at Kent Lake. Land uses in the watershed are primarily residential, parklands, and grazing lands. Olema Creek, which also supports coho, steelhead, and shrimp, flows northwest along the San Andreas Fault and discharges into Lagunitas Creek near its mouth. Olema Creek runs through areas of grazing, horse stables, and parkland.

The Walker Creek watershed is 73 square miles, mostly in northwestern Marin County, with a small portion in Sonoma County. It flows north-northwest and discharges into Tomales Bay near its northern end, close to the mouth of the Bay. The predominant land uses in this watershed are agriculture and grazing. The northern landscape of the lower watershed has open, low, rolling hills, while the upper watershed has rugged canyons. The creek is considered protected habitat by the U.S. Fish and Wildlife Service for coho salmon, steelhead, and California freshwater shrimp. California Department of Fish and Game has initiated a project to reintroduce coho salmon into the watershed, using broodstock from Olema and Lagunitas Creeks.

On the southern coast, Redwood Creek flows from Mt. Tamalpais through Muir Woods National Monument and discharges into the Pacific Ocean at Muir Beach. Redwood Creeks is also a significant coho salmon and steelhead spawning creek. There is currently a major creek restoration project underway at Muir Beach, the mouth of Redwood Creek, by the National Park Service. Easkoot Creek in Stinson Beach and Pine Gulch Creek in Bolinas are small coastal streams containing steelhead. Both of these watersheds are heavily used for recreation, including beach visits, hiking, birding, and horseback riding.

Bolinas Lagoon, located at the southern end of the Point Reyes Peninsula, is another significant Pacific Coast estuary. In 1998, the Lagoon was designated a Wetland of International Importance by the United States Fish and Wildlife Service in 1997, the only wetland along the

west coast of the continental U.S. outside Alaska to be so designated. A total of 447 species of birds, fish and other animals make their home here. The lagoon covers 1,100 acres and is a critical link in the chain of wetlands along the Pacific Coast flyway where migratory birds can feed and roost before moving on. More than 24,000 water birds, such as loons and grebes, and 20,000 shorebirds, including sandpipers and long-billed curlews, visit each year. The lagoon also serves as a nursery for about 200 harbor seals, one-fifth of California's harbor seal population, who use the lagoon to rest, molt, warm themselves and give birth to some 50 pups each spring.

Significant Watershed Issues and Water Board Activities in East Marin

One of the major issues we see in all of Marin County is that of preserving and restoring the integrity of stream systems, including removing the many barriers to fish passage. In eastern Marin, significant water quality issues include wetland and creek modifications associated with new development and flood control, including an ongoing discussion on a proposed extension of the existing flood control project on Corte Madera Creek and a major erosion control project on Novato Creek. Other issues include restoration of tidal and seasonal wetlands, e.g., Hamilton AFB, Petaluma River, and Bel Marin Keys, including the need to incorporate wetland goals from the Baylands Ecosystem Goals Report (1999) into watershed priorities. Water Board staff have commented on these efforts and closely followed planning and design of these projects as they are developed to the permitting stage.

Other potential pollutant issues in east Marin are impacts on San Francisco Bay from pollutants from marinas, houseboats, and boatworks, and pollutant discharges and dredging impacts from recreational lagoons adjacent to creeks and San Francisco Bay. There is also residual intertidal and subtidal sediment contamination from boat building activities during World War II along the Sausalito waterfront in Richardson Bay. Richardson Bay is listed on the 303(d) list of impaired waterbodies for pathogens and a pathogen TMDL was adopted by the Board in December 2009. Richardson Bay has been listed as a federal No Discharge Zone for vessel sewage waste since 1979. All of the eastern creeks in Marin are included on the 303(d) impaired waterbody list for pesticides, including diazinon. In both eastern and western Marin, potential pollution from equestrian facilities is also an area of focus, primarily by the County of Marin.

The County has an active countywide stormwater program (Marin County Stormwater Pollution Prevention Program or MCSTOPPP) that has a creek and watershed awareness focus and has been doing creek assessments in several eastern Marin creeks, including an ongoing bioassessment monitoring program. The County program is working on urban runoff control issues, and a large focus of the next few years will be on continued implementation of Phase II stormwater permitting, which began in 2004. MCSTOPPP also worked on the County's pesticide reduction program as part of the Water Board's pesticide TMDL for San Francisco Bay.

Marin completed an update of its General Plan in 2007, with the theme of "Sustainable Marin". The General Plan process also includes developing watershed plans for East and West Marin. In the past few years, the County has developed a countywide watershed program, which is discussed in more detail in the Watershed Groups and Watershed Management Efforts section below.

Significant Watershed Issues and Water Board Activities in Coastal South and West Marin

Water bodies in west Marin on the 303(d) list are Tomales Bay (nutrients, sediments, pathogens, and mercury), Lagunitas Creek (nutrients, sediments, and pathogens), and Walker Creek (nutrients, sediment, and mercury). Impacts from sediment are also documented in Bolinas Lagoon. Water Board staff have completed a pathogen TMDL for Tomales Bay (September 2005) and mercury TMDL for Walker Creek (September 2008) and are currently working on a sediment TMDL for Lagunitas Creek watershed.

Tomales Bay

In response to the passage of the state Shellfish Protection Act in 1993, which designated Tomales Bay shellfish beds as threatened by rainfall-related coliform levels, the Water Board established the Tomales Bay Shellfish Technical Advisory Committee, to determine remediation measures for the shellfish growing areas. Potential coliform sources include dairies and other confined animal facilities, grazing animals, on-site sewage disposal systems, small wastewater treatment facilities, and recreational use (i.e., boat discharges). In May 1998 there was an outbreak of Norwalk virus, a human pathogen, when approximately 170 people fell ill from eating Tomales Bay oysters. This public health crisis has led to increased focus on remediating on-site systems, providing sanitary facilities for boaters, and outreach to homeowners and visitors. Water Board staff are currently working with the Shellfish TAC and other partners in the watershed on pathogen TMDL implementation activities related to pathogens, including looking at options to designate Tomales Bay as a Federal No Discharge Zone for vessel wastes. The Gulf of the Farallones National Marine Sanctuary has been working with other federal and state agencies (including the Water Board) to develop a Vessel Management Plan for Tomales Bay, which would address all types of vessel wastes as well as mooring issues.

In response to the pollution threats to Tomales Bay, a group of stakeholders that includes local community members, agencies, environmental groups, shellfish growers, and dairy producers, came together in January 2000 to form the Tomales Bay Watershed Council. The Council completed the Tomales Bay Watershed Stewardship Plan in July 2003, which identifies goals and objectives for the watershed and an action plan. The Council succeeded in hiring a part-time coordinator, and the Council received a grant from the State Water Board under Proposition 50 to develop an Integrated Regional Watershed Management Plan (completed in June 2007) and another Proposition 50 grant to develop a long-term trend and source area monitoring program, which was begun in the summer of 2007.

The National Park Service developed a plan for restoration of 563 acres of wetlands on the Giacomini Ranch at the mouth of Lagunitas Creek. Water Board staff were very involved in the initial design stages of these projects through technical advisory committees and stakeholder workgroups. The project was successfully completed, and the wetlands opened to tidal action in October 2008. Since that time the wetlands have shown a large increase in use by fish, invertebrates, birds, and marine mammals, exceeding even initial expectations. Water Board staff will continue to be involved through post-project monitoring and follow-up, including a proposed pedestrian bridge that has been the subject of some controversy due to potential environmental impacts.

The County Environmental Health Services is beginning to address water quality concerns of creek pollution from on-site sewage systems through assessments of pollutant impacts in unincorporated rural areas and exploration of potential remediation strategies. The County received a Proposition 13 coastal nonpoint source grant in 2002 to assess Tomales Bay systems and develop a pilot remediation program, including potential construction of community on-site sewer systems. The community system along the Marshall shoreline was completed in 2008, and the County is seeking funds to expand the system to additional households.

As noted above, in September 2005, the Regional Board adopted the pathogen TMDL for Tomales Bay, which establishes numeric water quality targets for Tomales Bay and its tributaries and laid out an implementation plan and schedule for meeting these targets. The TMDL resolution, staff report, and implementation plan are available at

<http://www.waterboards.ca.gov/sanfranciscobay/TMDL/tomalesbaypathogenstmdl.htm>

Implementing these TMDL actions related to dairies, grazing management, boating, shellfish harvesting, and on-site sewer systems, will be the focus of Water Board activities over the next several years. In July 2008 the Water Board adopted a conditional waiver of WDRs to regulate grazing lands in the larger Tomales Bay Watershed. The goal of the Grazing Waiver is to reduce the amount of sediment, nutrients, pathogens, and mercury in Tomales Bay and its tributaries, by requiring landowners and operators to implement appropriate management measures (MMs) on grazing lands. As of late 2010, over 85% of ranchers had complied with waiver conditions. We continue to work on ensuring full compliance with the waiver and work with other partners in the watershed to address all sources of pathogens to Tomales Bay and its tributary streams.

Walker Creek Watershed

Walker Creek is listed as impaired for nutrients, siltation, and mercury and is also considered impaired by exceedances of coliform. The abandoned Gambonini mercury mine is located east of Tomales Bay on a tributary to Walker Creek as this area was a major source of mercury-laden sediments to Walker Creek and Tomales Bay. The major source of mercury loading in the Walker Creek Watershed is from the Gambonini Mine, which was operated from the 1960's to the early 1970's. Although mining ceased in 1972, the waste containment structure, which consisted of an earthen dam built across a steep canyon channel, was not adequate. It failed catastrophically in the winter of 1982, inundating the surrounding floodplains below the dam with mercury-laden waste. Data indicate that the mercury mine waste polluted Walker Creek to its terminus at the Walker Creek delta in Tomales Bay.

The Gambonini Mine site was cleaned up and stabilized in 2000 through a U.S. EPA Superfund action. Mine site remediation focused on minimizing the runoff of mercury-laden sediment from the former mine site by using a combination of geotechnical engineering, re-vegetation, bio-stabilization, channel reconfiguration, and runoff control techniques to isolate the mining waste from stormwater. Site remediation successfully cut off the source of the mercury-laden sediment to downstream receiving waters. Data demonstrate that legacy mining waste at the terminus of Walker Creek, the Walker Creek Delta, is being buried by cleaner surface sediments.

The Grazing Waiver discussed above implements the Tomales Bay pathogens TMDL, Walker Creek mercury TMDL (adopted by the Board in 2007), and is expected to serve as an early

implementation action for the Walker Creek sediment and the Tomales Bay mercury, nutrients, and sediment TMDLs that are under development. For property owners of 50 acres or more who graze cattle along Walker Creek, the Grazing Waiver requires ranchers to incorporate grazing management practices that minimize mercury discharges and methylmercury production. The primary goal of the Grazing Waiver for this part of the watershed is to keep cattle out of the creek to prevent remobilization of mercury-laden sediment previously deposited on floodplains and overbanks.

Landowner assistance with the identification and implementation of best management practices (e.g., fencing, bank stabilization, off-channel water sources, road repair, wet crossings, etc.) within the Walker Creek watershed is being carried out by the Tomales Bay Grazing Land Partnership through grants awarded to the Marin County RCD and Point Reyes National Seashore. Grant fund sources include state and federal funds, including Proposition 13, CWA 319(h) and Cleanup and Abatement account funding. Monitoring has been done by the Water Board, SWAMP, and OEHHA (and the Tomales Bay Watershed Council).

Additionally, in 2008, the Water Board imposed requirements on the Marin Municipal Water District (District), the owner and operator of Soulajule Reservoir. We required the District to submit a monitoring and implementation plan and schedule by 2009 to: 1) characterize fish tissue, water, and suspended sediment mercury concentrations in the reservoir and Arroyo Sausal Creek and 2) develop and implement methylmercury production controls necessary to attain both in-reservoir and downstream TMDL targets.

It appears that previous and current actions— Gambonini mine site cleanup and restoration and Tomales Bay Watershed Grazing Waiver implementation actions—are sufficient to address mercury in Walker Creek and Tomales Bay, and we plan to continue monitoring to ensure that mercury concentrations continue to decrease.

Additionally, the California Department of Fish and Game (CDFG) began a program to restore coho populations to Walker creek through the release of coho from Olema Creek and reared in their conservation hatchery. Water Board staff will continue to work with CDFG and local stakeholders in this effort.

Lagunitas Creek Watershed

As noted above, Lagunitas Creek and tributaries are significant coho salmon and steelhead habitat. The creek is listed as impaired for sediments, nutrients, and pathogens. The reduced flow from the MMWD reservoirs has dramatically altered stream flows, thereby affecting aquatic habitat. A reduction in the magnitude and timing of peak flows can delay or prevent coho and steelhead migration and lead to an accumulation of sand and fine gravels that impair fish habitat due to a lack of flushing flows. Additionally, large woody debris (LWD), an essential habitat component for salmonids, is retained behind the dam. *Order # WR 95-17: Lagunitas Creek* from the State Water Resources Control Board (1995) delineates provisions to protect coho salmon, steelhead, and California freshwater shrimp, including flow and sediment requirements, LWD placement, and monitoring of turbidity, dissolved oxygen, and water temperature.

MMWD was also required to produce and implement a sediment and riparian management plan and a fisheries management plan for the reach between Peters Dam and Tocaloma. MMWD completed the management plans in June 1997 and has been implementing them since then under the guidance of the Lagunitas Creek Technical Advisory Committee, which includes Water Board staff. MMWD is currently in process of working to prepare a new Fisheries Management Plan to succeed the recently completed 10-year plan mandated by the State Board. Water Board staff are closely involved in plan review.

Ongoing monitoring is conducted by MMWD to determine the success of their restoration program in mitigating the potential effects of the dam. However, this monitoring program does not address all of the necessary issues. Therefore, the Marin Resources Conservation District (RCD), working with the Tomales Bay Watershed Council, secured funding through a Proposition 13 grant to conduct a limiting factors analysis in Lagunitas Creek for salmonids and freshwater shrimp. Water Board staff managed the contract and worked closely with the Council, RCD, MMWD, and state and federal parks on this effort, to help inform the TMDL work on Lagunitas Creek. A stakeholder group (Lagunitas Advisory Group, or LAG) was formed to oversee the limiting factors analysis. Water Board staff are also working closely with the LAG to secure additional funding for the full scale assessment that is necessary to determine the appropriate management actions to restore the watershed and complete the TMDLs. Water Board staff also managed a grant to the County of Marin to do a sediment study on San Geronimo Creek, to improve fish passage on selected tributaries, and reduce sediment inputs from roads and trails.

A local environmental group, the Salmon Protection and Watershed Network (SPAWN) works with volunteers to monitor San Geronimo and Lagunitas Creeks, conduct outreach, and implement salmonid rescue efforts. SPAWN is carrying out sediment reduction projects related to roads as part of a Prop. 50 grant to ABAG (Association of Bay Area Governments).

A recent focus of Water Board effort has been in providing technical input in developing the San Geronimo Salmon Enhancement Plan by Marin County, which was adopted by the County Supervisors in February 2010 (information is at www.marinwatersheds.org). The Plan is a science-based approach to developing riparian and stream protection measures for new and existing development. In 2011, the County obtained funding from CDFG and the Coastal Conservancy to implement a landowner Assistance Program to work with local landowners to identify priority sites for creek remediation and restoration and develop site-specific designs. Water Board staff is working closely with these partners to review project sites and work with permitting them. Staff will continue to provide outreach and technical information to local homeowners and the County as this project proceeds into the implementation phase.

Southern Marin Watersheds

Redwood Creek and the remnant lagoon at its mouth at Muir Beach are the focus of a planning and design process by the Golden Gate National Recreation Area and the County of Marin, which have been assessing the alternatives for restoring the creek to some form of its historic channel and lagoon configuration. Water Board staff sat on an interagency technical planning and design committee and will continue to be closely involved in the ongoing permitting process

and implementation oversight. The Park Service began initial construction on the project in the fall of 2009, and the project is expected to continue for the next few years.

Easkoot Creek restoration project (270 meters, approximately 2 acres) includes both long and short-term actions to improve habitat conditions, including the restoration of the natural floodplain and pool habitats adjacent to Stinson Beach. Water Board staff were involved in both planning and permit efforts. There has also been a major assessment underway for Bolinas Lagoon under the auspices of the Marin County Open Space District, which owns and manages the major part of the lagoon and surrounding land. The foremost resource management issues for Bolinas Lagoon are the continuing sediment accumulation and loss of estuarine habitat. Following a feasibility study by the U.S. Army Corps of Engineers to determine alternatives for restoring the lagoon's tidal prism, the County decided not to proceed as planned with a large dredging project due to uncertainties and concerns about both the need and effects of dredging, which were expressed by numerous agencies, environmental groups, and community members. The County of Marin and the Bolinas Lagoon Technical Advisory Committee has begun a revised study process to determine the existing conditions and projected effects of alternative actions.

Other significant water quality issues in west Marin County watersheds include road erosion, hill and gully erosion and impacts to stream corridors, runoff from confined animal facilities (dairy and horses) and ranches, and on site sewage systems. The County has been an active participant in the six county FishNet 4C program, which works with county governments to develop ways in which county governments can be more responsive to fishery concerns. Water Board staff have worked closely with the FishNet 4C and County staff, and we see this as a landmark effort to work with local government to protect the beneficial uses of the fish bearing streams in both east and west Marin areas.

Watershed Groups and Watershed Management Efforts

Currently, there are watershed management projects in progress in many watersheds throughout the County. These projects are led by the Marin Resource Conservation District, local community groups, volunteer monitoring groups, and the County of Marin. Water Board staff participate in meetings, provide technical support, and oversee grants.

As noted above, Water Board staff participated in a Technical Advisory Committee (TAC) to work with the Tomales Bay Watershed Council, which was funded through a Proposition 50 Integrated Coastal Watershed Management Plan to develop a comprehensive plan for coastal Marin County from Tomales Bay to Bolinas. The project included an assessment of water quality impacts on four Areas of Biological Significance, assessment and mapping of stormwater networks in west Marin, and a septic education and outreach program that will be focused on developing community-based solutions. The TAC provided technical review of all work products and reports, informed and approved methodologies, and helped establish review criteria and objectives.

Working with the Marin County creek coordinator, our staff has developed a process for reviewing hydromodification projects through a monthly Marin Project Coordination meeting,

where project applicants can meet with the permitting agencies such as CDFG and the Army Corps in order to review projects, discuss design changes, and share technical information. This project has worked well to improve project designs and ensure more environmentally sound projects and coordinated permitting. We hope this may become a model for other areas of the Region.

In west Marin, we also worked with the Marin RCD, NRCS, and Sustainable Conservation to develop a permit coordination process for rural landowners. This effort has been a collaborative one in which the permitting agencies have agreed to a process to jointly review and comment on designs for a number of clearly defined stream, riparian, and land management practices to improve habitat and water quality. This process ensures that landowners will be able to get permits in an expedited, facilitated fashion, regulatory agencies are able to have their concerns addressed, and projects are completed in an environmentally sound way. The RCD has acted as the lead agency for CEQA and permitting; funds have come through Proposition 13, Coastal Conservancy, Proposition 50, EPA 319(h) and CDFG grants, with local landowner match.

In response to severe flooding in January 2006, the County Public Works Department has initiated a watershed management program to coordinate flood management and habitat restoration for Marin’s creeks. The goal is to develop watershed management plans for each of Marin’s watersheds. The pilot effort will be in the Ross Valley (Corte Madera Creek) Watershed and initial watersheds will include Novato Creek, Miller Creek, Corte Madera Creek, Arroyo Corte Madera, San Geronimo Creek, and Easkoot Creek. The County will be hiring two new employees and will be seeking grant funding.

Marin County Public Works Department also initiated an ambitious, comprehensive web-based Watershed Program in 2008, which includes maps, watershed histories, watershed assessments, land use information, and planning tools. The program can be viewed at www.marinwatersheds.org.

The following table summarizes some of the local community-based watershed efforts underway in Marin County:

Watershed	Lead(s)	Activities
Corte Madera Creek	Friends of Corte Madera Creek Watershed, Marin County Stormwater Program	Watershed plan, fisheries study, sediment study, bioassessment, flow monitoring
Arroyo Corte Madera del Presidio (Mill Valley)	Mill Valley StreamKeepers, Marin County Stormwater Program	Public education, creek assessment, bioassessment.
Lagunitas Creek	Marin Municipal Water District (MMWD), RWQCB, CA Fish & Game, Marin County, State Parks, National Park Service, SPAWN (Salmon Protection and Watershed Network)	Sediment and riparian corridor management plan, fisheries, Giacomini Ranch wetlands restoration. Grants for limiting factors, sediment budget, erosion control projects, volunteer

Watershed	Lead(s)	Activities
		monitoring.
San Geronimo Creek	MMWD; Salmon Protection & Watershed Network (SPAWN)	Sediment management plan, fisheries assessment restoration, education.
Miller Creek	The Watershed Project, Marin County	Watershed assessment, bioassessment.
Novato Creek	Marin County; Friends of Novato Creek	Watershed assessment, bioassessment,
Redwood Creek (Muir Woods)	National Park Service	Watershed assessment, Restoration planning, Restoration projects completed (Banducci property) and underway (Big Lagoon at Muir Beach), volunteer monitoring.
Bolinas Lagoon	Bolinas Lagoon TAC; Marin County Open Space District	Feasibility studies on impacts of sedimentation on the lagoon, general issues
West Marin Watersheds, Olema Creek, Pt. Reyes	National Park Service	Coho salmon studies/restoration.
Tomales Bay	Tomales Bay Watershed Council (local stakeholders, Marin RCD, County, agency representatives)	Watershed plan developed, monitoring program, ICWMP prepared
Hamilton Wetlands	Coastal Conservancy; US Army Corps	Tidal wetlands restoration underway
North Bay Watersheds in Marin, Sonoma and Napa Counties	North Bay Watershed Association, a consortium of water agencies, stormwater and local government	Developing regional watershed planning and assessment and implementing projects
North Bay Watersheds	North Bay Watershed Council	Meets in conjunction with NBWA to develop project ideas and workplan
North Bay Watersheds, Marin, Sonoma, and Napa Counties	North Bay Watershed Network, leads: Sonoma Ecology Center, Napa County RCD	Promotes cooperation and coordination among community-driven stewardship and watershed groups

Proposed RWQCB Staff Workplan for FY 2010/11 and 2011/12

- Oversee countywide stormwater program including reviewing MCSTOPPP's annual report, conducting annual stormwater program audits of each municipality, and supporting MCSTOPPP's equestrian technical assistance program
- Work with County on ongoing implementation of Phase II stormwater permitting
- Take action on 401/404 certifications and WDRs, using stream circular guidelines and working with the County and Marin Permit Coordination group to promote biotechnical bank stabilization techniques
- Work with the National Park Service on a variety of stream and wetland restoration projects, providing technical input and permitting – including Big Lagoon restoration
- Continue dairy compliance program, with potential equestrian facility outreach and inspections
- Conduct annual sampling of Richardson Bay for pathogens (houseboat and marina areas)
- Reissue NPDES and Waste Discharge Permits as needed
- Conduct annual compliance inspections for NPDES and WDR permit holders

Tomales Bay Watershed Activities

- Work with Marin RCD and Sustainable Conservation to implement permit coordination process for restoration projects on agricultural lands
- Work with MMWD on implementing roads and sediment reduction projects, large woody debris MOU, and fisheries management plan
- Continue ongoing post-remediation Gambonini mine site monitoring and assessment and downstream monitoring; implementation actions for mercury TMDL in Walker Creek Watershed
- Oversee Shellfish Technical Advisory Committee and develop Tomales Bay shellfish contamination source identification and remediation strategy in conjunction with pathogen TMDL; work with other agencies to develop federal NDZ strategy
- Continue Tomales Bay pathogen TMDL monitoring
- Continue implementation of Tomales Bay Grazing Waiver
- Manage 319(h) grants to Marin RCD, UCCE, and National Park Service on projects related to implementation of grazing waiver through monitoring and installation of management practices on grazing lands.

Program Implementation by RWQCB staff working with local partners

- Participate on Lagunitas Creek Technical Advisory Committee
- Review Bolinas Lagoon Technical Advisory Committee sediment study products as needed
- Work with National Park Service, Coastal Commission, and others on vessel management in Tomales Bay
- Work with National Park Service on design and implementation of creek and lagoon restoration activities on Redwood Creek at Muir Beach
- Work with multi-agency, multi-stakeholder Redwood Creek Watershed Assessment Project to prioritize the most important conservation actions in this watershed.
- Work with Marin RCD and other partners on implementation of grazing management WDR, including through 319(h) funded grants to Marin RCD to develop ranch plan template and implement selected management measures on grazing lands

- Grant management for MMWD 319(h) funded projects for sediment management along Lagunitas Creek and with SPAWN on Prop 50 funded project for sediment reduction projects in San Geronimo Valley
- Work with local landowners and County on implementation of San Geronimo Salmon Enhancement Plan
- Work with Tomales Bay Watershed Council on long-term and source area watershed monitoring and Giacomini wetland restoration and monitoring as part of Prop 50 grant
- Work with other agencies on finalizing Vessel Management Plan for Tomales Bay (Gulf of the Farallones National Marine Sanctuary and State Lands Commission lead)

High Priority Projects for Grant Funding

- Implement Management Practices (MPs) according to ranch water quality plans (RWQPs) (grazing and dairy waiver requirements) as part of Tomales Bay pathogen TMDL implementation.
- Water quality monitoring in Tomales Bay, including West Shore, East Shore, and tributaries, to identify specific pathogen sources, including septic and animal waste (i.e. grazing/horse ranch facilities) that will lead to prioritizing actions for source reduction.
- Tomales Bay: pollution source analysis, development of best management practices for sediment, pathogens, nutrients, and metals, implementation of monitoring program, implementation of grazing WDR waiver requirements
- Projects to implement measures to address pollutant impacts from septic systems.
- Miller, Novato, and Corte Madera Creeks: development of watershed plans and implementation of sediment budget study recommendations; watershed monitoring
- Comprehensive watershed analysis and restoration plans to protect threatened and endangered salmonids: Lagunitas Creek, San Geronimo Creek, Olema Creek, and Redwood Creek, including projects to restore anadromous salmonid access to and from high quality spawning and rearing habitats.
- Purchase of existing wetlands and diked baylands for restoration on San Francisco Bay
- Assessment and remediation of on-site sewage systems in South and West Marin
- Programs that develop and implement water quality and fisheries habitat protection plans for farms and ranches in coastal and North Bay watersheds.

Figure 3-3. Marin County Watersheds

