

APPENDIX A.2: WATER QUALITY

Watershed	Existing Condition	Original Cite (Reviewer Edit)
Sonoma Creek	EPA's STORET database has data for 62 sampling events from 11 sampling sites taken over a period from 1973 to 1988. Samples analyzed for: T, DO, BOD, pH, Turbidity, TSS, Conductivity, TDS, Total Fecal Coliform, Nitrate, Nitrite, Ammonia, TKN, Total Phosphorous, Phosphate, etc.	38
	SEC monitors water temperature in Sonoma Creek and major tributaries. Results indicated temperatures at all monitoring stations are suitable for rearing steelhead and should not be limiting factor.	38
	<p>Sonoma Creek identified in 303(d) list as impaired by:</p> <p>Nutrients (MEDIUM PRIORITY, est. completion date = NA) Agriculture/Construction/Land Development/Urban Runoff/Storm Sewers</p> <p>Pathogens (LOW PRIORITY, est. completion date = NA) Agriculture/Construction/Land Development/Urban Runoff/Storm Sewers</p> <p>Sedimentation/Siltation (MEDIUM PRIORITY, est. completion date = NA) Agriculture/Construction/Land Development/Urban Runoff/Storm Sewers</p>	19
	Lack of up-to-date water quality and watershed information poses obstacle to development of TMDL for nutrients, pathogens, and sediment.	43
	Efforts underway to address RWQCB's priorities, including establishment of the Sonoma Conservancy, a consortium of stakeholders led by the Sonoma Ecology Center (SEC) and the Southern Sonoma County RCD (SSCRCD). A TMDL stakeholder forum has been established.	43
	Petaluma River	<p><u>Priority watersheds for erosion control activities identified:</u></p> <p>HIGH PRIORITY: San Antonio Creek, Ellis Creek, Adobe Creek, Lynch Creek, Willow Brook Creek</p> <p>MODERATE PRIORITY: Lichau Creek, Lakeville Tributaries, Liberty Creek</p> <p>LOW PRIORITY: Corona Creek, Capri Creek, Washington Creek, Westside Tributaries, Rush Creek</p>
<p><u>High erosion activity given to:</u></p> <p>Subwatersheds w/ chronic erosion problems on a number of sites; or</p> <p>Subwatersheds w/one major site w/ eroding soil and no vegetation contributing sediment during rain events.</p>		30
High erosion potential given to current and future land use, upslope stability, and presence of downstream dams indicate high risk of erosion.		30
<p><u>Repair priority established by considering:</u></p> <p>Erosion activity</p> <p>Erosion potential</p> <p>Impact of sedimentation on watershed resources</p> <p>Feasibility of repair</p>		30

Watershed	Existing Condition	Original Cite (Reviewer Edit)
Petaluma River (continued)	<p><u>Recommendations on erosion control activities are outlined in Petaluma Watershed Enhancement Plan:</u> Conducting detailed stream channel stability studies.</p> <p>Fencing and revegetation of riparian corridors</p> <p>Implementing BMPs on vineyards and ranchettes located adjacent to streams</p> <p>Stabilizing streambanks with biotechnical stabilization methods</p>	30
	<p>Nitrate groundwater contamination identified by 1982 DWR study. Contamination located northwest of Petaluma and west of Highway 101. Contamination first discovered in 1979. Nitrate contamination due to past agricultural practices (e.g. poultry and dairy operations) and septic tanks. Current agricultural practices have improved as mandated by the CWA (e.g. no more stockpiling of manure). However, an increase in rural development will increase the likelihood of nitrate contamination from faulty septic systems. No information on nitrate contamination of groundwater wells presently in use. Not clear whether new wells are in use.</p>	30
	<p>Area containing nitrate contamination also has elevated levels of electrical conductivity (EC) (e.g. dissolved minerals).</p>	30
	<p>Groundwater testing program on seven wells initiated by 1998. Wells will be monitored for: nitrates, salts, boron, TDS, hardness, coliforms, and organic constituents. Not clear whether present day wells are those outlined in report (e.g. Luchessi Well, Kingsmill well, Prince Park Wells, Airport Well, and Frates Well).</p>	30
	<p><u>Petaluma River identified in 303(d) list as impaired by:</u> Diazinon (LOW PRIORITY) Urban Runoff/Storm Sewers 22 miles</p> <p>Nutrients (MEDIUM PRIORITY) Agriculture/Construction & Land Development/Urban Runoff & Storm Sewers 22 miles</p> <p>Pathogens (MEDIUM PRIORITY) Agriculture/Construction & Land Development/Urban Runoff & Storm Sewers 22 miles</p> <p>Sedimentation/Siltation (MEDIUM PRIORITY) Agriculture/Construction & Land Development/Urban Runoff & Storm Sewers 22 miles</p>	19
	<p><u>Past/Present Monitoring Programs:</u> Monitoring plan developed by U.C. Cooperative Extension Service and the Sonoma and Marin County Farm Bureaus (e.g. Animal Waste Committee). Plan developed to address nonpoint source pollution such as nutrients in streams. The plan sets pollutant concentrations as "trigger levels". If trigger levels reached, the Farm Bureaus initiate a process of response in cooperation with the Regional Water Quality Control Board.</p>	30
	<p>Marin and Sonoma County Agricultural Runoff Influence Investigation (MSCARII) in cooperation w/ California Department of Fish and Game (CDFG). Purpose is to investigate impacts of agricultural runoff in San Antonio Creek, Ellis Creek, and middle reach of Petaluma River. WQ data taken during wet-weather months. Parameters include: D.O., conductivity, turbidity, pH, temperature, ammonia, and B.O.D.</p>	30
	<p>Past monitoring conducted by RWQCB and DWR.</p>	30
	<p>United Anglers of Casa Grande High School monitor Adobe Creek for water quality and fisheries.</p>	30

Watershed	Existing Condition	Original Cite (Reviewer Edit)
Petaluma River (continued)	Petaluma Tree Planters monitored diazinon concentrations in streams during the months of July through November 1998. Petaluma River has been identified in the CWA 303(d) list as being impaired by diazinon.	30
	SFEI RMP monitoring station at mouth of Petaluma River. Monitoring on water quality, sediments, and fish tissue contaminant concentrations.	30
	<p><u>Recommendations for regional monitoring efforts given in Water Quality Monitoring Guidelines for the Petaluma Watershed:</u></p> <p>Establishing a watershed science team to evaluate monitoring activities in watershed.</p> <p>Support landowners to monitor WQ in own properties (e.g. monitoring workshops organized by U.C. Extension)</p> <p>Establish baseline monitoring program and develop database w/ existing WQ conditions</p> <p>Establish an effectiveness monitoring program to determine success/failure of implemented BMPs</p> <p>Monitor the Redwood Landfill site since it is only 2 ft. instead of 5 ft. above water level. (No levees to protect Petaluma March/San Antonio Creek)</p>	30
	<p><u>Significant watershed issues identified by the S.F. Bay RWQCB:</u></p> <p>High metal concentrations found at the mouth of Petaluma River by the Regional Monitoring Program (RMP). Not known whether source of metals is the Petaluma River.</p> <p>Nutrient problems identified by CDFG monitoring in watershed. Needs action including source identification, more frequent inspections of confined animal facilities.</p> <p>Sedimentation problems in tributaries related to new development, gullyng, and agricultural use practices.</p> <p>Need to conduct baseline watershed assessment targeting 303(d) impairment listing, including coordination with stakeholder groups collecting WQ samples to update 303(d) listings and support development of TMDL.</p> <p>Assessment of water quality and habitat impacts due to river maintenance activities.</p> <p>Need for baseline watershed assessment for sedimentation, nutrient, and pathogen TMDL development.</p> <p>Development of hillside vineyards and associated erosion and runoff.</p>	43
	High priority, unfunded activities include WQ and biological monitoring; watershed assessment activities to facilitate development and implementation of TMDL.	43

Watershed	Existing Condition	Original Cite (Reviewer Edit)
Petaluma River (continued)	<p><u>High priority projects for grant funding:</u> Expansion of the Watershed Enhancement Plan</p> <p>Implementation of BMP demonstration projects</p> <p>Development of conservation ranch plans and nutrient budgets for confined animal facilities</p> <p>WQ and biological monitoring</p> <p>Watershed assessment activities</p>	43
Marin County	<p>Significant water quality issue related to wetland modifications due to new development and flood control in creeks and along the Bay shore. These projects include: a proposed flood control project in Corte Madera Creek, a large dredging project in the Bahia lagoon, and a major erosion control project on Novato Creek.</p> <p>Other potential pollutant problems related to discharges from marinas, houseboats, and boatworks; dredging impacts from recreational lagoons adjacent to creeks and the San Francisco Bay.</p> <p><u>High-priority unfunded activities for the San Francisco Bay RWQCB in Marin County:</u> Grazing and rangeland management</p> <p>Inspections of boatyards and marinas</p> <p>Work with private marinas to put in permanent pump-out stations</p> <p>Lagoon management</p> <p><u>High priority projects for grant funding by S.F. Bay RWQCB:</u> Miller, Novato, and Corte Madera Creeks: development of watershed plans and implementation sediment budget study recommendations</p> <p>Purchase of existing wetlands and diked baylands for restoration along S.F. Bay</p>	43 43 43 43
Novato Creek	<p>Erosion inventory and sediment control plan developed by PCI and MCFCD on upper Novato Creek Watershed.</p> <p>Sediment supply to Novato Creek originates at in-stream erosion sites.</p> <p>Novato Creek identified in 303(d) list as impaired by Diazinon (HIGH PRIORITY, est. completion date = 2004) Urban Runoff/Storm Sewers 17 miles</p>	23 23 19

Watershed	Existing Condition	Original Cite (Reviewer Edit)
Novato Creek (continued)	<u>Past/Present Monitoring Programs:</u> MCSTOPPP: purpose is to decrease pollutant concentrations in stormwater. Implements various monitoring programs across Marin County including the Aquatic Macroinvertebrate Sampling Program – Conducted mainly in streams draining into San Pablo Bay (e.g. flowing through heavily developed areas). During the Fall of 1999 and Spring of 2000, MCSTOPPP conducted macroinvertebrate studies in four watersheds (Arroyo Corte Madera, Corte Madera, Miller, and Novato creeks). In general, all watersheds had poorer habitat conditions in reaches located within urban centers, and better conditions in the upper watershed reaches. Six monitoring stations were located along Novato Creek and two along Warner Creek. According to the report, results were somewhat ambiguous and rated stations as poor or fair stream habitats. Ambiguity may have been caused by intermittent flow conditions. There was little variability in stream habitat conditions between lower and upper Novato Creek reaches.	1
	Stafford Lake captures all sediment bedload and large portion of suspended load behind dam. Sediment supply below dam is therefore depleted. May contribute to erosion of streambed below dam. Mainstem of creek from Sutro Avenue to dam has incised and widened. Mainstem not in equilibrium, adjusting to altered conditions (e.g. change in flows due to dam).	23
	Upper Bowman Canyon also incised and widening. Several nick points identified in Novato Creek Erosion Inventory and Sediment Control Plan. Will continue to erode until stabilized. Erosion control management in upper Canyon very good and includes livestock control fencing.	23
	Largest source of sediment supply in Novato Creek is in-stream erosion.	23
	15 high priority sites, 11 medium priority, and 5 low priority sites identified for erosion control in upper Bowman Canyon watershed, and mainstem Novato Creek (above Sutro Avenue to Stafford Dam).	23
Miller Creek	Arroyo Corte Madera Creek identified in 303(d) list as impaired by Diazinon (HIGH PRIORITY, est. completion date = 2004) Urban Runoff/Storm Sewers 9 miles	14
	<u>Past/Present Monitoring Programs:</u> MCSTOPP Aquatic Macroinvertebrate Sampling Program: 6 sampling stations located along Miller Creek. Upper two stations were dry during the fall. Lower three stations rated as poor habitat.	19
Corte Madera Creek	Corte Madera Creek identified in 303(d) list as impaired by Diazinon (HIGH PRIORITY, est. completion date = 2004) Urban Runoff/Storm Sewers 4.1 miles	14
	<u>Past/Present Monitoring Programs:</u> MCSTOPP Aquatic Macroinvertebrate Sampling Program: 13 stations located w/in watershed (e.g. Corte Madera, Ross, Bill Williams, San Anselmo, Sleepy Hollow, and Cascade creeks). Lower reaches in all four watersheds were impacted by urban development while upper reaches retained natural habitat. Results affected by intermittent flows in fall. "Most low-elevation stations had a poor rating of the Index of Biological Integrity (IBI)". "High elevation stations rated as fair or good".	19

Watershed	Existing Condition	Original Cite (Reviewer Edit)
Corte Madera Creek (continued)	<p>Sediment yield unnaturally high due to land use impacts.</p> <p><u>Specially problematic subwatersheds:</u> Sleepy Hollow - contributes 26% of total bedload sediment inflow at the Town of Ross. Evidence of impact caused by past intense grazing activities. Most probably source of sediment are active hillslope processes (e.g. slumps/land sliding).</p> <p>San Anselmo Creek - contributes 29% of total bedload sediment inflow at Town of Ross. Sediment contributions by landslides particularly problematic. Potential causes are fire and pipeline access roads in upper subwatershed.</p> <p>Temperature data collected for Corte Madera Creek Watershed</p>	<p>6</p> <p>(Liz Lewis)</p>
Sausalito	<p>Coliform Sampling by RWQCB for Pathogen TMDL</p>	<p>(Liz Lewis) Farhad Godrati, RWQCB</p>