State Water Resources Control Board Priorities for Public Benefits of Water Supply Projects

Background

Section 79743 of the Safe, Clean, and Reliable Drinking Water Supply Act of 2010 (Act)[1] charges the California Water Commission (Commission) with responsibility for developing a set of methods for quantifying public benefits associated with water supply projects for the purposes of allocating $3 billion in potential General Obligation Bond funding. These funds will only become available if the larger $11.4 billion water bond measure, currently scheduled for the November 2012 ballot, is passed by the voters.

The Act requires the Commission to adopt the methods by regulation, and to consult with the Department of Fish and Game (DFG) and the State Water Resources Control Board (State Water Board) in the development of these regulations. The regulations adopted by the Commission must also include the priorities and relative environmental value of ecosystem benefits as provided by the DFG, and the priorities and relative environmental value of water quality benefits as provided by the State Water Board.

For purposes of developing the regulations, water supply projects eligible for funding include:

(a) CALFED surface storage projects;
(b) Groundwater storage projects;
(c) Conjunctive use and reservoir reoperation projects; and
(d) Local and regional surface storage projects that improve the operation of water systems in the State and provide public benefits.

Projects receiving funding must provide measurable improvements to the Delta ecosystem or to the tributaries to the Delta, and funds cannot be used for the costs of environmental mitigation or meeting compliance obligations except for those associated with providing public benefits. Additionally, funds may only be used for the following public benefits associated with water storage projects:

(1) Ecosystem improvements, including changing the timing of water diversions, improvement in flow conditions, temperature, or other benefits that contribute to restoration of aquatic ecosystems and native fish and wildlife, including those ecosystems and fish and wildlife in the Delta.

(2) Water quality improvements in the Delta, or in other river systems, that provide significant public trust resources, or that clean up and restore groundwater resources.

(3) Flood control benefits, including, but not limited to, increases in flood reservation space in existing reservoirs by exchange for existing or increased water storage capacity in response to the effects of changing hydrology and decreasing snowpack on California's water and flood management system.

(4) Emergency response, including, but not limited to, securing emergency water supplies and flows for dilution and salinity repulsion following a natural disaster or act of terrorism.

[1] Senate Bill x7-2.

(5) Recreational purposes, including, but not limited to, those recreational pursuits generally associated with the outdoors.

The funding for proposed public benefits is limited to 50 percent of the proposed cost of the associated water supply project and at least 50 percent of the public benefits funding provided for any project must be attributed to ecosystem improvements, as described in (1) above.

Methods for Quantifying Public Benefits

The California Department of Water Resources (DWR), on behalf of the Commission, hired a consultant (CH2M Hill) to assist in developing methods for quantification of public benefits. Under DWR's direction, and with input from the DFG and the State Water Board, CH2M Hill has prepared a draft report[2] that identifies and reviews the available tools and methods for quantifying benefits. The report includes recommendations for methods that could be used to quantify different categories of public benefits. The recommended methods primarily include economic models that can be used to monetize environmental benefits and, thus, provide a common denominator by which projects can be compared to one another and across benefit categories (i.e., the relative benefits of different projects). Converting public benefits to economic value also provides a mechanism for determining how much money should be awarded to priority projects and the cost effectiveness of proposed projects, and for ensuring that the cost share requirements are met. In most cases, however, the physical benefits of a project (e.g., acres of wetlands restored, stream miles meeting temperature objectives, etc.) will need to be quantified to reliably assign an economic benefit. The Commission may consider and incorporate the recommended methods into their regulations.

In addition to public benefit quantification methods, the Act also requires the Commission to include in the regulations the priorities and relative environmental value ecosystem and water quality benefits as provided by the DFG and the State Water Board, respectively. Therefore, funding decisions presumably will be based on a combination of the economic value of public benefits and the priorities provided by the DFG and the State Water Board.

Priorities and Relative Environmental Value of Water Quality Benefits

Detrimental water quality and ecosystem impacts of water supply projects are well documented and can include adverse chemical, physical, and biological changes to water and habitat. For example, diversion of water can reduce in-stream flows to the point where aquatic habitat and aquatic life is reduced or eliminated. Impounding water in a reservoir can result in increased water temperature and decreased oxygen content, direct elimination of riverine habitat, undesirable changes in water column nutrient chemistry, and other impacts. New water supply projects can be designed to minimize water quality and ecosystem impacts, and even be designed to rectify these impacts where they have historically

[2] DWR Draft Report: Description and Screening of Potential Tools and Methods to Quantify Public Benefits of Water Storage Projects. Prepared by CH2MHill. Available at: http://cwc.ca.gov/cwc/docs/Methods_Tools_Quantification_PublicBenefits.pdf

occurred. However, development of new water supplies for consumptive use has the potential to adversely affect water quality and ecosystems at and downstream of the source of supply. The State Water Board, therefore, encourages the Commission to adopt methods that define the net water quality and ecosystem benefits, taking into consideration the water quality and ecosystem "costs" incurred by proposed projects, as well as the benefits.

The Water Board's highest priorities for funding of water quality benefits associated with water supply projects, as defined in the Act, include projects that:

1. Improve water temperature conditions in water bodies on California's Clean Water Act (CWA) Section 303(d) list that are impaired for temperature;
2. Improve dissolved oxygen conditions in water bodies on California's CWA 303(d) list that are impaired for dissolved oxygen;
3. Mitigate or control mercury in water bodies on California's CWA 303(d) list that are impaired for mercury;
4. Reduce salinity concentrations in water bodies on California's CWA 303(d) list that are impaired for sodium, total dissolved solids, chloride, or specific conductance/electrical conductivity;
5. Result in Delta tributary stream flows that more closely mimic natural hydrograph patterns or other flow regimes that have been demonstrated to improve conditions for aquatic life;
6. Create additional supply capacity south of the Delta, and offset/reduce the current or future water demand from the Delta and its tributaries; and
7. Clean up or restore groundwater resources in high use basins.

These priorities are not listed in order of priority since the State Water Board cannot evaluate the relative environmental benefits of prospective projects or generally elevate the importance of one water quality benefit over another without information on the specific merits of the projects or the ability to evaluate tradeoffs. Additionally, the listed priorities do not necessarily reflect the State Water Board's overall priorities for water quality improvement and protection; rather, they reflect high priority water quality issues that could be positively influenced by water supply projects as defined by the Act.

Following is additional information on each of the above-listed priorities:

Improve Temperature

Water temperature influences physical, chemical, and biological processes of an aquatic ecosystem. For example, temperature affects the toxicity of chemicals, physical habitat, and the life cycle, growth rate, and survival of aquatic life. The temperatures of water bodies, which generally vary seasonally, determine the type of species that are present. Reservoirs often result in creating habitats that induce a shift from coldwater species to warmwater species, and can further impact coldwater species through increased predation (e.g., bass prey on salmon smolts).

Impounding water impacts temperature regimes within the reservoir itself and downstream of the dam. While free-flowing streams tend to have homogenous temperatures, due to relatively shallow depths and mixing, water in reservoirs are warmer at the top, where the surface is exposed to sunlight, and

colder at the bottom. These conditions often cause the reservoir to be become temperature-stratified. A reservoir influences the temperature of the stream immediately below the dam by changing the natural flow regime, both in quantity and quality. These effects depend on the means in which water is released from the reservoir, which may be for hydropower, water supply, flood control, or fish passage. Water temperature, as well as the amount of nutrients present, also affects the amount of dissolved oxygen in the water (dissolved oxygen impacts are described in the next section). When a reservoir is stratified, water released from the surface will be warm, and tends to be oxygen-rich and nutrient-depleted. Water released from the bottom will be cold, and tends to be oxygen-depleted and nutrient-rich (this is especially true for newer reservoirs where large quantities of flooded vegetation decay over a period of time). Such extremes, compared to the natural temperatures to which aquatic species evolved, can adversely impact native aquatic life.

Among the 71 water bodies (rivers and streams) currently on California's CWA 303(d) list of impaired water bodies that are listed for temperature impairment, 41 water bodies are downstream of reservoirs (Attachment 1). While stream temperature can be impacted by factors other than those related to water storage (e.g., removal of riparian vegetation, agricultural return flows, water diversions), about 40 percent of the 41 temperature-impaired water bodies downstream of reservoirs may be impacted by dam construction, upstream impoundment, and/or flow regulation/modification. The State Water Board supports funding of projects that provide quantifiable improvements in temperature levels to reduce or eliminate exceedances of water quality objectives for temperature in waters downstream from reservoirs. Effective temperature improvements involve the design and operation of reservoirs so the manner of releasing water, both physically and temporally, more closely mimics, to the extent feasible, the natural temperature regime of the downstream waters prior to the project.

Improve Dissolved Oxygen Levels

Almost all aquatic life depends on oxygen dissolved in the water for their health and survival. As with temperature, dissolved oxygen in a reservoir may become stratified. As mentioned in the discussion on temperature above, the extent and duration of reservoir stratification is affected by its depth, shape, and other factors. Waters at the surface become warmed by sunlight, and cooler, denser waters remain near the bottom. Although cooler water can hold more dissolved oxygen, the surface waters of a reservoir may be well-oxygenated, while water at the bottom may become deoxygenated and not able to support life. This is especially true for new reservoirs, which can become anoxic due to decaying vegetation and microbes that deplete the water of oxygen, as well as for reservoirs that receive high levels of nutrients from human or animal wastes, including fertilizers. Water releases located deeper in a reservoir generally contain lower dissolved oxygen levels, which may alter aquatic habitat and harm aquatic species. At the other extreme, water that passes over a spillway and plunges into a pool at the base of the dam can cause too much air to be in the water creating a supersaturated condition that can be lethal to some fish species (gas bubble disease).

Whether the reservoir releases are from near the top or the bottom of a dam (i.e., higher temperatures and dissolved oxygen versus lower temperatures and dissolved oxygen), the downstream habitat and aquatic life are often subjected to conditions that are inconsistent with those of a free-flowing stream.

There are currently 139 water bodies on California's 303(d) list of impaired water bodies that are listed for dissolved oxygen impairment (Attachment 2). Seven of those water bodies are reservoirs, and 75 are water bodies downstream of a reservoir. Although agricultural discharges and other nonpoint sources are common causes of lowered dissolved oxygen levels, upstream impoundment, dam construction, and flow regulation/modification are identified as potential sources of dissolved oxygen impairment in Northern California. Therefore, the State Water Board supports funding of projects that provide quantifiable improvements in dissolved oxygen levels so that water quality objectives for dissolved oxygen are met in and downstream of reservoirs. Like temperature considerations, effective dissolved oxygen improvements involve the design and operation of reservoirs so the manner of releasing water, both physically and seasonally, more closely mimics, to the extent feasible, the natural regime of the downstream waters prior to the project. Many of the design and operation factors that address dissolved oxygen impairment will also improve temperature levels.

Control and Mitigate Methylmercury

Methylmercury is a neurotoxin that poses health risks to humans and wildlife. The primary route of exposure is through consumption of fish, and most fish contain at least some concentration of methylmercury. This has prompted the Food and Drug Administration and the California Office of Environmental Health Hazard Assessment to recommend that sensitive populations (women of child-bearing age and children) limit or avoid fish consumption. Approximately 65 percent of California's reservoirs have been predicted to contain fish with methylmercury levels high enough to warrant a mercury control program.[3]

Mercury enters the water column through a variety of sources, including erosion of rock and soil containing natural mercury, atmospheric deposition, and past and present waste discharges (e.g., mining waste, municipal wastewater, storm water, etc.). Particle-bound inorganic mercury settles out in reservoirs and other depositional areas where bacteria in the sediment convert it to methymercury, the form that is biologically available and can bioaccumulate in higher trophic level organism. Reservoirs, therefore, have the potential to amplify the adverse effects of mercury in the aquatic environment. Furthermore, the rate of methylation and the toxicity of mercury to aquatic life are affected by water temperature, dissolved oxygen, and salinity, among other factors.

There are currently 184 water bodies on California's 303(d) list of impaired water bodies that are listed for mercury impairment (Attachment 3). Among those water bodies, 74 are reservoirs and 86 are water bodies downstream of reservoirs. The number of listings is expected to double in the 2012 listing cycle as a result of applying a more stringent numeric listing criterion. Mercury control in reservoirs and other water bodies is, therefore, a high priority for the State Water Board. The State and Regional Water Boards are in the process of developing a statewide water quality control program for mercury. The mercury control program, once developed, may include a statewide reservoir mercury Total Maximum Daily Load ("TMDL") and control program to address mercury-impaired reservoirs. Accordingly, mercury

[3] Chris Foe, Central Valley Regional Water Quality Control Board. Personal Communication, December 20, 2011. Preliminary forecast based on Surface Water Ambient Monitoring Program data from 184 lakes.

controls incorporated into new or existing water supply projects would create significant public benefits and should be a priority for funding.

Reservoir management strategies to control mercury accumulation may include reducing the source of mercury before flooding, fisheries management, capping and dredging bottom sediment, aerating anoxic bottom sediment and waters, water level management, changing the timing and location of reservoir discharges, and limiting the extent of flooded areas.

Reduce Salinity Concentrations

Elevated salinity in California's surface water and groundwater can damage crops, degrade drinking water, and damage industrial equipment. High concentrations of salt in supply water also inhibit the ability to recycle water. Salts are naturally occurring in the environment, and water quality concerns are generally related to transport and concentration of salts associated with human activity. The primary sources of salinity include agricultural drainage, wastewater, and seawater intrusion to both surface water and groundwater. The economic impacts from salinity have been estimated to be in the millions of dollars with cost predicted to exceed one billion dollars by 2030 in the Central Valley alone.[4]

California's CWA 303(d) list of impaired water bodies currently lists 137 water bodies as impaired for salinity, measured as chloride, sodium, electrical conductivity/specific conductance, and/or total dissolved solids (Attachment 4). Among those water bodies, 68 are water bodies downstream of a reservoir, and two are reservoirs. The other water bodies listed for salinity impairment are saline lakes, wetlands, and the Delta estuary.

Salt in the Delta is derived from tributary sources as well as the Pacific Ocean. Delta watershed hydrology influences salt concentrations because freshwater inflows from the tributaries repel or balance seawater intrusion, which is also affected by tidal influences and water diversions. Changes in hydraulic and hydrologic patterns caused, in part, by the construction and operation of reservoirs, the influence of the Delta export pumps, and modification of Delta channels has resulted in changes in salinity. The State Water Board has established salinity water quality objectives for key locations in the Delta. The State Water Board is currently in the process of reviewing the southern Delta salinity and the San Joaquin River flow objectives contained in the Bay-Delta Plan (the existing objectives have been exceeded on numerous occasions in the past). The State Water Board supports funding of projects that provide quantifiable improvements in Delta or San Joaquin River salinity, or reduce or eliminate exceedances of the water quality objectives for these water bodies. Effective salinity improvements may involve the release of stored water to meet salinity objectives, operational or physical changes at the Delta export pumps, operational or physical changes to Delta channels, agricultural drainage treatment or re-use, and re-operations of agricultural drainage (e.g., real time salinity management).

Given that some salinity impairment is caused or exacerbated by flow regulation/modification, and can be mitigated by manner, volume, and timing of reservoir releases, the State Water Board supports

[4] Howitt, R. et al. (2009) The Economic Impacts of Central Valley Salinity. Final report to the State Water Resources Control Board. Contract 05-417-150-0 (University of California Davis).

funding of projects that provide quantifiable improvements in salinity levels to reduce or eliminate exceedances of water quality objectives for salinity in waters downstream from reservoirs.

Restore Flow/Hydrograph Variability in Delta Tributaries

Hydrology of the Delta watershed has been highly regulated by water diversion, storage, and use, and, as a result, flows have become more homogenous. Native aquatic species, which have evolved to take advantage of flow and habitat variability, have been adversely affected by physical and flow-related habitat simplification, which often favors exotic species over native species. This concept, and the supporting science, is described and incorporated in the State Water Board report entitled "Development of Flow Criteria for the Sacramento-San Joaquin Delta Ecosystem"[5], which includes flow criteria expressed as a percentage of the unimpaired hydrograph rather than as static numbers. The report indicates that Delta "inflows should generally be provided from tributaries to the Delta watershed in proportion to their contribution to unimpaired flow unless otherwise indicated."

Water supply projects typically result in net decreases to in-stream flows due to consumptive use, but new and existing projects can be operated in a manner that mimics natural unimpaired hydrographs to the benefit of native species and their habitats. For example, pulse flows can be incorporated into reservoir operating regimes to maintain channel function, enhance outmigration, or trigger ocean entry of fishes. Water supply projects resulting in Delta flows or Delta tributary stream flows that replicate natural hydrograph patterns or have been demonstrated to improve conditions for native aquatic life, should be given high priority for funding. Specifically, projects that improve flow for the Sacramento-San Joaquin Delta Ecosystem are a high priority for the Water Boards.

In December 2010, the State Water Board also completed a prioritized schedule and cost estimate to complete instream flow studies for Delta tributaries[6]. The report includes a detailed list (Schedule 1) of Sacramento River and Delta tributaries that are high priorities for conducting instream flow analyses and for development of instream flow criteria. Projects that implement instream flow criteria established for rivers and streams identified as "Priority 1" in Schedule 1 of the report should also be considered a priority for funding.

We also encourage the commission to prioritize projects designed to divert and store (in surface impoundments or groundwater basins) high flows that exceed established instream flow criteria caps or other levels that are demonstrated to exceed flows needed for aquatic habitat or cause human or environmental harm.

Reducing Current or Future Water Demand on the Delta Watershed by Developing Local Water Supplies

[5] State Water Resources Control Board (2010). Development of Flow Criteria for the Sacramento-San Joaquin Delta Ecosystem. Available at: http://www.swrcb.ca.gov/waterrights/water_issues/programs/bay_delta/deltaflow/docs/final_rpt080310.pdf

[6] State Water Resources Control Board (2010). Instream Flow Studies for the Protection of Public Trust Resources: A Prioritized Schedule and Estimate of Costs. http://www.waterboards.ca.gov/publications_forms/publications/legislative/docs/2011/instream_flow2010.pdf

As stated above, water supply projects are typically associated with a net depletion of in-stream flow. Incremental improvement to in-stream flow conditions and water quality can potentially be achieved locally in the Delta watershed by increasing local water supplies south of the Delta. Developing local water supplies in southern California, for example, could reduce reliance on imported Delta water and/or create additional flexibility in the timing of diversions from the Delta or its tributaries. Developing additional water supply capacity south of the Delta would also result in a more diverse and potentially more reliable source of supply in light of regulatory uncertainty associated with diverting water from the Delta and predictions of future reductions in the Sierra snowpack due to climate change. Additionally, increasing south of Delta supplies could result in a reduction in the greenhouse gas emissions associated with the energy requirements to convey water from the Delta to southern California.

The State Water Board's highest priorities for increasing reliable local water supplies south of the Delta include: (1) projects that maximize the use of recycled water, linked to groundwater or surface water storage for consistency with the Act; (2) conjunctive use or other groundwater storage projects that result in measurable improvements to Delta flows or flow variability conducive to enhancing conditions for native aquatic life; and (3) storm water capture and reuse projects emphasizing the use of low impact development and green infrastructure technologies.

Restore Groundwater in High-Use Basins

Groundwater represents a large and growing portion of the State's water supply portfolio. Groundwater is particularly vulnerable, however, to contamination and must be maintained at a quality that is sufficient for its intended use to provide a water supply benefit. Discharge of pollutants, over-pumping, and land use practices are adversely affecting groundwater quality, supply, and availability in the State. Contamination from salts, nitrates, and industrial chemicals, such as solvents and fuels, has reduced the suitability of groundwater as a drinking water source in some areas. Seawater intrusion is occurring in some coastal aquifers as a result of groundwater pumping. Once groundwater becomes contaminated it is difficult and costly to clean-up, so prevention is key. Unmanaged groundwater pumping can result in depletion of groundwater resources and land subsidence (in some cases a permanent loss of storage capacity). While at the same time urbanization and other land use changes are reducing opportunities for water to percolate and recharge groundwater.

The State Water Board's 2008 Strategic Plan identifies protecting and restoring groundwater in high-use basins as one of the Board's primary goals. The Act itself specifically defines prevention or remediation of groundwater contamination that provides water storage benefits as actions that are fundable as water supply projects. The State Water Board strongly supports funding for projects incorporating efforts to prevent groundwater contamination, clean up contamination that already exists, or restore water supply in over-drafted aquifers. The State Water Board's specific priorities related to groundwater protection and remediation efforts include:

1. Development of Salt and Nutrient Management Plans as specified in the State Water Board's Recycled Water Policy[7].
2. Establishing or enhancing local groundwater management efforts, including Integrated Regional Water Management planning, that include performance standards for maintaining groundwater quality and quantity.
3. Funding of large-scale groundwater cleanup where no readily identifiable or viable responsible party has been identified.
4. Projects that increase the percolation of low-nitrate/low-salt waters, including low impact development (LID) projects designed to infiltrate storm water for purposes of restoring groundwater levels in high use or over drafted basins.
5. Projects that incorporate the use of recycled water as a way to offset groundwater overdraft.
6. Construction and use of barrier wells to reduce seawater intrusion.

Through its Groundwater Ambient Monitoring and Assessment (GAMA) Program, the State Water Board has identified priority basins (Attachments 5a and 5b) that include 116 of the 472 DWR-defined groundwater basins. These priority basins account for 95 percent of public supply wells, 99 percent of municipal pumping, 90 percent of agricultural pumping, 90 percent of leaky underground tanks, 90 percent of pesticide applications, and 60 percent of the land area in California. In response to Executive Order D-5-99, the State Water Board has also mapped the locations where published hydrogeologic information indicates conditions that are more vulnerable to groundwater contamination (Attachment 6a). These locations are termed "Hydrogeologically Vulnerable Areas" (Attachment 6b). This information should be considered in decisions on where to fund groundwater cleanup and protection projects, with projects located in priority basins and/or hydrogeologically vulnerable areas receiving the highest priority.

Please contact Eric Oppenheimer at (916) 445-5960 or eoppenheimer@waterboards.ca.gov if you have any questions about this document.

[7] State Water Board Resolution No. 2009-0011.

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Attachment 1
Temperature Impaired Water Bodies
(by Regional Water Board)

REGION	WATER BODY NAME	WATER BODY TYPE	ESTIMATED SIZE AFFECTED	UNIT	POTENTIAL SOURCES	COMMENTS PERTAINING TO IMPAIRMENT	BEING ADDRESSED BY TMDL/OTHER ACTION?	IS WATER BODY A RESERVOIR (R) - OR - DOWNSTREAM OF A RESERVOIR (Y/N)?
1	Cape Mendocino HU, Mattole River HA, Mattole River	River & Stream	503	Miles	Habitat Modification, Natural Sources, Nonpoint Source, Range Grazing-Riparian and/or Upland, Removal of Riparian Vegetation, Road Construction, Silviculture		Being addressed by USEPA approved TMDL	Y
1	Eel River HU, Lower Eel River HA (includes the Eel River Delta)	River & Stream	426	Miles	Nonpoint Source, Removal of Riparian Vegetation			Y
1	Eel River HU, Middle Fork HA, Eden Valley and Round Valley HSAs	River & Stream	596	Miles	Nonpoint Source, Removal of Riparian Vegetation	The entire Middle Fork Eel River Watershed was listed as temperature-impaired in 1994. The USEPA approved the "Middle Fork Eel River Total Maximum Daily Loads for Temperature and Sediment" in December 2003. For the 2008 303(d) List, the watershed was divided into an upper and lower section. The upper section includes the Wilderness HSA and the Black Butte River HSA. The lower section includes the Eden Valley HSA and the Round Valley HSA. This division was made in order to consider sediment data specific to individual HSAs.	Being addressed by USEPA approved TMDL	Y
1	Eel River HU, Middle Fork HA, Wilderness and Black Butte HSAs	River & Stream	642	Miles	Nonpoint Source, Removal of Riparian Vegetation	The entire Middle Fork Eel River Watershed was listed as temperature-impaired in 1994. The USEPA approved the "Middle Fork Eel River Total Maximum Daily Loads for Temperature and Sediment" in December 2003. For the 2008 303(d) List, the watershed was divided into an upper and lower section. The upper section includes the Wilderness HSA and the Black Butte River HSA. The lower section includes the Eden Valley HSA and the Round Valley HSA. This division was made in order to consider sediment data specific to individual HSAs.	Being addressed by USEPA approved TMDL	N
1	Eel River HU, Middle Main HA	River & Stream	674	Miles	Channel Erosion, Drainage/Filling Of Wetlands, Erosion/Siltation, Habitat Modification, Removal of Riparian Vegetation, Streambank Modification/Destabilization, Upstream Impoundment		Being addressed by USEPA approved TMDL	Y
1	Eel River HU, North Fork HA, Lower North Fork Eel River Watershed	River & Stream	209	Miles	Habitat Modification, Nonpoint Source, Removal of Riparian Vegetation, Streambank Modification/Destabilization	The entire North Fork Eel River Watershed was listed as temperature-impaired in 1994. The USEPA approved the "North Fork Eel River Total Maximum Daily Loads for Sediment and Temperature" on December 30, 2002. For the 2008 303(d) List, the watershed was divided into Upper and Lower sections. The Upper North Fork Eel River Watershed is the area of the North Fork Eel River Watershed that drains to the North Fork Eel River north of the Six Rivers National Forest boundary with the River. The Lower Watershed is the area that drains into the North Fork Eel River south of the Six Rivers National Forest boundary with the River. The division was made in order to consider sediment data specific to individual areas of the watershed.	Being addressed by USEPA approved TMDL	N
1	Eel River HU, North Fork HA, Upper North Fork Eel River Watershed	River & Stream	173	Miles	Habitat Modification, Nonpoint Source, Removal of Riparian Vegetation, Streambank Modification/Destabilization	The entire North Fork Eel River Watershed was listed as temperature-impaired in 1994. The USEPA approved the "North Fork Eel River Total Maximum Daily Loads for Sediment and Temperature" on December 30, 2002. For the 2008 303(d) List, the watershed was divided into Upper and Lower sections. The Upper North Fork Eel River Watershed is the area of the North Fork Eel River Watershed that drains to the North Fork Eel River north of the Six Rivers National Forest boundary with the River. The Lower Watershed is the area that drains into the North Fork Eel River south of the Six Rivers National Forest boundary with the River. The division was made in order to consider sediment data specific to individual areas of the watershed.	Being addressed by USEPA approved TMDL	N
1	Eel River HU, South Fork HA	River & Stream	943	Miles	Erosion/Siltation, Flow Regulation/Modification, Hydromodification, Nonpoint Source, Removal of Riparian Vegetation		Being addressed by USEPA approved TMDL	Y

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1	Eel River HU, Upper Main HA (Includes Tomki Creek)	River & Stream	1141	Miles	Channelization, Drainage/Filling Of Wetlands, Habitat Modification, Nonpoint Source, Removal of Riparian Vegetation, Streambank Modification/Destabilization		Being addressed by USEPA approved TMDL	Y
1	Klamath River HU, Butte Valley HA	River & Stream	253	Miles	Nonpoint Source	The Klamath River, from source to mouth, is listed as water quality impaired (by both Oregon and California) under Section 303(d) of the Federal Clean Water Act. In 1992 the SWQCB proposed that the Klamath River be listed for both temperature and nutrients, requiring the development of total maximum daily load (TMDL) limits and implementation plans. The United States Environmental Protection Agency (USEPA) and the NCRWQCB accepted this action in 1993. The basis for listing the Klamath River as impaired was aquatic habitat degradation due to excessively warm water temperatures and algae blooms associated with high nutrient loads, water impoundments, and agricultural water diversions.		N
1	Klamath River HU, Lower HA, Klamath Glen HSA	River & Stream	609	Miles	Channel Erosion, Dam Construction, Flow Regulation/Modification, Habitat Modification, Hydromodification, Removal of Riparian Vegetation, Upstream Impoundment, Water Diversions	Flow regulation and diversion, coupled with reduced riparian vegetative cover and darker material on the channel bottom, all contribute to elevated water temperatures.		Y
1	Klamath River HU, Middle HA and Lower HA, Scott River to Trinity River	River & Stream	1389	Miles	Channelization, Dam Construction, Drainage/Filling Of Wetlands, Erosion/Siltation, Flow Regulation/Modification, Habitat Modification, Hydromodification, Logging Road Construction/Maintenance, Natural Sources, Nonpoint Source, Removal of Riparian Vegetation, Silviculture, Streambank Modification/Destabilization, Upstream Impoundment, Water Diversions	The Klamath River HU, Middle HA, Scott River to Trinity River includes the following Hydrologic Sub Areas (HSAs) : Orleans HSA 105.12, Ukonom HSA 105.31, Happy Camp HSA 105.32, and Seiad Valley HSA 105.33 .		Y
1	Klamath River HU, Middle HA, Iron Gate Dam to Scott River	River & Stream	548	Miles	Flow Regulation/Modification, Habitat Modification, Hydromodification, Nonpoint Source, Removal of Riparian Vegetation, Upstream Impoundment	The Klamath River HU, Middle HA, Iron Gate Dam to Scott River includes the following Hydrologic Sub Areas (HSAs) : Beaver Creek HSA 105.35 and Hornbrook HSA 105.36.		Y
1	Klamath River HU, Middle HA, Oregon to Iron Gate	River & Stream	129	Miles	Flow Regulation/Modification, Hydromodification, Nonpoint Source, Upstream Impoundment	The Klamath River HU, Middle HA, Oregon to Iron Gate Dam includes the following Hydrologic Sub Areas (HSAs): Iron Gate HSA 115.37 and Copco HSA 105.38.		Y
1	Klamath River HU, Salmon River HA	River & Stream	694	Miles	Erosion/Siltation, Logging Road Construction/Maintenance, Mine Tailings, Removal of Riparian Vegetation, Silviculture	In 2008, the "Klamath River Hydrologic Unit, Wooley Creek Hydrologic Sub-Area" was removed from the "Klamath River Hydrologic Unit, Salmon River Hydrologic Area" in order to consider delisting the Wooley Creek Watershed for temperature as monitoring data indicated there may be different conditions in the Wooley Creek Watershed than the rest of the Salmon River Watershed. Upon review of the available data, there was insufficient information to determined if conditions in the Wooley Creek Watershed were different from the rest of the Salmon River Watershed. Additionally, temperature data in the Wooley Creek Watershed showed an exceedance of the evaluation guideline. Therefore, it was determined that the waterbody-pollutant combination should not be removed from the Section 303(d) List because applicable water quality standards for the pollutant are being exceeded.	Being addressed by USEPA approved TMDL	N

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REGION	WATER BODY NAME	WATER BODY TYPE	ESTIMATED SIZE AFFECTED	UNIT	POTENTIAL SOURCES	COMMENTS PERTAINING TO IMPAIRMENT	BEING ADDRESSED BY TMDL/OTHER ACTION?	IS WATER BODY A RESERVOIR (R) - OR - DOWNSTREAM OF A RESERVOIR (Y/N)?
1	Klamath River HU, Salmon River HA, Wooley Creek HSA	River & Stream	184	Miles	Erosion/Siltation, Removal of Riparian Vegetation	Previous to the 2008 Integrated Report, the Wooley Creek Hydrologic Sub-Area (HSA) was included as part of the Klamath River Hydrologic Unit, Salmon River Hydrologic Area.	Being addressed by USEPA approved TMDL	N
1	Klamath River HU, Scott River HA	River & Stream	902	Miles	Agricultural Return Flows, Drainage/Filling Of Wetlands, Flow Regulation/Modification, Habitat Modification, Irrigated Crop Production, Nonpoint Source, Other, Pasture Grazing-Riparian and/or Upland, Removal of Riparian Vegetation, Silviculture, Streambank Modification/Destabilization, Water Diversions		Being addressed by USEPA approved TMDL	Y
1	Klamath River HU, Shasta River HA	River & Stream	630	Miles	Agriculture-irrigation tailwater, Drainage/Filling Of Wetlands, Flow Regulation/Modification, Habitat Modification, Removal of Riparian Vegetation		Being addressed by USEPA approved TMDL	Y
1	Mad River HU, Mad River	River & Stream	654	Miles	Nonpoint Source, Unknown Nonpoint Source		Being addressed by USEPA approved TMDL	Y
1	Mendocino Coast HU, Albion River HA, Albion River	River & Stream	91	Miles	Source Unknown			N
1	Mendocino Coast HU, Big River HA, Big River	River & Stream	225	Miles	Drainage/Filling Of Wetlands, Erosion/Siltation, Habitat Modification, Nonpoint Source, Removal of Riparian Vegetation, Streambank Modification/Destabilization	The most sensitive beneficial uses supported by the Big River include uses associated with the cold water fishery and municipal and domestic supply. The Big River provides habitat for coho salmon and steelhead trout, which are listed as a threatened species under the federal Endangered Species Act. Populations of coho salmon and steelhead trout in the Big River are extremely low compared to historical levels. Recent (1996-2000) temperature data gathered in the Big River watershed indicate that high temperature levels may be a source of impairment of cold water fisheries in the river. This listing is specific to the area of the watershed from the confluence with the North Fork Big River, including the watersheds of the mainstem Big River and the North Fork Big River.		N
1	Mendocino Coast HU, Garcia River HA, Garcia River	River & Stream	154	Miles	Habitat Modification, Nonpoint Source, Removal of Riparian Vegetation, Streambank Modification/Destabilization	Elevated temperatures impacting cold water fisheries in these reaches and sub_areas: Planning Units 113.70010 (Pardaloe Creek), 113.70011, 12, 13, 14, 20, 21 and the entire mainstem Garcia River from Pardaloe Creek to the estuary, which includes that portion of 113.70022, 23, 24, 25, and 26. February 2002- The Garcia River TMDL for sediment has been adopted by NCRWQCB and approved by SWRCB and Office of Administrative Law. It is possible that voluntary compliance with measures in this TMDL will improve conditions related to temperature prior to development of a TMDL for temperature.		N
1	Mendocino Coast HU, Gualala River HA, Gualala River	River & Stream	455	Miles	Channel Erosion, Erosion/Siltation, Nonpoint Source, Removal of Riparian Vegetation, Streambank Modification/Destabilization	Recent (1994-2000) temperature data collected in the Gualala River watershed indicate that high temperature levels may be a source of impairment of cold water fisheries in the watershed. Temperatures in the Little North Fork are generally below threshold levels and appear to exhibit properly functioning conditions with respect to stream temperature. The Gualala River is listed for temperature, with the exception of the Little North Fork.		N

Attachment 1
Temperature Impaired Water Bodies
(by Regional Water Board)

REGION	WATER BODY NAME	WATER BODY TYPE	ESTIMATED SIZE AFFECTED	UNIT	POTENTIAL SOURCES	COMMENTS PERTAINING TO IMPAIRMENT	BEING ADDRESSED BY TMDL/OTHER ACTION?	IS WATER BODY A RESERVOIR (R) - OR - DOWNSTREAM OF A RESERVOIR (Y/N)?
1	Mendocino Coast HU, Navarro River HA	River & Stream	415	Miles	Agricultural Return Flows, Agriculture, Drainage/Filling Of Wetlands, Flow Regulation/Modification, Habitat Modification, Nonpoint Source, Removal of Riparian Vegetation, Resource Extraction, Streambank Modification/Destabilization, Water Diversions		Being addressed by USEPA approved TMDL	N
1	Mendocino Coast HU, Noyo River HA, Noyo River	River & Stream	144	Miles	Source Unknown	This listing only applies to the following areas of the Noyo River watershed: (1) The Noyo River mainstem from the confluence of Duffy Gulch downstream to the confluence with Hayshed Gulch; (2) The South Fork Noyo River mainstem from the confluence of Kass Creek downstream to the confluence with Noyo River mainstem; and (3) The Little North Fork Noyo River, Duffy Gulch, and Kass Creek tributaries.		N
1	Mendocino Coast HU, Noyo River HA, Pudding Creek	River & Stream	24	Miles	Logging Road Construction/Maintenance, Removal of Riparian Vegetation, Silviculture			Y
1	Mendocino Coast HU, Rockport HA, Ten Mile River HSA	River & Stream	162	Miles	Habitat Modification, Nonpoint Source, Removal of Riparian Vegetation, Streambank Modification/Destabilization			N
1	Redwood Creek HU, Redwood Creek	River & Stream	332	Miles	Erosion/Siltation, Logging Road Construction/Maintenance, Natural Sources, Nonpoint Source, Range Grazing-Riparian, Removal of Riparian Vegetation, Silviculture, Streambank Modification/Destabilization			N
1	Russian River HU, Lower Russian River HA, Austin Creek HSA	River & Stream	81	Miles	Flow Regulation/Modification, Habitat Modification, Hydromodification, Nonpoint Source, Removal of Riparian Vegetation	The most sensitive beneficial uses supported by the Russian River include uses associated with the cold water fishery and municipal and domestic supply. The Russian River provides habitat for coho salmon and steelhead trout, which are listed as a threatened species under the federal Endangered Species Act. Temperature data collected from 1997 to 2000 in the Russian River watershed indicate that high temperature levels may be a source of impairment of cold water fisheries in the watershed.		N
1	Russian River HU, Lower Russian River HA, Guerneville HSA	River & Stream	195	Miles	Flow Regulation/Modification, Habitat Modification, Hydromodification, Nonpoint Source, Removal of Riparian Vegetation, Streambank Modification/Destabilization, Upstream Impoundment			Y
1	Russian River HU, Middle Russian River HA, Big Sulphur Creek HSA	River & Stream	85	Miles	Flow Regulation/Modification, Habitat Modification, Nonpoint Source, Removal of Riparian Vegetation	The most sensitive beneficial uses supported by the Russian River include uses associated with the cold water fishery and municipal and domestic supply. The Russian River provides habitat for coho salmon and steelhead trout, which are listed as a threatened species under the federal Endangered Species Act. Temperature data collected from 1997 to 2000 in the Russian River watershed indicate that high temperature levels may be a source of impairment of cold water fisheries in the watershed.		N
1	Russian River HU, Middle Russian River HA, Geyserville HSA	River & Stream	242	Miles	Flow Regulation/Modification, Habitat Modification, Nonpoint Source, Removal of Riparian Vegetation	The most sensitive beneficial uses supported by the Russian River include uses associated with the cold water fishery and municipal and domestic supply. The Russian River provides habitat for coho salmon and steelhead trout, which are listed as a threatened species under the federal Endangered Species Act. Temperature data collected from 1997 to 2000 in the Russian River watershed indicate that high temperature levels may be a source of impairment of cold water fisheries in the watershed.		Y

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Temperature Impaired Water Bodies
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REGION	WATER BODY NAME	WATER BODY TYPE	ESTIMATED SIZE AFFECTED	UNIT	POTENTIAL SOURCES	COMMENTS PERTAINING TO IMPAIRMENT	BEING ADDRESSED BY TMDL/OTHER ACTION?	IS WATER BODY A RESERVOIR (R) - OR - DOWNSTREAM OF A RESERVOIR (Y/N)?
1	Russian River HU, Middle Russian River HA, Laguna de Santa Rosa	River & Stream	96	Miles	Hydromodification, Nonpoint Source, Removal of Riparian Vegetation, Streambank Modification/Destabilization, Upstream Impoundment	Entire Russian River watershed (including Laguna de Santa Rosa) is listed for temperature. The most sensitive beneficial uses supported by the Russian River include uses associated with the cold water fishery and municipal and domestic supply. The Russian River provides habitat for coho salmon and steelhead trout, which are listed as a threatened species under the federal Endangered Species Act. Temperature data collected from 1997 to 2000 in the Russian River watershed indicate that high temperature levels may be a source of impairment of cold water fisheries in the watershed.		N
1	Russian River HU, Middle Russian River HA, Mark West Creek HSA	River & Stream	99	Miles	Flow Regulation/Modification, Habitat Modification, Hydromodification, Nonpoint Source, Removal of Riparian Vegetation, Streambank Modification/Destabilization, Upstream Impoundment	The most sensitive beneficial uses supported by the Russian River include uses associated with the cold water fishery and municipal and domestic supply. The Russian River provides habitat for coho salmon and steelhead trout, which are listed as a threatened species under the federal Endangered Species Act. Temperature data collected from 1997 to 2000 in the Russian River watershed indicate that high temperature levels may be a source of impairment of cold water fisheries in the watershed.		N
1	Russian River HU, Middle Russian River HA, Santa Rosa Creek	River & Stream	87	Miles	Hydromodification, Nonpoint Source, Removal of Riparian Vegetation, Streambank Modification/Destabilization, Upstream Impoundment	The entire Russian River watershed (including Santa Rosa Creek) is listed for temperature.		N
1	Russian River HU, Middle Russian River HA, Warm Springs HSA	River & Stream	255	Miles	Flow Regulation/Modification, Habitat Modification, Hydromodification, Nonpoint Source, Removal of Riparian Vegetation, Streambank Modification/Destabilization, Upstream Impoundment	The most sensitive beneficial uses supported by the Russian River include uses associated with the cold water fishery and municipal and domestic supply. The Russian River provides habitat for coho salmon and steelhead trout, which are listed as a threatened species under the federal Endangered Species Act. Temperature data collected from 1997 to 2000 in the Russian River watershed indicate that high temperature levels may be a source of impairment of cold water fisheries in the watershed.		Y
1	Russian River HU, Upper Russian River HA, Coyote Valley HSA	River & Stream	171	Miles	Flow Regulation/Modification, Habitat Modification, Hydromodification, Nonpoint Source, Removal of Riparian Vegetation, Streambank Modification/Destabilization, Upstream Impoundment	The most sensitive beneficial uses supported by the Russian River include uses associated with the cold water fishery and municipal and domestic supply. The Russian River provides habitat for coho salmon and steelhead trout, which are listed as a threatened species under the federal Endangered Species Act. Temperature data collected from 1997 to 2000 in the Russian River watershed indicate that high temperature levels may be a source of impairment of cold water fisheries in the watershed.		Y
1	Russian River HU, Upper Russian River HA, Forsythe Creek HSA	River & Stream	122	Miles	Flow Regulation/Modification, Habitat Modification, Hydromodification, Nonpoint Source, Removal of Riparian Vegetation, Streambank Modification/Destabilization, Upstream Impoundment	The most sensitive beneficial uses supported by the Russian River include uses associated with the cold water fishery and municipal and domestic supply. The Russian River provides habitat for coho salmon and steelhead trout, which are listed as a threatened species under the federal Endangered Species Act. Temperature data collected from 1997 to 2000 in the Russian River watershed indicate that high temperature levels may be a source of impairment of cold water fisheries in the watershed.		Y
1	Russian River HU, Upper Russian River HA, Ukiah HSA	River & Stream	460	Miles	Flow Regulation/Modification, Habitat Modification, Hydromodification, Nonpoint Source, Removal of Riparian Vegetation, Streambank Modification/Destabilization, Upstream Impoundment	The most sensitive beneficial uses supported by the Russian River include uses associated with the cold water fishery and municipal and domestic supply. The Russian River provides habitat for coho salmon and steelhead trout, which are listed as a threatened species under the federal Endangered Species Act. Temperature data collected from 1997 to 2000 in the Russian River watershed indicate that high temperature levels may be a source of impairment of cold water fisheries in the watershed.		Y
1	Trinity River HU, South Fork HA	River & Stream	1161	Miles	Habitat Modification, Range Grazing-Riparian, Removal of Riparian Vegetation, Streambank Modification/Destabilization, Water Diversions			N

Attachment 1
Temperature Impaired Water Bodies
(by Regional Water Board)

REGION	WATER BODY NAME	WATER BODY TYPE	ESTIMATED SIZE AFFECTED	UNIT	POTENTIAL SOURCES	COMMENTS PERTAINING TO IMPAIRMENT	BEING ADDRESSED BY TMDL/OTHER ACTION?	IS WATER BODY A RESERVOIR (R) - OR - DOWNSTREAM OF A RESERVOIR (Y/N)?
2	Arroyo Mocho	River & Stream	34	Miles	Channelization, Habitat Modification, Removal of Riparian Vegetation			Y
2	Codornices Creek	River & Stream	2	Miles	Channelization, Habitat Modification, Removal of Riparian Vegetation, Removal of Riparian Vegetation			N
2	Stevens Creek	River & Stream	20	Miles	Channelization, Habitat Modification, Removal of Riparian Vegetation			Y
2	Suisun Creek	River & Stream	19	Miles	Habitat Modification, Removal of Riparian Vegetation			Y
3	Arroyo Seco River	River & Stream	43	Miles	Source Unknown			Y
3	Atascadero Creek (Santa Barbara county)	River & Stream	6	Miles	Agriculture, Confined Animal Feeding Operations (NPS), Grazing-Related Sources, Urban Runoff/Storm Sewers			Y
3	Chualar Creek	River & Stream	14	Miles	Agriculture, Other Urban Runoff, Removal of Riparian Vegetation			N
3	Cieneguitas Creek	River & Stream	3	Miles	Unknown Point Source, Urban Runoff/Storm Sewers			N
3	Greene Valley Creek (Santa Barbara County)	River & Stream	4	Miles	Agriculture, Removal of Riparian Vegetation, Unknown Nonpoint Source			N
3	Llagas Creek (above Chesbro Reservoir)	River & Stream	9	Miles	Source Unknown			N
3	Millers Canal	River & Stream	2	Miles	Agriculture, Channelization, Grazing-Related Sources, Removal of Riparian Vegetation, Source Unknown			Y
3	Natividad Creek	River & Stream	7	Miles	Agriculture, Grazing-Related Sources, Other Urban Runoff, Removal of Riparian Vegetation			N
3	Orcutt Creek	River & Stream	10	Miles	Agriculture, Grazing-Related Sources, Removal of Riparian Vegetation			N
3	Quail Creek	River & Stream	4	Miles	Agriculture, Removal of Riparian Vegetation			N
3	Salinas River (middle, near Gonzales Rd crossing to confluence with Nacimiento River)	River & Stream	72	Miles	Agriculture, Grazing-Related Sources, Natural Sources, Other Urban Runoff			Y
3	San Miguelito Creek	River & Stream	10	Miles	Channelization, Removal of Riparian Vegetation			N
3	San Pedro Creek (Santa Barbara County)	River & Stream	7	Miles	Golf course activities, Natural Sources, Other Urban Runoff			Y
3	Santa Rosa Creek (San Luis Obispo County)	River & Stream	23	Miles	Agriculture, Disturbed Sites (Land Develop.), Grazing-Related Sources, Other Urban Runoff, Water Diversions			Y
3	Santa Ynez River (Cachuma Lake to below city of Lompoc)	River & Stream	43	Miles	Agriculture, Disturbed Sites (Land Develop.), Flow Regulation/Modification, Grazing-Related Sources, Other Urban Runoff			Y
3	Santa Ynez River (below city of Lompoc to Ocean)	River & Stream	4	Miles	Agriculture, Flow Regulation/Modification, Grazing-Related Sources, Municipal Point Sources, Other Urban Runoff			Y

Attachment 1
Temperature Impaired Water Bodies
(by Regional Water Board)

REGION	WATER BODY NAME	WATER BODY TYPE	ESTIMATED SIZE AFFECTED	UNIT	POTENTIAL SOURCES	COMMENTS PERTAINING TO IMPAIRMENT	BEING ADDRESSED BY TMDL/OTHER ACTION?	IS WATER BODY A RESERVOIR (R) - OR - DOWNSTREAM OF A RESERVOIR (Y/N)?
3	Uvas Creek (above Uvas Reservoir)	River & Stream	8	Miles	Source Unknown			Y
5	Feather River, North Fork (below Lake Almanor)	River & Stream	54	Miles	Flow Regulation/Modification, Hydromodification			Y
5	Merced River, Lower (McSwain Reservoir to San Joaquin River)	River & Stream	50	Miles	Source Unknown			Y
5	Pit River (from confluence of N and S forks to Shasta Lake)	River & Stream	123	Miles	Agriculture, Agriculture-grazing			Y
5	San Joaquin River (Merced River to Tuolumne River)	River & Stream	29	Miles	Source Unknown			Y
5	San Joaquin River (Tuolumne River to Stanislaus River)	River & Stream	8	Miles	Source Unknown			Y
5	San Joaquin River (Stanislaus River to Delta Boundary)	River & Stream	3	Miles	Source Unknown			Y
5	Stanislaus River, Lower	River & Stream	59	Miles	Source Unknown			Y
5	Tuolumne River, Lower (Don Pedro Reservoir to San Joaquin River)	River & Stream	60	Miles	Source Unknown			Y
5	Willow Creek (Madera County)	River & Stream	6	Miles	Source Unknown			Y
5	Yuba River, South Fork (Spaulding Reservoir to Englebright Reservoir)	River & Stream	48	Miles	Source Unknown			N

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Attachment 2
Dissolved Oxygen Impaired Water Bodies
(by Regional Water Board)

REGION	WATER BODY NAME	WATER BODY TYPE	ESTIMATED SIZE AFFECTED	UNIT	POTENTIAL SOURCES	COMMENTS PERTAINING TO IMPAIRMENT	BEING ADDRESSED BY TMDL/OTHER ACTION?	IS WATER BODY A RESERVOIR (R) - OR - DOWNSTREAM OF A RESERVOIR (Y/N)?
1	Eel River HU, Lower Eel River HA (includes the Eel River Delta)	River & Stream	426	Miles	Source Unknown			Y
1	Klamath River HU, Lower HA, Klamath Glen HSA	River & Stream	609	Miles	Agriculture, Agriculture-animal, Agriculture-irrigation tailwater, Agriculture-storm runoff, Agriculture-subsurface drainage, Irrigated Crop Production, Range Grazing-Riparian, Specialty Crop Production, Flow Regulation/Modification, Upstream Impoundment, Industrial Point Sources, Out-of-state source, Municipal Point Sources	Klamath Falls (Oregon) municipal wastewater discharge, industrial facilities, and US Bureau of Reclamation pumped discharge of agricultural waste are significant sources of organic enrichment of Klamath River waters flowing to California.		Y
1	Klamath River HU, Middle HA and Lower HA, Scott River to Trinity River	River & Stream	1389	Miles	Agriculture	The Klamath River HU, Middle HA, Scott River to Trinity River includes the following Hydrologic Sub Areas (HSAs) : Orleans HSA 105.12, Ukonom HSA 105.31, Happy Camp HSA 105.32, and Seiad Valley HSA 105.33		Y
1	Klamath River HU, Middle HA and Lower HA, Scott River to Trinity River	River & Stream	1389	Miles	Agriculture-irrigation tailwater, Agriculture-storm runoff, Flow Regulation/Modification	The Klamath River HU, Middle HA, Scott River to Trinity River includes the following Hydrologic Sub Areas (HSAs) : Orleans HSA 105.12, Ukonom HSA 105.31, Happy Camp HSA 105.32, and Seiad Valley HSA 105.33		Y
1	Klamath River HU, Middle HA and Lower HA, Scott River to Trinity River	River & Stream	1389	Miles	Upstream Impoundment, Industrial Point Sources, Out-of-state source, Combined Sewer Overflow, Municipal Point Sources, Wastewater - land disposal	The Klamath River HU, Middle HA, Scott River to Trinity River includes the following Hydrologic Sub Areas (HSAs) : Orleans HSA 105.12, Ukonom HSA 105.31, Happy Camp HSA 105.32, and Seiad Valley HSA 105.33		Y
1	Klamath River HU, Middle HA, Iron Gate Dam to Scott River	River & Stream	548	Miles	Out-of-state source, Nonpoint Source, Point Source	The Klamath River HU, Middle HA, Iron Gate Dam to Scott River includes the following Hydrologic Sub Areas (HSAs) : Beaver Creek HSA 105.35 and Hornbrook HSA 105.36. The impairment listing regarding dissolved oxygen was prompted by a 1997 United States Fish and Wildlife Service Report.		Y
1	Klamath River HU, Middle HA, Oregon to Iron Gate	River & Stream	129	Miles	Agriculture, Agriculture-animal, Agriculture-irrigation tailwater, Agriculture-storm runoff, Agriculture-subsurface drainage, Irrigated Crop Production, Range Grazing-Riparian and/or Upland, Specialty Crop Production, Flow Regulation/Modification, Upstream Impoundment, Industrial Point Sources	The Klamath River HU, Middle HA, Oregon to Iron Gate Dam includes the following Hydrologic Sub Areas (HSAs): Iron Gate HSA 115.37 and Copco HSA 105.38.		Y
1	Klamath River HU, Middle HA, Oregon to Iron Gate	River & Stream	129	Miles	Out-of-state source, Municipal Point Sources	The Klamath River HU, Middle HA, Oregon to Iron Gate Dam includes the following Hydrologic Sub Areas (HSAs): Iron Gate HSA 115.37 and Copco HSA 105.38.		Y
1	Klamath River HU, Shasta River HA	River & Stream	630	Miles	Agriculture-irrigation tailwater, Agriculture-storm runoff, Dairies, Habitat Modification, Dam Construction		Being addressed by USEPA approved TMDL	Y

Attachment 2
Dissolved Oxygen Impaired Water Bodies
(by Regional Water Board)

REGION	WATER BODY NAME	WATER BODY TYPE	ESTIMATED SIZE AFFECTED	UNIT	POTENTIAL SOURCES	COMMENTS PERTAINING TO IMPAIRMENT	BEING ADDRESSED BY TMDL/OTHER ACTION?	IS WATER BODY A RESERVOIR (R) - OR - DOWNSTREAM OF A RESERVOIR (Y/N)?
1	Klamath River HU, Shasta River HA	River & Stream	630	Miles	Flow Regulation/Modification, Hydromodification, Minor Municipal Point Source-dry and/or wet weather discharge		Being addressed by USEPA approved TMDL	Y
1	Russian River HU, Lower Russian River HA, Guerneville HSA, Green Valley Creek watershed	River & Stream	39	Miles	Agriculture, Erosion/Siltation, Habitat Modification, Removal of Riparian Vegetation, Internal Nutrient Cycling (primarily lakes), Other, Source Unknown			Y
1	Russian River HU, Middle Russian River HA, Laguna de Santa Rosa	River & Stream	96	Miles	Internal Nutrient Cycling (primarily lakes), Nonpoint Source, Point Source	The Laguna de Santa Rosa was added to the 303(d) List in 1990 for high levels of ammonia and low dissolved oxygen (DO) concentrations. A TMDL was completed for the Laguna for ammonia and dissolved oxygen in 1995. The TMDL concluded that high ammonia levels in the Laguna were the result of point and non-point source nitrogen inputs of various forms. Low dissolved oxygen concentrations were a result of inputs of organic matter and nutrients which stimulate algal growth and subsequently cause depressed dissolved oxygen levels when the algae dies and decays. The TMDL took the form of a Waste Reduction Strategy (WRS) which addressed the reduction of nitrogen loading from point and non-point sources. With the implementation of the WRS and operational improvements at the City of Santa Rosa Waste Water Treatment Plant as well as improvements in waste storage and disposal activities at local dairies, nitrogen inputs to the Laguna were significantly reduced. Following implementation of the WRS and the subsequent attainment of nitrogen-ammonia interim concentration goals, as stated in the WRS, the Laguna was removed from the 303(d) List for ammonia and dissolved oxygen in 1998, pursuant to a recommendation by US EPA. However, dissolved oxygen levels in the Laguna continue to fall below the Regional Water Board Basin Plan minimum DO objective of 7.0 mg/L and in many cases fluctuate significantly on a daily and seasonal basis. Based on available information, it appears that phosphorus may contribute to the dissolved oxygen fluctuations. However, the cause of the low dissolved oxygen levels is not certain. While elevated phosphorus levels may contribute to low DO, nitrogen to phosphorus ratios, based on recent Laguna measurements, indicate that nitrogen may be the macronutrient controlling plant growth in the Laguna. A TMDL addressing nutrients (both nitrogen and phosphorus) and dissolved oxygen is necessary for water quality objective attainment.		N
2	Lake Merced	Lake & Reservoir	299	Acres	Source Unknown	This listing was made by USEPA.		N
2	Lake Merritt	Lake & Reservoir	142	Acres	Source Unknown	This listing was made by USEPA.		N
2	Suisun Marsh Wetlands	Wetland, Tidal	66339	Acres	Flow Regulation/Modification, Urban Runoff/Storm Sewers	Additional monitoring and assessment needed.		N
2	Suisun Creek	River & Stream	19	Miles	Habitat Modification, Removal of Riparian Vegetation, Hydromodification, Source Unknown, Streambank Modification/Destabilization			Y

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Dissolved Oxygen Impaired Water Bodies
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3	Alisal Slough (Monterey County)	River & Stream	7	Miles	Agriculture			N
3	Arroyo De La Cruz	River & Stream	11	Miles	Grazing-Related Sources, Natural Sources			N
3	Atascadero Creek (San Luis Obispo County)	River & Stream	5	Miles	Source Unknown			Y
3	Atascadero Creek (Santa Barbara county)	River & Stream	6	Miles	Agriculture, Confined Animal Feeding Operations (NPS), Grazing-Related Sources, Urban Runoff/Storm Sewers			Y
3	Beach Road Ditch	River & Stream	1	Miles	Agriculture, Removal of Riparian Vegetation			N
3	Bennett Slough	River & Stream	2	Miles	Source Unknown			N
3	Blanco Drain	River & Stream	15	Miles	Agriculture, Groundwater Loadings			N
3	Bradley Canyon Creek	River & Stream	17	Miles	Agriculture, Removal of Riparian Vegetation			N
3	Carnadero Creek	River & Stream	2	Miles	Agriculture, Urban Runoff/Storm Sewers			Y
3	Carneros Creek (Monterey County)	River & Stream	12	Miles	Agriculture			N
3	Carpinteria Creek	River & Stream	6	Miles	Agriculture, Urban Runoff/Storm Sewers			N
3	Cholame Creek	River & Stream	9	Miles	Grazing-Related Sources, Natural Sources			N
3	Cieneguitas Creek	River & Stream	3	Miles	Source Unknown			N
3	Dairy Creek	River & Stream	5	Miles	Source Unknown		Being addressed by USEPA approved TMDL	N
3	Devereux Creek	River & Stream	1	Miles	Natural Sources, Golf course activities, Urban Runoff/Storm Sewers			N
3	Greene Valley Creek (Santa Barbara County)	River & Stream	4	Miles	Agriculture, Removal of Riparian Vegetation, Unknown Nonpoint Source			N
3	Harkins Slough	River & Stream	7	Miles	Source Unknown			N
3	Carpinteria Marsh (El Estero Marsh)	Estuary	188	Acres	Agriculture, Groundwater Loadings			Y
3	Carpinteria Marsh (El Estero Marsh)	Estuary	188	Acres	Urban Runoff/Storm Sewers			Y
3	Elkhorn Slough	Estuary	2034	Acres	Agriculture, Grazing-Related Sources, Natural Sources			N
3	Llagas Creek (below Chesbro Reservoir)	River & Stream	16	Miles	Agricultural Return Flows, Irrigated Crop Production, Habitat Modification, Municipal Point Sources	This listing was made by USEPA.		Y
3	Lockhart Gulch	River & Stream	3	Miles	Source Unknown			N
3	Los Osos Creek	River & Stream	4	Miles	Agriculture, Pasture Grazing-Riparian and/or Upland, Natural Sources, Urban Runoff/Storm Sewers	This listing was made by USEPA.		N
3	Merrit Ditch	River & Stream	0	Miles	Agriculture, Removal of Riparian Vegetation			N

Attachment 2
Dissolved Oxygen Impaired Water Bodies
(by Regional Water Board)

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3	Elkhorn Slough	Estuary	2034	Acres	Urban Runoff/Storm Sewers			N
3	Merrit Ditch	River & Stream	0	Miles	Channelization			N
3	Millers Canal	River & Stream	2	Miles	Agriculture, Grazing-Related Sources, Removal of Riparian Vegetation, Channelization, Source Unknown			Y
3	Mission Creek (Santa Barbara County)	River & Stream	9	Miles	Habitat Modification, Removal of Riparian Vegetation, Hydromodification, Source Unknown			N
3	Moore Creek	River & Stream	2	Miles	Source Unknown			N
3	Natividad Creek	River & Stream	7	Miles	Agriculture, Grazing-Related Sources			N
3	Natividad Creek	River & Stream	7	Miles	Removal of Riparian Vegetation, Other Urban Runoff			N
3	Old Salinas River	River & Stream	4	Miles	Agriculture, Removal of Riparian Vegetation, Unknown Nonpoint Source, Marinas and Recreational Boating, Other Urban Runoff			N
3	Pacheco Creek	River & Stream	25	Miles	Agriculture, Grazing-Related Sources, Natural Sources			Y
3	Pajaro River	River & Stream	32	Miles	Agriculture, Grazing-Related Sources, Removal of Riparian Vegetation, Channelization, Source Unknown, Unknown Nonpoint Source, Other Urban Runoff			Y
3	Pico Creek	River & Stream	1	Miles	Grazing-Related Sources, Natural Sources, Source Unknown	Impaired section for low dissolved oxygen is located between the creek mouth and the top of the lagoon (approximately 1/2 mile).		Y
3	Pismo Creek	River & Stream	5	Miles	Agriculture, Grazing-Related Sources, Petroleum Activities, Transient encampments, Natural Sources, Resource Extraction			N
3	Prefumo Creek	River & Stream	8	Miles	Agriculture, Unknown Nonpoint Source, Other Urban Runoff			Y
3	Quail Creek	River & Stream	4	Miles	Agriculture, Grazing-Related Sources, Nurseries, Removal of Riparian Vegetation			N
3	Salinas Reclamation Canal	River & Stream	8	Miles	Agriculture, Grazing-Related Sources, Removal of Riparian Vegetation, Urban Runoff--Industrial Permitted			N
3	Salinas Reclamation Canal	River & Stream	8	Miles	Urban Runoff--Non-industrial Permitted, Urban Runoff/Storm Sewers			N
3	Salsipuedes Creek (Santa Cruz County)	River & Stream	3	Miles	Agriculture, Removal of Riparian Vegetation, Other Urban Runoff			Y
3	San Antonio Creek (San Antonio Watershed, Rancho del las Flores Bridge at Hwy 135 to downstream at Railroad Bridge)	River & Stream	14	Miles	Agriculture, Source Unknown			N

Attachment 2
Dissolved Oxygen Impaired Water Bodies
(by Regional Water Board)

REGION	WATER BODY NAME	WATER BODY TYPE	ESTIMATED SIZE AFFECTED	UNIT	POTENTIAL SOURCES	COMMENTS PERTAINING TO IMPAIRMENT	BEING ADDRESSED BY TMDL/OTHER ACTION?	IS WATER BODY A RESERVOIR (R) - OR - DOWNSTREAM OF A RESERVOIR (Y/N)?
3	Moro Cojo Slough	Estuary	62	Acres	Source Unknown			N
3	Morro Bay	Bay & Harbor	1922	Acres	Source Unknown			Y
3	Moss Landing Harbor	Bay & Harbor	79	Acres	Source Unknown			N
3	Pinto Lake	Lake & Reservoir	115	Acres	Agriculture, Nurseries, Groundwater Loadings, Onsite Wastewater Systems (Septic Tanks)	natural, spring-fed lake		N
3	San Juan Creek (San Benito County)	River & Stream	7	Miles	Agriculture, Grazing-Related Sources			N
3	San Juan Creek (San Benito County)	River & Stream	7	Miles	Unknown Nonpoint Source			N
3	San Simeon Creek	River & Stream	6	Miles	Agriculture, Grazing-Related Sources, Natural Sources			Y
3	San Simeon Creek	River & Stream	6	Miles	Wastewater - land disposal			Y
3	Santa Rita Creek (Monterey County)	River & Stream	11	Miles	Source Unknown			N
3	Santa Ynez River (below city of Lompoc to Ocean)	River & Stream	4	Miles	Agriculture, Grazing-Related Sources, Municipal Point Sources, Other Urban Runoff			Y
3	Struve Slough	River & Stream	3	Miles	Agriculture, Other Urban Runoff			N
3	Tequisquita Slough	River & Stream	7	Miles	Source Unknown			Y
3	Toro Creek	River & Stream	16	Miles	Grazing-Related Sources, Petroleum Activities, Natural Sources			Y
3	Uvas Creek (below Uvas Reservoir)	River & Stream	8	Miles	Agriculture, Other Urban Runoff			Y
3	Warden Creek	River & Stream	6	Miles	Agriculture			N
3	Warden Creek	River & Stream	6	Miles	Grazing-Related Sources			N
3	Watsonville Creek	River & Stream	5	Miles	Agriculture, Grazing-Related Sources			N
3	Watsonville Creek	River & Stream	5	Miles	Groundwater Loadings, Removal of Riparian Vegetation			N
3	Watsonville Slough	River & Stream	6	Miles	Agriculture, Removal of Riparian Vegetation, Urban Runoff/Storm Sewers			N
4	Canada Larga (Ventura River Watershed)	River & Stream	8	Miles	Nonpoint Source			N
4	Crystal Lake	Lake & Reservoir	4	Acres	Nonpoint Source			N
4	Elizabeth Lake	Lake & Reservoir	123	Acres	Nonpoint Source			Y
4	Las Virgenes Creek	River & Stream	12	Miles	Agriculture-animal, Irrigated Crop Production, Atmospheric Deposition, Groundwater Loadings, Major Municipal Point Source-dry and/or wet weather discharge, Golf course activities, Urban Runoff/Storm Sewers, Onsite Wastewater Systems (Septic Tanks), Golf course activities, Urban Runoff/Storm Sewers, Onsite Wastewater Systems (Septic Tanks)		Being addressed by USEPA approved TMDL	Y

Attachment 2
Dissolved Oxygen Impaired Water Bodies
(by Regional Water Board)

REGION	WATER BODY NAME	WATER BODY TYPE	ESTIMATED SIZE AFFECTED	UNIT	POTENTIAL SOURCES	COMMENTS PERTAINING TO IMPAIRMENT	BEING ADDRESSED BY TMDL/OTHER ACTION?	IS WATER BODY A RESERVOIR (R) - OR - DOWNSTREAM OF A RESERVOIR (Y/N)?
4	Lake Calabasas	Lake & Reservoir	18	Acres	Nonpoint Source			N
4	Lake Sherwood	Lake & Reservoir	135	Acres	Agriculture-animal, Golf course activities	Has Lake Sherwood Dam on it, but appears used only for recreation.	Being addressed by USEPA approved TMDL	R
4	Lincoln Park Lake	Lake & Reservoir	4	Acres	Nonpoint Source			N
4	Malibou Lake	Lake & Reservoir	40	Acres	Agriculture-animal, Irrigated Crop Production, Atmospheric Deposition, Groundwater Loadings, Major Municipal Point Source-dry and/or wet weather discharge, Golf course activities, Urban Runoff/Storm Sewers, Onsite Wastewater Systems (Septic Tanks)	Created in 1926 after a dam was built at the confluence of two creeks, the lake and community are private.	Being addressed by USEPA approved TMDL	Y
4	Peck Road Park Lake	Lake & Reservoir	103	Acres	Nonpoint Source			Y
4	Puddingstone Reservoir	Lake & Reservoir	243	Acres	Nonpoint Source			R
4	San Gabriel River Estuary	River & Stream	3	Miles	Source Unknown			Y
4	Westlake Lake	Lake & Reservoir	119	Acres	Agriculture-animal, Irrigated Ag Crop Production, Atmospheric Deposition, Groundwater Loadings, Major Municipal Point Source-dry and/or wet weather discharge, Golf course activities, Urban Runoff/Storm Sewers, Onsite Wastewater Systems (Septic Tanks)	Man-made lake that impounds water from local springs, and runoff from Lake Sherwood and Hidden Valley. The 125 acrea lake has an average depth of 10 feet.	Being addressed by USEPA approved TMDL	Y
5	Bear Creek (San Joaquin and Calaveras Counties; partly in Delta Waterways, eastern portion)	River & Stream	43	Miles	Source Unknown			Y
5	Butte Slough	River & Stream	9	Miles	Source Unknown			Y
5	Calaveras River, Lower (from Stockton Diverting Canal to the San Joaquin River; partly in Delta Waterways, eastern portion)	River & Stream	8	Miles	Urban Runoff/Storm Sewers			Y
5	Colusa Basin Drain	River & Stream	49	Miles	Source Unknown			Y
5	Five Mile Slough (Alexandria Place to Fourteen Mile Slough; in Delta Waterways, eastern portion)	River & Stream	2	Miles	Urban Runoff/Storm Sewers			N

Attachment 2
Dissolved Oxygen Impaired Water Bodies
(by Regional Water Board)

REGION	WATER BODY NAME	WATER BODY TYPE	ESTIMATED SIZE AFFECTED	UNIT	POTENTIAL SOURCES	COMMENTS PERTAINING TO IMPAIRMENT	BEING ADDRESSED BY TMDL/OTHER ACTION?	IS WATER BODY A RESERVOIR (R) - OR - DOWNSTREAM OF A RESERVOIR (Y/N)?
5	French Camp Slough (confluence of Littlejohns and Lone Tree Creeks to San Joaquin River, San Joaquin Co; partly in Delta Waterways, eastern portion)	River & Stream	6	Miles	Source Unknown			Y
5	Fresno River (Above Hensley Reservoir to confl w Nelder Creek and Lewis Fork)	River & Stream	30	Miles	Source Unknown			Y
5	Gordon Slough (from headwaters and Goodnow Slough to Adams Canal, Yolo County)	River & Stream	8	Miles	Source Unknown			N
5	Honcut Creek (Butte and Yuba Counties)	River & Stream	10	Miles	Source Unknown			Y
5	Kellogg Creek (Los Vaqueros Reservoir to Discovery Bay; partly in Delta Waterways, western portion)	River & Stream	14	Miles	Source Unknown			N
5	Delta Waterways (Stockton Ship Channel)	Estuary	1603	Acres	Municipal Point Sources, Urban Runoff/Storm Sewers		Being addressed by USEPA approved TMDL	Y
5	Knights Landing Ridge Cut (Yolo County)	River & Stream	13	Miles	Source Unknown			Y
5	Live Oak Slough	River & Stream	8	Miles	Source Unknown			Y
5	Los Banos Creek (below Los Banos Reservoir, Merced County)	River & Stream	31	Miles	Source Unknown			Y
5	Main Drainage Canal	River & Stream	9	Miles	Source Unknown			Y
5	Hensley Lake	Lake & Reservoir	1669	Acres	Source Unknown	The 1,500 acre lake was created by the construction of Hidden Dam on the Fresno River. Built for flood control, irrigation, resource management and recreation.		Y
5	Middle River (in Delta Waterways, southern portion)	River & Stream	10	Miles	Hydromodification, Source Unknown			Y
5	Miners Ravine (Placer County)	River & Stream	9	Miles	Source Unknown			N
5	Mokelumne River, Lower (in Delta Waterways, eastern portion)	River & Stream	34	Miles	Source Unknown			Y

Attachment 2
Dissolved Oxygen Impaired Water Bodies
(by Regional Water Board)

REGION	WATER BODY NAME	WATER BODY TYPE	ESTIMATED SIZE AFFECTED	UNIT	POTENTIAL SOURCES	COMMENTS PERTAINING TO IMPAIRMENT	BEING ADDRESSED BY TMDL/OTHER ACTION?	IS WATER BODY A RESERVOIR (R) - OR - DOWNSTREAM OF A RESERVOIR (Y/N)?
5	Mormon Slough (Commerce Street to Stockton Deep Water Channel; partly in Delta Waterways, eastern portion)	River & Stream	1	Miles	Urban Runoff/Storm Sewers			Y
5	Mosher Slough (downstream of I-5; in Delta Waterways, eastern portion)	River & Stream	1	Miles	Urban Runoff/Storm Sewers			Y
5	Hume Lake	Lake & Reservoir	87	Acres	Source Unknown	Was used to store logs for an adjacent mill and supplied water for a flume used to transport cut lumber to Sanger, California. Now used for recreation.		R
5	Isabella Lake	Lake & Reservoir	7710	Acres	Source Unknown			Y
5	Newman Wasteway	River & Stream	8	Miles	Source Unknown			Y
5	Old River (San Joaquin River to Delta-Mendota Canal; in Delta Waterways, southern portion)	River & Stream	15	Miles	Hydromodification, Source Unknown			Y
5	Pit River (from confluence of N and S forks to Shasta Lake)	River & Stream	123	Miles	Agriculture, Agriculture-grazing			Y
5	Pixley Slough (San Joaquin County; partly in Delta Waterways, eastern portion)	River & Stream	13	Miles	Source Unknown			Y
5	Pleasant Grove Creek	River & Stream	20	Miles	Source Unknown			Y
5	Pleasant Grove Creek, South Branch	River & Stream	7	Miles	Source Unknown			N
5	Sacramento Slough	River & Stream	2	Miles	Source Unknown			Y
5	Sand Creek (Colusa County)	River & Stream	20	Miles	Source Unknown			Y
5	Smith Canal (in Delta Waterways, eastern portion)	River & Stream	2	Miles	Urban Runoff/Storm Sewers			N
5	Spring Creek (Colusa County)	River & Stream	13	Miles	Source Unknown			Y
5	Stone Corral Creek	River & Stream	22	Miles	Source Unknown			Y
5	Sycamore Slough (Yolo County)	River & Stream	17	Miles	Source Unknown			Y
5	Tom Paine Slough (in Delta Waterways, southern portion)	River & Stream	14	Miles	Source Unknown			Y

Attachment 2
Dissolved Oxygen Impaired Water Bodies
(by Regional Water Board)

REGION	WATER BODY NAME	WATER BODY TYPE	ESTIMATED SIZE AFFECTED	UNIT	POTENTIAL SOURCES	COMMENTS PERTAINING TO IMPAIRMENT	BEING ADDRESSED BY TMDL/OTHER ACTION?	IS WATER BODY A RESERVOIR (R) - OR - DOWNSTREAM OF A RESERVOIR (Y/N)?
6	Hilton Creek	River & Stream	9	Miles	Source Unknown			N
6	Crowley Lake	Lake & Reservoir	4861	Acres	Source Unknown	Reservoir on the Upper Owens River in Southern Mono County. Created as storage in 1941 for the Los Angeles Aqueduct and for flood control.		R
6	Pleasant Valley Reservoir	Lake & Reservoir	99	Acres	Flow Regulation/Modification, Nonpoint Source			R
7	New River (Imperial County)	River & Stream	66	Miles	Source Unknown			Y
8	Elsinore, Lake	Lake & Reservoir	2431	Acres	Unknown Nonpoint Source	Largest natural freshwater lake in Southern California	Being addressed by USEPA approved TMDL	Y
9	Loveland Reservoir	Lake & Reservoir	420	Acres	Source Unknown	It is operated primarily for flood control and municipal water storage in conjunction with downstream Sweetwater Dam but the reservoir is also open to the public for fishing.		R
9	San Diego River (Lower)	River & Stream	16	Miles	Unknown Nonpoint Source	Impairment transcends adjacent Calwater watershed 90712.		Y
9	San Diego River (Lower)	River & Stream	16	Miles	Unknown Point Source	Impairment transcends adjacent Calwater watershed 90712.		Y
9	San Diego River (Lower)	River & Stream	16	Miles	Urban Runoff/Storm Sewers	Impairment transcends adjacent Calwater watershed 90712.		Y
9	Sweetwater Reservoir	Lake & Reservoir	925	Acres	Agriculture-grazing, Source Unknown, Unknown Nonpoint Source, Unknown Point Source, Urban Runoff/Storm Sewers			R
9	Tijuana River	River & Stream	6	Miles	Agriculture-animal, Wastewater, Unknown Nonpoint Source, Unknown Point Source, Urban Runoff/Storm Sewers			Y
9	Tijuana River Estuary	Estuary	1319	Acres	Wastewater			Y
9	Tijuana River Estuary	Estuary	1319	Acres	Unknown Nonpoint Source, Unknown Point Source			Y
9	Tijuana River Estuary	Estuary	1319	Acres	Urban Runoff/Storm Sewers			Y

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Attachment 3
Mercury Impaired Water Bodies
(by Regional Water Board)

REGION	WATER BODY NAME	WATER BODY TYPE	ESTIMATED SIZE AFFECTED	UNIT	POTENTIAL SOURCES	COMMENTS PERTAINING TO IMPAIRMENT	BEING ADDRESSED BY TMDL/OTHER ACTION?	IS WATER BODY A RESERVOIR (R) - OR - DOWNSTREAM OF A RESERVOIR (Y/N)?
1	Eel River HU, Upper Main HA, Lake Pillsbury HSA, Lake Pillsbury	Lake & Reservoir	1973	Acres	Natural Sources, Inactive Mining, Nonpoint Source			R
1	Russian River HU, Middle Russian River HA, Warm Springs HSA, Lake Sonoma [Reservoir]	Lake & Reservoir	2377	Acres	Resource Extraction, Nonpoint Source	The Russian River HU, Middle Russian River HA, Warm Springs HSA, Lake Sonoma [Reservoir] includes the following Calwater Planning Watersheds (PWS): 114.24022, 114.24030 and 114.24032.		R
1	Russian River HU, Upper Russian River HA, Coyote Valley HSA, Lake Mendocino [Reservoir]	Lake & Reservoir	1704	Acres	Resource Extraction, Nonpoint Source			R
1	Shastina, Lake	Lake & Reservoir	1413.89	Acres	Atmospheric Deposition, Natural Sources, Resource Extraction, Source Unknown			R
1	Trinity Lake (was Claire Engle Lake)	Lake & Reservoir	15985	Acres	Atmospheric Deposition, Natural Sources, Resource Extraction, Source Unknown			R
1	Russian River HU, Middle Russian River HA, Laguna de Santa Rosa	River & Stream	96	Miles	Source Unknown			N
1	Trinity River HU, Upper HA, Trinity River, East Fork	River & Stream	92	Miles	Source Unknown	The Trinity River HU, Upper HA, Trinity River, East Fork includes the following Calwater Super Planning Watersheds (SPWs): Mumbo Creek SPW 106.40030 and Blue Ridge SPW 106.40040.		N
2	Central Basin, San Francisco (part of SF Bay, Lower)	Bay & Harbor	39.6916	Acres		Current data indicate fish consumption and wildlife consumption impacted uses: health consumption advisory in effect for multiple fish species including striped bass and shark. Major source is historic: gold mining sediments and local mercury mining; most significant ongoing source is erosion and drainage from abandoned mines; moderate to low level inputs from point sources.	Being addressed by USEPA approved TMDL	Y
2	Oakland Inner Harbor (Fruitvale Site, part of SF Bay, Lower)	Bay & Harbor	0.928347	Acres	Atmospheric Deposition, Industrial Point Sources, Municipal Point Sources, Natural Sources, Resource Extraction, Nonpoint Source	Current data indicate fish consumption and wildlife consumption impacted uses: health consumption advisory in effect for multiple fish species including striped bass and shark. Major source is historic: gold mining sediments and local mercury mining; most significant ongoing source is erosion and drainage from abandoned mines; moderate to low level inputs from point sources.	Being addressed by USEPA approved TMDL	Y

Attachment 3
Mercury Impaired Water Bodies
(by Regional Water Board)

REGION	WATER BODY NAME	WATER BODY TYPE	ESTIMATED SIZE AFFECTED	UNIT	POTENTIAL SOURCES	COMMENTS PERTAINING TO IMPAIRMENT	BEING ADDRESSED BY TMDL/OTHER ACTION?	IS WATER BODY A RESERVOIR (R) - OR - DOWNSTREAM OF A RESERVOIR (Y/N)?
2	Oakland Inner Harbor (Pacific Dry-dock Yard 1 Site, part of SF Bay, Lower)	Bay & Harbor	1.77713	Acres	Atmospheric Deposition, Industrial Point Sources, Municipal Point Sources, Natural Sources, Resource Extraction, Nonpoint Source, Source Unknown	Current data indicate fish consumption and wildlife consumption impacted uses: health consumption advisory in effect for multiple fish species including striped bass and shark. Major source is historic: gold mining sediments and local mercury mining; most significant ongoing source is erosion and drainage from abandoned mines; moderate to low level inputs from point sources.	Being addressed by USEPA approved TMDL	Y
2	Richardson Bay	Bay & Harbor	2438.87	Acres	Atmospheric Deposition, Municipal Point Sources, Natural Sources, Resource Extraction, Nonpoint Source	Current data indicate fish consumption and wildlife consumption impacted uses: health consumption advisory in effect for multiple fish species including striped bass and shark. Major source is historic: gold mining sediments and local mercury mining; most significant ongoing source is erosion and drainage from abandoned mines; moderate to low level inputs from point sources.	Being addressed by USEPA approved TMDL	Y
2	San Francisco Bay, Central	Bay & Harbor	70992.3	Acres	Atmospheric Deposition, Industrial Point Sources, Municipal Point Sources, Natural Sources, Resource Extraction, Nonpoint Source	Current data indicate fish consumption and wildlife consumption impacted uses: health consumption advisory in effect for multiple fish species including striped bass and shark. Major source is historic: gold mining sediments and local mercury mining; most significant ongoing source is erosion and drainage from abandoned mines; moderate to low level inputs from point sources.	Being addressed by USEPA approved TMDL	Y
2	San Francisco Bay, Lower	Bay & Harbor	92274	Acres	Atmospheric Deposition, Industrial Point Sources, Municipal Point Sources, Natural Sources, Resource Extraction, Nonpoint Source	Current data indicate fish consumption and wildlife consumption impacted uses: health consumption advisory in effect for multiple fish species including striped bass and shark. Major source is historic: gold mining sediments and local mercury mining; most significant ongoing source is erosion and drainage from abandoned mines; moderate to low level inputs from point sources.	Being addressed by USEPA approved TMDL	Y
2	San Francisco Bay, South	Bay & Harbor	9204	Acres	Atmospheric Deposition, Industrial Point Sources, Municipal Point Sources, Natural Sources, Resource Extraction, Nonpoint Source	Current data indicate fish consumption and wildlife consumption impacted uses: health consumption advisory in effect for multiple fish species including striped bass and shark. Major source is historic: gold mining sediments and local mercury mining; most significant ongoing source is erosion and drainage from abandoned mines; moderate to low level inputs from point sources.	Being addressed by USEPA approved TMDL	Y

Attachment 3
Mercury Impaired Water Bodies
(by Regional Water Board)

REGION	WATER BODY NAME	WATER BODY TYPE	ESTIMATED SIZE AFFECTED	UNIT	POTENTIAL SOURCES	COMMENTS PERTAINING TO IMPAIRMENT	BEING ADDRESSED BY TMDL/OTHER ACTION?	IS WATER BODY A RESERVOIR (R) - OR - DOWNSTREAM OF A RESERVOIR (Y/N)?
2	San Leandro Bay (part of SF Bay, Lower)	Bay & Harbor	588.324	Acres	Atmospheric Deposition, Industrial Point Sources, Municipal Point Sources, Natural Sources, Resource Extraction, Nonpoint Source, Source Unknown	Current data indicate fish consumption and wildlife consumption impacted uses: health consumption advisory in effect for multiple fish species including striped bass and shark. Major source is historic: gold mining sediments and local mercury mining; most significant ongoing source is erosion and drainage from abandoned mines; moderate to low level inputs from point sources.	Being addressed by USEPA approved TMDL	Y
2	San Pablo Bay	Bay & Harbor	68348.92	Acres	Atmospheric Deposition, Municipal Point Sources, Natural Sources, Resource Extraction, Nonpoint Source	Current data indicate fish consumption and wildlife consumption impacted uses: health consumption advisory in effect for multiple fish species including striped bass and shark. Major source is historic: gold mining sediments and local mercury mining; most significant ongoing source is erosion and drainage from abandoned mines; moderate to low level inputs from point sources.	Being addressed by USEPA approved TMDL	Y
2	Suisun Bay	Bay & Harbor	25335	Acres	Atmospheric Deposition, Industrial Point Sources, Natural Sources, Resource Extraction, Nonpoint Source	Current data indicate fish consumption and wildlife consumption impacted uses. Major source is historic: gold mining sediments and local mercury mining; most significant ongoing source is erosion and drainage from abandoned mines; moderate to low level inputs from point sources.	Being addressed by USEPA approved TMDL	Y
2	Tomales Bay	Bay & Harbor	8545.46	Acres	Mine Tailings	Current data indicate fish consumption and wildlife consumption impacted uses: health consumption advisory in effect for multiple fish species including striped bass and shark. Major source is historic: gold mining sediments and local mercury mining; most significant ongoing source is erosion and drainage from abandoned mines; moderate to low level inputs from point sources.		Y
2	Pacific Ocean at Pillar Point	Coastal & Bay Shoreline	0.62	Miles	Source Unknown			N
2	Carquinez Strait	Estuary	5657.31	Acres	Atmospheric Deposition, Industrial Point Sources, Municipal Point Sources, Natural Sources, Resource Extraction, Nonpoint Source	Current data indicate fish consumption and wildlife consumption impacted uses. Major source is historic: gold mining sediments and local mercury mining; most significant ongoing source is erosion and drainage from abandoned mines; moderate to low level inputs from point sources.	Being addressed by USEPA approved TMDL	Y
2	Castro Cove, Richmond (San Pablo Basin)	Estuary	71.4037	Acres	Point Source, Urban Runoff/Storm Sewers		Being addressed by USEPA approved TMDL	Y
2	Mission Creek	Estuary	8.45275	Acres	Industrial Point Sources, Combined Sewer Overflow			N

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Mercury Impaired Water Bodies
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REGION	WATER BODY NAME	WATER BODY TYPE	ESTIMATED SIZE AFFECTED	UNIT	POTENTIAL SOURCES	COMMENTS PERTAINING TO IMPAIRMENT	BEING ADDRESSED BY TMDL/OTHER ACTION?	IS WATER BODY A RESERVOIR (R) - OR - DOWNSTREAM OF A RESERVOIR (Y/N)?
2	Sacramento San Joaquin Delta	Estuary	41736.4	Acres	Atmospheric Deposition, Industrial Point Sources, Municipal Point Sources, Natural Sources, Resource Extraction, Nonpoint Source	Current data indicate fish consumption and wildlife consumption impacted uses. Major source is historic: gold mining sediments and local mercury mining; most significant ongoing source is erosion and drainage from abandoned mines; moderate to low level inputs from point sources.	Being addressed by USEPA approved TMDL	Y
2	Stege Marsh	Estuary	29.2108	Acres	Source Unknown		Being addressed by action other than TMDL	Y
2	Almaden Lake	Lake & Reservoir	21	Acres	Mine Tailings	Downstream of Almaden Reservoir/ Dam		Y
2	Almaden Reservoir	Lake & Reservoir	51.69	Acres	Mine Tailings			R
2	Anderson Reservoir	Lake & Reservoir	1012.6	Acres	Source Unknown			R
2	Bon Tempe Reservoir	Lake & Reservoir	120	Acres	Source Unknown			R
2	Calaveras Reservoir	Lake & Reservoir	1501	Acres	Source Unknown			R
2	Calero Reservoir	Lake & Reservoir	333.53	Acres	Mine Tailings, Surface Mining			R
2	Del Valle Reservoir	Lake & Reservoir	1022	Acres	Source Unknown			R
2	Guadalupe Reservoir	Lake & Reservoir	62.78	Acres	Mine Tailings, Surface Mining			R
2	Lafayette Reservoir	Lake & Reservoir	114	Acres	Source Unknown			R
2	Lake Chabot (Alameda Co)	Lake & Reservoir	312	Acres	Source Unknown			R
2	Lake Herman	Lake & Reservoir	108.08	Acres	Surface Mining	Problem due to historical mining. Normal surface area of 110 acres & used for		R
2	Nicasio Reservoir	Lake & Reservoir	829	Acres	Source Unknown			R
2	San Pablo Reservoir	Lake & Reservoir	784.46	Acres	Atmospheric Deposition			R
2	Shadow Cliffs Reservoir	Lake & Reservoir	90	Acres	Source Unknown			R
2	Soulajule Reservoir	Lake & Reservoir	49	Acres	Source Unknown			R
2	Stevens Creek Reservoir	Lake & Reservoir	85	Acres	Source Unknown			R
2	Alamitos Creek	River & Stream	7.1	Miles	Mine Tailings			Y
2	Guadalupe Creek	River & Stream	8.1	Miles	Mine Tailings			Y
2	Guadalupe River	River & Stream	18.21	Miles	Mine Tailings			Y
2	Walker Creek	River & Stream	15.8352	Miles	Mine Tailings, Surface Mining		Being addressed by USEPA approved TMDL	Y
2	Suisun Marsh Wetlands	Wetland, Tidal	66339.3	Acres	Flow Regulation/Modification, Urban Runoff/Storm Sewers			Y
3	Chesbro Reservoir	Lake & Reservoir	213.558	Acres	Source Unknown			R
3	Hernandez Reservoir	Lake & Reservoir	626.481	Acres	Subsurface Mining		Being addressed by USEPA approved TMDL	R
3	Nacimiento Reservoir	Lake & Reservoir	5735.74	Acres	Surface Mining			R
3	San Antonio Reservoir	Lake & Reservoir	5417	Acres	Source Unknown			R
3	Uvas Reservoir	Lake & Reservoir	212.428	Acres	Source Unknown			R
3	Clear Creek (San Benito County)	River & Stream	9.61097	Miles	Resource Extraction		Being addressed by USEPA approved TMDL	N

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4	Los Angeles Harbor - Consolidated Slip	Bay & Harbor	36	Acres	Nonpoint Source	Sources include the historical use of pesticides and lubricants, stormwater runoff, aerial deposition, and historical discharges for metals.		Y
4	Los Angeles Harbor - Fish Harbor	Bay & Harbor	91	Acres	Source Unknown			N
4	Calleguas Creek Reach 1 (was Mugu Lagoon on 1998 303(d) list)	Estuary	343.791	Acres	Nonpoint Source, Point Source		Being addressed by USEPA approved TMDL	N
4	Casitas, Lake	Lake & Reservoir	2069	Acres	Natural Sources, Source Unknown			R
4	Castaic Lake	Lake & Reservoir	2282	Acres	Source Unknown			R
4	El Dorado Lakes	Lake & Reservoir	31.0447	Acres	Nonpoint Source	Not a reservoir under our definition (per State Water Board GIS staff).		N
4	Lake Sherwood	Lake & Reservoir	135.07	Acres	Nonpoint Source	Has Lake Sherwood Dam on it, but appears used only for recreation.		R
4	Puddingstone Reservoir	Lake & Reservoir	243.08	Acres	Nonpoint Source			R
4	Pyramid Lake	Lake & Reservoir	1483	Acres	Natural Sources, Source Unknown, Unknown Nonpoint Source			R
4	Triunfo Canyon Creek Reach 1	River & Stream	2.51	Miles	Nonpoint Source			Y
4	Triunfo Canyon Creek Reach 2	River & Stream	3.32	Miles	Nonpoint Source			Y
5	Delta Waterways (central portion)	Estuary	11425	Acres	Resource Extraction	All resource extraction sources are abandoned mines.		Y
5	Delta Waterways (eastern portion)	Estuary	2972	Acres	Resource Extraction	All resource extraction sources are abandoned mines.		Y
5	Delta Waterways (export area)	Estuary	583	Acres	Resource Extraction	All resource extraction sources are abandoned mines.		Y
5	Delta Waterways (northern portion)	Estuary	6795	Acres	Resource Extraction	All resource extraction sources are abandoned mines.		Y
5	Delta Waterways (northwestern portion)	Estuary	2587	Acres	Resource Extraction	All resource extraction sources are abandoned mines.		Y
5	Delta Waterways (southern portion)	Estuary	3125	Acres	Resource Extraction	All resource extraction sources are abandoned mines.		Y
5	Delta Waterways (Stockton Ship Channel)	Estuary	1603	Acres	Resource Extraction	All resource extraction sources are abandoned mines.		Y
5	Delta Waterways (western portion)	Estuary	14524	Acres	Resource Extraction	All resource extraction sources are abandoned mines.		Y
5	Almanor Lake	Lake & Reservoir	25314.1	Acres	Resource Extraction			R
5	Beach Lake	Lake & Reservoir	95.7063	Acres	Resource Extraction	Is downstream of Mather Dam.		Y
5	Berryessa, Lake	Lake & Reservoir	19083.2	Acres	Resource Extraction	Formed by the Monticello Dam, which provides water and hydroelectricity to the North Bay region of the San Francisco Bay Area.		R
5	Black Butte Reservoir	Lake & Reservoir	4506.72	Acres	Resource Extraction			R
5	Britton Lake	Lake & Reservoir	1099.74	Acres	Resource Extraction			R
5	Camanche Reservoir	Lake & Reservoir	7389.16	Acres	Resource Extraction			R
5	Camp Far West Reservoir	Lake & Reservoir	1945.3	Acres	Resource Extraction			R

Attachment 3
Mercury Impaired Water Bodies
(by Regional Water Board)

REGION	WATER BODY NAME	WATER BODY TYPE	ESTIMATED SIZE AFFECTED	UNIT	POTENTIAL SOURCES	COMMENTS PERTAINING TO IMPAIRMENT	BEING ADDRESSED BY TMDL/OTHER ACTION?	IS WATER BODY A RESERVOIR (R) - OR - DOWNSTREAM OF A RESERVOIR (Y/N)?
5	Clear Lake	Lake & Reservoir	40070.2	Acres	Resource Extraction	Is downstream of several smaller dams. Largest natural freshwater lake entirely in CA, and has the largest surface area of any freshwater lake entirely in CA. Sole outlet is Cache Creek. There is a dam on Cache Creek to increase the lake's capacity and to regulate outflow. However, Clear Lake is not to be confused with Clear Lake Reservoir located in Modoc County.	Being addressed by USEPA approved TMDL	N
5	Combie, Lake	Lake & Reservoir	362.04	Acres	Resource Extraction	All resource extraction sources are abandoned mines. Lake Combie is impounded by Lake Combie Dam on the Bear River in Placer County and is used for irrigation, drinking water and hydroelectric power purposes. At normal levels it has a surface area of 360 acres.		R
5	Davis Creek Reservoir	Lake & Reservoir	163.3	Acres	Resource Extraction			R
5	Don Pedro Lake	Lake & Reservoir	11055.5	Acres	Resource Extraction	Lake Don Pedro has 13,000 surface-acres of water, making it the fifth largest reservoir in California.		R
5	East Park Reservoir	Lake & Reservoir	1698.02	Acres	Resource Extraction			R
5	Englebright Lake	Lake & Reservoir	754.402	Acres	Resource Extraction	All resource extraction sources are abandoned mines.		R
5	Folsom Lake	Lake & Reservoir	11064	Acres	Resource Extraction			R
5	Hell Hole Reservoir	Lake & Reservoir	1370.31	Acres	Source Unknown			R
5	Hensley Lake	Lake & Reservoir	1668.94	Acres	Source Unknown	Hensley Lake is created by Hidden Dam on the Fresno River in Madera County, California and is used for flood control, irrigation and recreation purposes. Its normal surface area is 2.5 square miles		R
5	Hetch Hetchy Reservoir	Lake & Reservoir	1839.77	Acres	Source Unknown			R
5	Indian Valley Reservoir (Lake County)	Lake & Reservoir	3469.4	Acres	Resource Extraction			R
5	Kaweah Lake	Lake & Reservoir	1701.75	Acres	Resource Extraction	Lake Kaweah is the result of Terminus Dam on the Kaweah River in Tulare County, California and is used for flood control, irrigation, recreation and hydroelectric power purposes.		R
5	Marsh Creek Reservoir	Lake & Reservoir	278.328	Acres	Resource Extraction			R
5	McClure Reservoir (Mariposa County)	Lake & Reservoir	5604.96	Acres	Resource Extraction			R
5	Mile Long Pond (Butte County)	Lake & Reservoir	84	Acres	Resource Extraction	Not a reservoir under our definition (per State Water Board GIS staff).		N
5	Millerton Lake	Lake & Reservoir	4365.83	Acres	Resource Extraction	The lake was created by construction of the Friant Dam across the San Joaquin River.		R
5	Modesto Reservoir	Lake & Reservoir	1964	Acres	Source Unknown			R

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Mercury Impaired Water Bodies
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REGION	WATER BODY NAME	WATER BODY TYPE	ESTIMATED SIZE AFFECTED	UNIT	POTENTIAL SOURCES	COMMENTS PERTAINING TO IMPAIRMENT	BEING ADDRESSED BY TMDL/OTHER ACTION?	IS WATER BODY A RESERVOIR (R) - OR - DOWNSTREAM OF A RESERVOIR (Y/N)?
5	Natoma, Lake	Lake & Reservoir	484.992	Acres	Resource Extraction	The Lake was created by Nimbus Dam across the American River. Lake Natoma is a regulating reservoir for releases from Folsom Lake. The Dam and Lake are features of the Central Valley project.		R
5	New Bullards Bar Reservoir	Lake & Reservoir	3864.26	Acres	Resource Extraction			R
5	New Hogan Lake (Calaveras County)	Lake & Reservoir	3180	Acres	Resource Extraction	The 4,400 surface acre lake was created with the completion of New Hogan Dam		R
5	New Melones Reservoir	Lake & Reservoir	1654.1	Acres	Resource Extraction			R
5	ONeill Forebay	Lake & Reservoir	2254.17	Acres	Source Unknown	Created by the construction of the O'Neill Dam across San Luis Creek.		R
5	Oroville, Lake	Lake & Reservoir	15399.9	Acres	Resource Extraction	Formed by the Oroville Dam across the Feather River. One of the largest reservoirs in CA, after Shasta Lake.		R
5	Oxbow Reservoir (Ralston Afterbay, El Dorado and Placer Counties)	Lake & Reservoir	65	Acres	Resource Extraction			R
5	Pardee Reservoir	Lake & Reservoir	2185.16	Acres	Resource Extraction			R
5	Pine Flat Reservoir	Lake & Reservoir	5770.4	Acres	Source Unknown			R
5	Robinsons Riffle Pond (Butte County)	Lake & Reservoir	7.9	Acres	Resource Extraction			N
5	Rollins Reservoir	Lake & Reservoir	773.72	Acres	Resource Extraction			R
5	San Luis Reservoir	Lake & Reservoir	13007.4	Acres	Source Unknown			R
5	Scotts Flat Reservoir	Lake & Reservoir	659.955	Acres	Resource Extraction			R
5	Shasta Lake	Lake & Reservoir	27335	Acres	Resource Extraction	Formed by the construction of Shasta Dam across the Sacramento River. At full pool has a surface area of 30,000 acres. It is the largest reservoir in CA.		R
5	Slab Creek Reservoir (El Dorado County)	Lake & Reservoir	242	Acres	Resource Extraction			R
5	Solano, Lake	Lake & Reservoir	15.4875	Acres	Resource Extraction	Not a reservoir by our definition (per State Water Board GIS staff), but is downstream of Lake Berryessa dam. A section of Putah Creek with a small dam on it. A diversion dam is located on the lower end of the lake, splitting water usage for agriculture and water flows into Putah Creek.		N
5	Stony Gorge Reservoir	Lake & Reservoir	1410.63	Acres	Source Unknown			R
5	Thermalito Afterbay	Lake & Reservoir	3863.39	Acres	Resource Extraction			R
5	Tulloch Reservoir	Lake & Reservoir	992.061	Acres	Source Unknown			R
5	Turlock Lake	Lake & Reservoir	3180	Acres	Source Unknown	It is a 3500-surface-acre lake used for drinking water, recreation, and other uses.		R
5	Whiskeytown Lake (areas near Oak Bottom, Brandy Creek Campgrounds and Whiskeytown)	Lake & Reservoir	97.5489	Acres	Resource Extraction	Formed by Whiskeytown Dam on Clear Creek.		R
5	Wildwood, Lake (Nevada County)	Lake & Reservoir	289	Acres	Resource Extraction			R
5	Woodward Reservoir	Lake & Reservoir	1775	Acres	Source Unknown			R
5	American River, Lower (Nimbus Dam to confluence with Sacramento River)	River & Stream	26.9286	Miles	Resource Extraction	All resource extraction sources are abandoned mines.		Y
5	American River, North Fork	River & Stream	71.2455	Miles	Resource Extraction	This listing is from North Fork Dam to Folsom Lake.		Y

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Mercury Impaired Water Bodies
(by Regional Water Board)

REGION	WATER BODY NAME	WATER BODY TYPE	ESTIMATED SIZE AFFECTED	UNIT	POTENTIAL SOURCES	COMMENTS PERTAINING TO IMPAIRMENT	BEING ADDRESSED BY TMDL/OTHER ACTION?	IS WATER BODY A RESERVOIR (R) - OR - DOWNSTREAM OF A RESERVOIR (Y/N)?
5	American River, South Fork (below Slab Creek Reservoir to Folsom Lake)	River & Stream	37	Miles	Resource Extraction			Y
5	Bear Creek (Colusa County)	River & Stream	14.9347	Miles	Resource Extraction		Being addressed by USEPA approved TMDL	Y
5	Bear River, Lower (below Camp Far West Reservoir)	River & Stream	20.52	Miles	Resource Extraction			Y
5	Bear River, Upper (from Combie Lake to Camp Far West Reservoir, Nevada and Placer Counties)	River & Stream	10.2697	Miles	Resource Extraction			Y
5	Big Chico Creek (Butte and Tehama Counties)	River & Stream	45	Miles	Resource Extraction			N
5	Butte Creek (Butte County)	River & Stream	94.1915	Miles	Resource Extraction			Y
5	Cache Creek, Lower (Clear Lake Dam to Cache Creek Settling Basin near Yolo Bypass)	River & Stream	95.9386	Miles	Resource Extraction	All resource extraction sources are abandoned mines.	Being addressed by USEPA approved TMDL	Y
5	Cache Creek, North Fork (below Indian Valley Reservoir, Lake County)	River & Stream	14	Miles	Resource Extraction		Being addressed by USEPA approved TMDL	Y
5	Calaveras River, Lower (from Stockton Diverting Canal to the San Joaquin River; partly in Delta Waterways, eastern portion)	River & Stream	7.6	Miles	Resource Extraction			Y
5	Clear Creek (below Whiskeytown Lake, Shasta County)	River & Stream	18	Miles	Resource Extraction			Y
5	Colusa Basin Drain	River & Stream	49.2939	Miles	Resource Extraction			Y
5	Davis Creek (downstream from Davis Creek Reservoir, Yolo County)	River & Stream	6.3	Miles	Resource Extraction			Y
5	Davis Creek (upstream from Davis Creek Reservoir, Yolo County)	River & Stream	4.8	Miles	Resource Extraction			N
5	Deer Creek (from Deer Creek Reservoir to Lake Wildwood, Nevada County)	River & Stream	16	Miles	Resource Extraction			Y
5	Duck Creek (San Joaquin County)	River & Stream	33	Miles	Resource Extraction			Y
5	Dunn Creek (Mt Diablo Mine to Marsh Creek)	River & Stream	0.696711	Miles	Resource Extraction	All resource extraction sources are abandoned mines.		N
5	Feather River, Lower (Lake Oroville Dam to Confluence with Sacramento River)	River & Stream	42	Miles	Resource Extraction	All resource extraction sources are abandoned mines.		Y
5	Feather River, North Fork (below Lake Almanor)	River & Stream	54.15412	Miles	Resource Extraction	This listing is from Poe Reservoir Dam to Lake Oroville.		Y
5	Gold Run (Nevada County)	River & Stream	1.9	Miles	Resource Extraction			Y
5	Harley Gulch	River & Stream	5.99	Miles	Resource Extraction	All resource extraction sources are abandoned mines.	Being addressed by USEPA approved TMDL	N
5	Humbug Creek	River & Stream	2.20272	Miles	Resource Extraction	All resource extraction sources are abandoned mines.		N
5	James Creek	River & Stream	6.29	Miles	Resource Extraction	All resource extraction sources are abandoned mines.		N
5	Little Deer Creek	River & Stream	4.06404	Miles	Resource Extraction			Y
5	Marsh Creek (Dunn Creek to Marsh Creek Reservoir)	River & Stream	11.3583	Miles	Resource Extraction	All resource extraction sources are abandoned mines.		N

Attachment 3
Mercury Impaired Water Bodies
(by Regional Water Board)

REGION	WATER BODY NAME	WATER BODY TYPE	ESTIMATED SIZE AFFECTED	UNIT	POTENTIAL SOURCES	COMMENTS PERTAINING TO IMPAIRMENT	BEING ADDRESSED BY TMDL/OTHER ACTION?	IS WATER BODY A RESERVOIR (R) - OR - DOWNSTREAM OF A RESERVOIR (Y/N)?
5	Marsh Creek (Marsh Creek Reservoir to San Joaquin River; partly in Delta Waterways, western portion)	River & Stream	10.3438	Miles	Resource Extraction, Source Unknown, Urban Runoff/Storm Sewers	All resource extraction sources are abandoned mines.		Y
5	Merced River, Lower (McSwain Reservoir to San Joaquin River)	River & Stream	49.5891	Miles	Resource Extraction			Y
5	Mokelumne River, Lower (in Delta Waterways, eastern portion)	River & Stream	34	Miles	Resource Extraction			Y
5	Mosher Slough (downstream of I-5; in Delta Waterways, eastern portion)	River & Stream	1.31082	Miles	Source Unknown			Y
5	Natomas Cross Canal (Sutter County)	River & Stream	5.8	Miles	Resource Extraction			Y
5	Natomas East Main Drainage Canal (aka Steelhead Creek, downstream of confluence with Arcade Creek)	River & Stream	3.54304	Miles	Source Unknown			Y
5	Panoche Creek (Silver Creek to Belmont Avenue)	River & Stream	17.6357	Miles	Resource Extraction	All resource extraction sources are abandoned mines.		Y
5	Putah Creek (Solano Lake to Putah Creek Sinks; partly in Delta Waterways, northwestern portion)	River & Stream	27	Miles	Resource Extraction, Source Unknown	All resource extraction sources are abandoned mines.		Y
5	Sacramento River (Cottonwood Creek to Red Bluff)	River & Stream	15.624	Miles	Resource Extraction			Y
5	Sacramento River (Red Bluff to Knights Landing)	River & Stream	81.77	Miles	Resource Extraction			Y
5	Sacramento River (Knights Landing to the Delta)	River & Stream	16.2676	Miles	Resource Extraction	All resource extraction sources are abandoned mines.		Y
5	Sacramento Slough	River & Stream	1.66	Miles	Source Unknown			Y
5	Salt Slough (upstream from confluence with San Joaquin River)	River & Stream	9.87	Miles	Source Unknown			Y
5	San Carlos Creek (downstream of New Idria Mine)	River & Stream	5.05781	Miles	Acid Mine Drainage, Resource Extraction	All resource extraction sources are abandoned mines.		Y
5	San Joaquin River (Bear Creek to Mud Slough)	River & Stream	14	Miles	Resource Extraction			Y
5	San Joaquin River (Mud Slough to Merced River)	River & Stream	3	Miles	Resource Extraction			Y
5	San Joaquin River (Merced River to Tuolumne River)	River & Stream	29	Miles	Resource Extraction			Y
5	San Joaquin River (Tuolumne River to Stanislaus River)	River & Stream	8.4	Miles	Resource Extraction			Y
5	San Joaquin River (Stanislaus River to Delta Boundary)	River & Stream	3	Miles	Resource Extraction			Y
5	Stanislaus River, Lower	River & Stream	59.02	Miles	Resource Extraction			Y
5	Sulphur Creek (Colusa County)	River & Stream	13.8228	Miles	Resource Extraction	All resource extraction sources are abandoned mines.		N
5	Sutter Bypass	River & Stream	19.0771	Miles	Resource Extraction			Y
5	Tuolumne River, Lower (Don Pedro Reservoir to San Joaquin River)	River & Stream	60	Miles	Resource Extraction			Y
5	Yuba River, Lower	River & Stream	10.3706	Miles	Resource Extraction			Y
5	Yuba River, Middle Fork	River & Stream	45.1656	Miles	Resource Extraction	This listing is from Bear Creek to the North Yuba River.		Y
5	Yuba River, North Fork	River & Stream	36.9438	Miles	Resource Extraction	This listing is from New Bullards Bar Reservoir dam to Lake Englebright.		Y

Attachment 3
Mercury Impaired Water Bodies
(by Regional Water Board)

REGION	WATER BODY NAME	WATER BODY TYPE	ESTIMATED SIZE AFFECTED	UNIT	POTENTIAL SOURCES	COMMENTS PERTAINING TO IMPAIRMENT	BEING ADDRESSED BY TMDL/OTHER ACTION?	IS WATER BODY A RESERVOIR (R) - OR - DOWNSTREAM OF A RESERVOIR (Y/N)?
5	Yuba River, South Fork (Spaulding Reservoir to Englebright Reservoir)	River & Stream	48.35	Miles	Resource Extraction	This listing is from Rucker Creek to Lake Englebright.		Y
5	Mendota Pool	Wetland, Freshwater	3045.38	Acres	Resource Extraction			Y
6	Bodie Creek	River & Stream	11.3448	Miles	Source Unknown			N
6	Mammoth Creek (Old Mammoth Road to Highway 395)	River & Stream	6	Miles	Natural Sources			N
6	Mammoth Creek (Twin Lakes outlet to Old Mammoth Road)	River & Stream	1.9	Miles	Natural Sources			N
6	Mammoth Creek, unamed tributary (confluence is near Old Mammoth Rd)	River & Stream	1.7	Miles	Natural Sources			N
6	Susan River (Headwaters to Susanville)	River & Stream	36	Miles	Natural Sources			Y
6	Susan River (Litchfield to Honey Lake)	River & Stream	7.5	Miles	Source Unknown			Y
6	Susan River (Susanville to Litchfield)	River & Stream	16	Miles	Natural Sources			Y
7	Alamo River	River & Stream	57.2244	Miles	Source Unknown			Y
7	New River (Imperial County)	River & Stream	66	Miles	Source Unknown			Y
8	Rhine Channel	Bay & Harbor	20	Acres	Source Unknown			Y
8	Big Bear Lake	Lake & Reservoir	2865.01	Acres	Resource Extraction			R
9	San Diego Bay Shoreline, between Sampson and 28th Streets	Bay & Harbor	53	Acres	Major Industrial Point Source		Being addressed by action other than TMDL	Y
9	Hodges, Lake	Lake & Reservoir	1104	Acres	Source Unknown			R

Attachment 4
Salinity Impaired Water Bodies
(by Regional Water Board)

REGION	WATER BODY NAME	WATER BODY TYPE	ESTIMATED SIZE AFFECTED	UNIT	POLLUTANTS CAUSING IMPAIRMENT	POTENTIAL SOURCES	COMMENTS PERTAINING TO IMPAIRMENT	BEING ADDRESSED BY TMDL/OTHER ACTION?	IS WATER BODY A RESERVOIR (R) - OR - DOWNSTREAM OF A RESERVOIR (Y/N)?
1	Russian River HU, Middle Russian River HA, Big Sulphur Creek HSA	River & Stream	85	Miles	Specific Conductivity	Source Unknown			N
2	Suisun Marsh Wetlands	Wetland, Tidal	66339.3	Acres	Salinity/TDS/Chlorides	Flow Regulation/Modification, Urban Runoff/Storm Sewers	Additional monitoring and assessment needed.		Y
3	Alisal Creek (Monterey County)	River & Stream	16	Miles	Sodium	Nonpoint Source, Urban Runoff/Storm Sewers, Agriculture			N
3	Arroyo Paredon	River & Stream	5	Miles	Chloride, Sodium	Urban Runoff/Storm Sewers, Groundwater Loadings, Agriculture			N
3	Atascadero Creek (Santa Barbara county)	River & Stream	6	Miles	Chloride, Sodium	Urban Runoff/Storm Sewers, Confined Animal Feeding Operations (NPS), Agriculture, Grazing-Related Sources,			Y
3	Canada De La Gaviota	River & Stream	7	Miles	Chloride, Sodium	Grazing-Related Sources, Natural Sources, Highway/Road/Bridge Runoff			Y
3	Canada Del Refugio	River & Stream	7	Miles	Chloride, Sodium	Grazing-Related Sources, Natural Sources, Agriculture			Y
3	Carpinteria Creek	River & Stream	6	Miles	Sodium	Urban Runoff/Storm Sewers, Agriculture			N
3	Cholame Creek	River & Stream	9	Miles	Chloride, Electrical Conductivity, Sodium	Grazing-Related Sources, Natural Sources			N
3	Cuyama River (above Twitchell Reservior)	River & Stream	80	Miles	Chloride, Electrical Conductivity, Sodium	Natural Sources, Grazing-Related Sources, Agriculture, Resource Extraction, Municipal Point Sources	The impaired length is between Twitchell Reservoir and the Highway 33 Bridge.		N
3	Dos Pueblos Canyon Creek	River & Stream	7	Miles	Sodium	Source Unknown			N
3	Estrella River	River & Stream	28	Miles	Chloride, Sodium	Natural Sources, Agriculture, Grazing-Related Sources			N
3	Franklin Creek (Santa Barbara County)	River & Stream	3	Miles	Sodium	Groundwater Loadings, Natural Sources, Urban Runoff/Storm Sewers, Agriculture			N
3	Glen Annie Canyon	River & Stream	6	Miles	Chloride, Sodium	Other Urban Runoff, Golf course activities, Grazing-Related Sources, Agriculture,			Y
3	Jalama Creek	River & Stream	10	Miles	Chloride, Sodium	Natural Sources, Grazing-Related Sources			Y
3	Llagas Creek (below Chesbro Reservoir)	River & Stream	16	Miles	Chloride, Electrical Conductivity, Sodium, Total Dissolved Solids	Point Source, Nonpoint Source, Source Unknown,	Impaired section for Chlorides is located downstream of confluence with Miller Slough (approximately 1 mile of stream near Southside Drive).		Y
3	Los Berros Creek	River & Stream	13	Miles	Chloride, Sodium	Agriculture, Source Unknown, Grazing-Related Sources			N
3	Los Carneros Creek	River & Stream	6	Miles	Electrical Conductivity	Source Unknown			N
3	Maria Ygnacio Creek	River & Stream	7	Miles	Sodium	Source Unknown			N
3	Moore Creek	River & Stream	2	Miles	Electrical Conductivity	Source Unknown			N
3	Orcutt Creek	River & Stream	10	Miles	Chloride, Electrical Conductivity, Sodium	Other Urban Runoff, Agriculture, Source Unknown			N
3	Oso Flaco Creek	River & Stream	6	Miles	Chloride, Sodium	Agriculture, Source Unknown, Unknown Nonpoint Source			N
3	Pajaro River	River & Stream	32	Miles	Chloride, Sodium	Saltwater Intrusion, Agriculture, Other Urban Runoff, Natural Sources, Unknown Point Source			Y

Attachment 4
Salinity Impaired Water Bodies
(by Regional Water Board)

REGION	WATER BODY NAME	WATER BODY TYPE	ESTIMATED SIZE AFFECTED	UNIT	POLLUTANTS CAUSING IMPAIRMENT	POTENTIAL SOURCES	COMMENTS PERTAINING TO IMPAIRMENT	BEING ADDRESSED BY TMDL/OTHER ACTION?	IS WATER BODY A RESERVOIR (R) - OR - DOWNSTREAM OF A RESERVOIR (Y/N)?
3	Pismo Creek	River & Stream	5	Miles	Chloride, Sodium	Petroleum Activities, Grazing-Related Sources, Natural Sources, Resource Extraction, Agriculture, Transient Encampments			N
3	Rincon Creek	River & Stream	10	Miles	Chloride, Sodium	Source Unknown, Agriculture, Other Urban Runoff, Natural Sources			N
3	Salinas River (lower, estuary to near Gonzales Rd crossing, watersheds 30910 and 30920)	River & Stream	31	Miles	Chloride, Electrical Conductivity, Sodium, Total Dissolved Solids	Grazing-Related Sources, Natural Sources, Other Urban Runoff, Agriculture, Source Unknown	Impaired length for conductivity is from Del Monte Road to the River Mouth.		Y
3	Salinas River (upper, confluence of Nacimiento River to Santa Margarita Reservoir)	River & Stream	49	Miles	Chloride, Sodium	Pasture Grazing-Riparian and/or Upland, Agriculture, Urban Runoff/Storm Sewers, Pasture Grazing-Riparian and/or Upland			Y
3	Salsipuedes Creek (Santa Barbara County)	River & Stream	9	Miles	Chloride, Sodium	Agriculture, Grazing-Related Sources, Natural Sources			Y
3	San Antonio Creek (San Antonio Watershed, Rancho del las Flores Bridge at Hwy 135 to downstream at Railroad Bridge)	River & Stream	14	Miles	Chloride, Sodium	Agriculture, Natural Sources			N
3	San Benito River	River & Stream	86	Miles	Electrical Conductivity	Source Unknown, Agriculture, Other Urban Runoff, Natural Sources, Grazing-Related Sources, Resource Extraction			Y
3	San Jose Creek (Santa Barbara County)	River & Stream	10	Miles	Chloride, Electrical Conductivity, Sodium	Other Urban Runoff, Industrial Point Sources, Channelizaton			Y
3	San Lorenzo Creek (Monterey County)	River & Stream	49	Miles	Chloride, Electrical Conductivity, Sodium	Source Unknown, Natural Sources, Grazing-Related Sources			N
3	San Luis Obispo Creek (below Osos Street)	River & Stream	10	Miles	Chloride, Sodium	Grazing-Related Sources, Other Urban Runoff, Agriculture, Municipal Point Sources,			Y
3	San Miguelito Creek	River & Stream	10	Miles	Chloride, Sodium	Source Unknown			N
3	San Pedro Creek (Santa Barbara County)	River & Stream	7	Miles	Sodium	Other Urban Runoff, Natural Sources, Golf course activities			Y
3	San Simeon Creek	River & Stream	6	Miles	Chloride, Sodium	Grazing-Related Sources, Natural Sources, Wastewater - land disposal, Agriculture	Impaired length for Chloride is the Creek mouth to the first San Simeon Creek Road crossing, approximately 4 miles. Impaired length for Sodium is the Creek mouth to the first San Simeon Creek Road crossing, approximately 4 miles.		Y
3	Santa Maria River	River & Stream	51	Miles	Chloride, Sodium	Grazing-Related Sources, Agriculture, Other Urban Runoff, Natural Sources			N
3	Santa Rita Creek (Monterey County)	River & Stream	11	Miles	Sodium	Agriculture, Other Urban Runoff			N
3	Santa Ynez River (below city of Lompoc to Ocean)	River & Stream	4	Miles	Chloride, Sodium, Total Dissolved Solids	Natural Sources, Agriculture, Grazing-Related Sources, Other Urban Runoff, Municipal Point Sources			Y
3	Santa Ynez River (Cachuma Lake to below city of Lompoc)	River & Stream	43	Miles	Sodium, Total Dissolved Solids	Grazing-Related Sources, Agriculture, Other Urban Runoff, Natural Sources, Flow Regulation/Modification			Y
3	Sycamore Creek	River & Stream	4	Miles	Chloride, Sodium	Source Unknown			Y
3	Tecolote Creek (Santa Barbara County)	River & Stream	7	Miles	Chloride, Sodium	Natural Sources, Source Unknown			N

Attachment 4
Salinity Impaired Water Bodies
(by Regional Water Board)

REGION	WATER BODY NAME	WATER BODY TYPE	ESTIMATED SIZE AFFECTED	UNIT	POLLUTANTS CAUSING IMPAIRMENT	POTENTIAL SOURCES	COMMENTS PERTAINING TO IMPAIRMENT	BEING ADDRESSED BY TMDL/OTHER ACTION?	IS WATER BODY A RESERVOIR (R) - OR - DOWNSTREAM OF A RESERVOIR (Y/N)?
3	Tularcitos Creek	River & Stream	14	Miles	Chloride, Sodium	Source Unknown			Y
4	Calleguas Creek Reach 3 (Potrero Road upstream to confluence with Conejo Creek on 1998 303d list)	River & Stream	3	Miles	Chloride, Total Dissolved Solids	Major Municipal Point Source-dry weather discharge, Groundwater Loadings, Domestic Use of Ground Water, Atmospheric Deposition, Irrigated Crop Production, Surface Runoff,		Being addressed by USEPA approved TMDL	Y
4	Calleguas Creek Reach 6 (was Arroyo Las Posas Reaches 1 and 2 on 1998 303d list)	River & Stream	15	Miles	Chloride, Total Dissolved Solids	Atmospheric Deposition, Irrigated Crop Production, Major Municipal Point Source-dry weather discharge, Groundwater Loadings, Domestic Use of Ground Water, Surface Runoff		Being addressed by USEPA approved TMDL	Y
4	Calleguas Creek Reach 7 (was Arroyo Simi Reaches 1 and 2 on 1998 303d list)	River & Stream	14	Miles	Chloride, Total Dissolved Solids	Domestic Use of Ground Water, Irrigated Crop Production, Surface Runoff, Major Municipal Point Source-dry weather discharge, Groundwater Loadings, Atmospheric Deposition		Being addressed by USEPA approved TMDL	Y
4	Calleguas Creek Reach 8 (was Tapo Canyon Reach 1)	River & Stream	7	Miles	Chloride, Total Dissolved Solids	Domestic Use of Ground Water, Irrigated Crop Production, Surface Runoff, Major Municipal Point Source-dry weather discharge, Groundwater Loadings, Atmospheric Deposition		Being addressed by USEPA approved TMDL	N
4	Calleguas Creek Reach 9A (was lower part of Conejo Creek Reach 1 on 1998 303d list)	River & Stream	2	Miles	Total Dissolved Solids	Domestic Use of Ground Water, Major Municipal Point Source-dry weather discharge, Surface Runoff, Groundwater Loadings, Atmospheric Deposition		Being addressed by USEPA approved TMDL	N
4	Calleguas Creek Reach 9B (was part of Conejo Creek Reaches 1 and 2 on 1998 303d list)	River & Stream	6	Miles	Chloride, Total Dissolved Solids	Domestic Use of Ground Water, Irrigated Crop Production, Surface Runoff, Major Municipal Point Source-dry weather discharge, Groundwater Loadings, Atmospheric Deposition		Being addressed by USEPA approved TMDL	N
4	Calleguas Creek Reach 10 (Conejo Creek (Hill Canyon)-was part of Conejo Crk Reaches 2 & 3, and lower Conejo Crk/Arroyo Conejo N Fk on 1998 303d list)	River & Stream	3	Miles	Chloride, Total Dissolved Solids	Domestic Use of Ground Water, Irrigated Crop Production, Surface Runoff, Major Municipal Point Source-dry weather discharge, Groundwater Loadings, Atmospheric Deposition		Being addressed by USEPA approved TMDL	N
4	Calleguas Creek Reach 11 (Arroyo Santa Rosa, was part of Conejo Creek Reach 3 on 1998 303d list)	River & Stream	9	Miles	Total Dissolved Solids	Domestic Use of Ground Water, Irrigated Crop Production, Surface Runoff, Major Municipal Point Source-dry weather discharge, Groundwater Loadings, Atmospheric Deposition		Being addressed by USEPA approved TMDL	N
4	Calleguas Creek Reach 12 (was Conejo Creek/Arroyo Conejo North Fork on 1998 303d list)	River & Stream	5	Miles	Total Dissolved Solids	Domestic Use of Ground Water, Irrigated Crop Production, Surface Runoff, Major Municipal Point Source-dry weather discharge, Groundwater Loadings, Atmospheric Deposition		Being addressed by USEPA approved TMDL	N
4	Calleguas Creek Reach 13 (Conejo Creek South Fork, was Conejo Cr Reach 4 and part of Reach 3 on 1998 303d list)	River & Stream	17	Miles	Chloride, Total Dissolved Solids	Domestic Use of Ground Water, Irrigated Crop Production, Surface Runoff, Major Municipal Point Source-dry weather discharge, Groundwater Loadings, Atmospheric Deposition		Being addressed by USEPA approved TMDL	N

Attachment 4
Salinity Impaired Water Bodies
(by Regional Water Board)

REGION	WATER BODY NAME	WATER BODY TYPE	ESTIMATED SIZE AFFECTED	UNIT	POLLUTANTS CAUSING IMPAIRMENT	POTENTIAL SOURCES	COMMENTS PERTAINING TO IMPAIRMENT	BEING ADDRESSED BY TMDL/OTHER ACTION?	IS WATER BODY A RESERVOIR (R) - OR - DOWNSTREAM OF A RESERVOIR (Y/N)?
4	Canada Larga (Ventura River Watershed)	River & Stream	8	Miles	Total Dissolved Solids	Source Unknown			N
4	Fox Barranca (tributary to Calleguas Creek Reach 6)	River & Stream	7	Miles	Total Dissolved Solids	Other		Being addressed by USEPA approved TMDL	N
4	Hopper Creek	River & Stream	13	Miles	Total Dissolved Solids	Point Source, Nonpoint Source			N
4	Piru Creek (from gaging station below Santa Felicia Dam to headwaters)	River & Stream	67	Miles	Chloride	Source Unknown			Y
4	Pole Creek (trib to Santa Clara River Reach 3)	River & Stream	9	Miles	Total Dissolved Solids	Nonpoint Source			N
4	San Antonio Creek (Tributary to Ventura River Reach 4)	River & Stream	10	Miles	Total Dissolved Solids	Source Unknown			Y
4	Lake Lindero	Lake & Reservoir	15	Acres	Chloride, Specific Conductivity	Nonpoint Source			N
4	San Jose Creek Reach 1 (SG Confluence to Temple St.)	River & Stream	3	Miles	Total Dissolved Solids	Source Unknown			N
4	Santa Clara River Reach 3 (Freeman Diversion to A Street)	River & Stream	31	Miles	Chloride, Total Dissolved Solids	Nonpoint Source, Point Source		Being addressed by USEPA approved TMDL (Chloride)	Y
4	Santa Clara River Reach 5 (Blue Cut gaging station to West Pier Hwy 99 Bridge) (was named Santa Clara River Reach 7 on 2002 303(d) list)	River & Stream	9	Miles	Chloride	Nonpoint Source, Point Source	Chloride was relisted by USEPA in 2002.	Being addressed by USEPA approved TMDL	Y
4	Santa Clara River Reach 6 (W Pier Hwy 99 to Bouquet Cyn Rd) (was named Santa Clara River Reach 8 on 2002 303(d) list)	River & Stream	5	Miles	Chloride	Nonpoint Source, Point Source	Chloride was relisted by USEPA in 2002.	Being addressed by USEPA approved TMDL	Y
4	Santa Clara River Reach 11 (Piru Creek, from confluence with Santa Clara River Reach 4 to gaging station below Santa Felicia Dam)	River & Stream	6	Miles	Specific Conductance, Total Dissolved Solids	Source Unknown			Y
4	Sespe Creek (from 500 ft below confluence with Little Sespe Cr to headwaters)	River & Stream	54	Miles	Chloride	Nonpoint Source			N
4	Wheeler Canyon/Todd Barranca	River & Stream	10	Miles	Total Dissolved Solids	Nonpoint Source			N
5	Del Puerto Creek	River & Stream	6	Miles	Salinity	Source Unknown			Y
5	Hospital Creek (San Joaquin and Stanislaus Counties)	River & Stream	20	Miles	Salinity	Agriculture			Y
5	Ingram Creek (from confluence with San Joaquin River to confluence with Hospital Creek)	River & Stream	2	Miles	Salinity	Agriculture			N
5	Kellogg Creek (Los Vaqueros Reservoir to Discovery Bay; partly in Delta Waterways, western portion)	River & Stream	14	Miles	Salinity	Source Unknown			N
5	Kings River, Lower (Island Weir to Stinson and Empire Weirs)	River & Stream	36	Miles	Electrical Conductivity	Agriculture			Y
5	Knights Landing Ridge Cut (Yolo County)	River & Stream	13	Miles	Salinity	Source Unknown			Y

Attachment 4
Salinity Impaired Water Bodies
(by Regional Water Board)

REGION	WATER BODY NAME	WATER BODY TYPE	ESTIMATED SIZE AFFECTED	UNIT	POLLUTANTS CAUSING IMPAIRMENT	POTENTIAL SOURCES	COMMENTS PERTAINING TO IMPAIRMENT	BEING ADDRESSED BY TMDL/OTHER ACTION?	IS WATER BODY A RESERVOIR (R) - OR - DOWNSTREAM OF A RESERVOIR (Y/N)?
5	Mountain House Creek (from Altamont Pass to Old River, Alameda and San Joaquin Counties; partly in Delta Waterways, southern portion)	River & Stream	11	Miles	Chloride, Salinity	Source Unknown			Y
5	Mud Slough, North (downstream of San Luis Drain)	River & Stream	13	Miles	Electrical Conductivity	Agriculture			Y
5	Mud Slough, North (upstream of San Luis Drain)	River & Stream	22	Miles	Electrical Conductivity	Source Unknown			Y
5	Newman Wasteway	River & Stream	8	Miles	Salinity	Source Unknown			Y
5	Old River (San Joaquin River to Delta-Mendota Canal; in Delta Waterways, southern portion)	River & Stream	15	Miles	Electrical Conductivity, Total Dissolved Solids	Source Unknown			Y
5	Pit River, South Fork	River & Stream	34	Miles	Salinity	Source Unknown			Y
5	Salado Creek (Stanislaus County)	River & Stream	9	Miles	Salinity	Urban Runoff/Storm Sewers, Agriculture			Y
5	Salt Slough (upstream from confluence with San Joaquin River)	River & Stream	10	Miles	Electrical Conductivity	Agriculture			Y
5	San Joaquin River (Bear Creek to Mud Slough)	River & Stream	14	Miles	Electrical Conductivity	Agriculture			Y
5	San Joaquin River (Mud Slough to Merced River)	River & Stream	3	Miles	Electrical Conductivity	Agriculture			Y
5	San Joaquin River (Merced River to Tuolumne River)	River & Stream	29	Miles	Electrical Conductivity	Agriculture			Y
5	San Joaquin River (Tuolumne River to Stanislaus River)	River & Stream	8	Miles	Electrical Conductivity	Agriculture			Y
5	San Joaquin River (Stanislaus River to Delta Boundary)	River & Stream	3	Miles	Electrical Conductivity	Agriculture		Being addressed by USEPA approved TMDL	Y
5	Delta Waterways (export area)	Estuary	583	Acres	Electrical Conductivity	Agriculture			Y
5	Delta Waterways (northwestern portion)	Estuary	2587	Acres	Electrical Conductivity	Agriculture			Y
5	Delta Waterways (southern portion)	Estuary	3125	Acres	Electrical Conductivity	Agriculture			Y
5	Delta Waterways (western portion)	Estuary	14524	Acres	Electrical Conductivity	Agriculture			Y
5	Grasslands Marshes	Wetland, Freshwater	7962	Acres	Electrical Conductivity	Agriculture			Y
5	Ramona Lake (Fresno County)	Lake & Reservoir	28	Acres	Salinity	Source Unknown	Lake Ramona is a reservoir built by Ramona Municipal Water District during the 1980's to impound as much as 12,000 acre feet of water behind an		R
5	Sand Creek (tributary to Marsh Creek, Contra Costa County; partly in Delta Waterways, western portion)	River & Stream	10	Miles	Salinity	Source Unknown			N
5	Spring Creek (Colusa County)	River & Stream	13	Miles	Salinity	Source Unknown			Y
5	Temple Creek	River & Stream	10	Miles	Electrical Conductivity	Dairies			Y
5	Tom Paine Slough (in Delta Waterways, southern portion)	River & Stream	14	Miles	Chloride, Salinity	Source Unknown			Y

Attachment 4
Salinity Impaired Water Bodies
(by Regional Water Board)

REGION	WATER BODY NAME	WATER BODY TYPE	ESTIMATED SIZE AFFECTED	UNIT	POLLUTANTS CAUSING IMPAIRMENT	POTENTIAL SOURCES	COMMENTS PERTAINING TO IMPAIRMENT	BEING ADDRESSED BY TMDL/OTHER ACTION?	IS WATER BODY A RESERVOIR (R) - OR - DOWNSTREAM OF A RESERVOIR (Y/N)?
5	Tule Canal (Yolo County)	River & Stream	11	Miles	Salinity	Agriculture			Y
6	Bidwell Creek	River & Stream	12	Miles	Total Dissolved Solids	Source Unknown			N
6	Carson River, East Fork	River & Stream	48	Miles	Total Dissolved Solids	Source Unknown			Y
6	Crab Creek	River & Stream	6	Miles	Total Dissolved Solids	Source Unknown			N
6	Heavenly Valley Creek (source to USFS boundary)	River & Stream	2	Miles	Chloride	Natural Sources, Source Unknown, Highway Maintenance and Runoff, Atmospheric Deposition,	This listing may be addressed through revision of the water quality objective rather than through a TMDL.		N
6	Heavenly Valley Creek (USFS boundary to Trout Creek)	River & Stream	1	Miles	Chloride	Natural Sources, Source Unknown, Highway Maintenance and Runoff, Atmospheric Deposition,	This listing may be addressed by revision of the water quality objective rather than through a TMDL.		N
6	Holcomb Creek	River & Stream	19	Miles	Total Dissolved Solids	Source Unknown			N
6	Mammoth Creek (Headwaters to Twin Lakes outlet)	River & Stream	3	Miles	Total Dissolved Solids	Source Unknown			N
6	Mammoth Creek (Old Mammoth Road to Highway 395)	River & Stream	6	Miles	Total Dissolved Solids	Source Unknown			N
6	Mill Creek (Modoc County)	River & Stream	4	Miles	Total Dissolved Solids	Source Unknown			N
6	Mojave River (Upper Narrows to Lower Narrows)	River & Stream	4	Miles	Total Dissolved Solids	Source Unknown			Y
6	Monitor Creek	River & Stream	4	Miles	Total Dissolved Solids	Mill Tailings, Mine Tailings, Point Source, Inactive Mining, Nonpoint Source, Acide Mine Drainage, Natural Sources	This listing is expected to be addressed through the CERCLA remediation process.		N
6	Rock Creek (tributary to Owens River)	River & Stream	33	Miles	Total Dissolved Solids	Surface Mining			N
6	Honey Lake	Saline Lake	57756	Acres	Salinity/TDS/Chlorides	Agricultural Return Flows, Agriculture, Agricultural Water Diversion, Sediment Resuspension, Nonpoint Source, Natural Sources, Geothermal Development	Honey Lake has naturally high salinity but is affected by low flows and geothermal discharges. Further study is needed to verify whether impairment occurs and whether a TMDL is needed.		Y
6	Honey Lake Wildfowl Management Ponds	Saline Lake	665	Acres	Salinity/TDS/Chlorides	Agriculture, Geothermal Development, Natural Sources	The ponds are affected by salts and trace elements from natural sources, which may be concentrated by evaporation during dry years. Additional study is needed to verify whether impairment exists and whether a TMDL is needed.		N
6	Mono Lake	Saline Lake	39743	Acres	Salinity/TDS/Chlorides	Source Unknown, Natural Sources, Flow Regulation/Modification	This listing is being addressed through State Water Resources Control Board Water Rights Decision 1631. SWRCB water rights decision 1631. SWRCB Decision 1631 establishes conditions to control lake level and salt concentrations. Salt concentrations are not solely due to natural causes. Fifty years of water diversions caused a 45 foot drop in lake level, which caused increases in salt concentrations above those caused by natural sources. SWRCB Decision 1631 established a restored lake level of 6391 feet to meet water quality standards (SWRCB, 2003).	Being addressed by an action other than a TMDL.	Y

Attachment 4
Salinity Impaired Water Bodies
(by Regional Water Board)

REGION	WATER BODY NAME	WATER BODY TYPE	ESTIMATED SIZE AFFECTED	UNIT	POLLUTANTS CAUSING IMPAIRMENT	POTENTIAL SOURCES	COMMENTS PERTAINING TO IMPAIRMENT	BEING ADDRESSED BY TMDL/OTHER ACTION?	IS WATER BODY A RESERVOIR (R) - OR - DOWNSTREAM OF A RESERVOIR (Y/N)?
6	Searles Lake	Saline Lake	30211	Acres	Salinity/TDS/Chlorides	Source Unknown	This listing is being addressed through Lahontan Water Board Cleanup and Abatement Orders 6-00-64, 6-00-64A1 and 6-00-64A2. The RWQCB has issued Cleanup and Abatement Orders to address this pollutant problem in Searles Lake. These orders require the company to (1) describe methods implemented to significantly reduce the number of waterfowl deaths, (2) eliminate ongoing sources of contaminant concentrations to the lake, (3) implement any additional methods that are necessary to correct the problems, (4) eliminate all visible petroleum hydrocarbons from surface waters of the Lake, (5) remove or remediate to non-detect levels, all visible petroleum hydrocarbon contaminated surface soils and sediments, and (6) to periodically report on the effectiveness of remediation efforts (SWRCB, 2003).	Being addressed by an action other than a TMDL.	N
6	Sheep Creek	River & Stream	2	Miles	Total Dissolved Solids	Source Unknown			Y
6	Susan River (Headwaters to Susanville)	River & Stream	36	Miles	Total Dissolved Solids	Source Unknown			Y
6	Susan River (Susanville to Litchfield)	River & Stream	16	Miles	Total Dissolved Solids	Source Unknown			Y
7	Salton Sea	Saline Lake	233340	Acres	Salinity	Out-of-state source, Point Source, Agricultural Return Flows	TMDL development will not be effective in addressing this problem, which will require an engineering solution with federal, local, and state cooperation.		Y
8	Santiago Creek, Reach 4	River & Stream	10	Miles	Salinity/TDS/Chlorides	Source Unknown			N
8	Silverado Creek	River & Stream	11	Miles	Salinity/TDS/Chlorides	Unknown Nonpoint Source			N
9	Agua Hedionda Creek	River & Stream	7	Miles	Total Dissolved Solids	Unknown Nonpoint Source, Urban Runoff/Storm Sewers, Unknown Point Source			Y
9	Cloverdale Creek	River & Stream	1	Miles	Total Dissolved Solids	Unknown Nonpoint Source, Urban Runoff/Storm Sewers, Unknown Point Source			N
9	Escondido Creek	River & Stream	26	Miles	Total Dissolved Solids	Source Unknown			Y
9	Felicita Creek	River & Stream	1	Miles	Total Dissolved Solids	Unknown Nonpoint Source, Urban Runoff/Storm Sewers, Unknown Point Source, Flow Regulation/Modification, Agricultural Return Flows			N
9	Forester Creek	River & Stream	6	Miles	Total Dissolved Solids	Unknown Nonpoint Source, Urban Runoff/Storm Sewers, Unknown Point Source, Flow Regulation/Modification, Agricultural Return Flows	Impairment Located at lower 1 mile.		Y
9	Green Valley Creek	River & Stream	1	Miles	Chloride	Source Unknown			Y

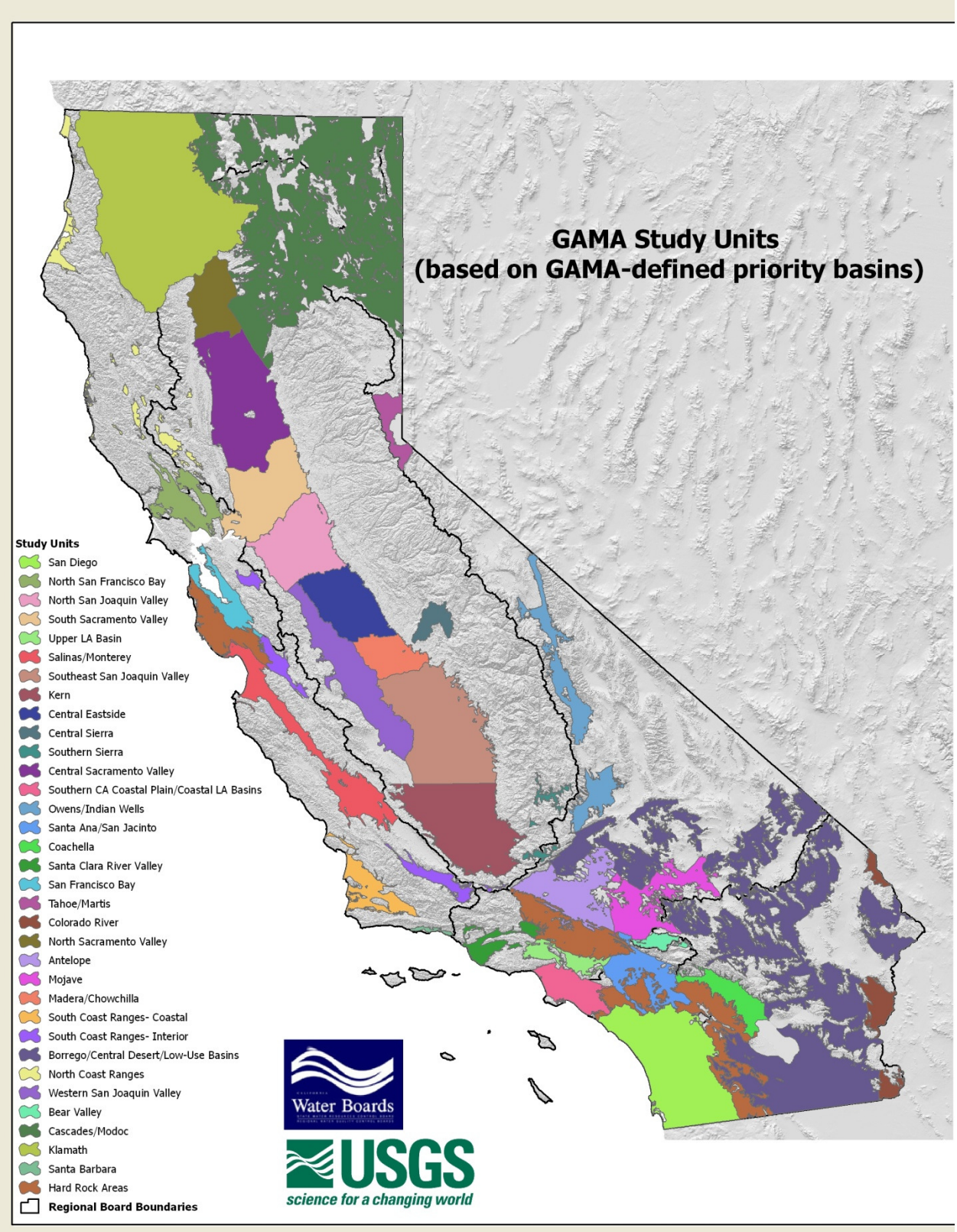
Attachment 4
Salinity Impaired Water Bodies
(by Regional Water Board)

REGION	WATER BODY NAME	WATER BODY TYPE	ESTIMATED SIZE AFFECTED	UNIT	POLLUTANTS CAUSING IMPAIRMENT	POTENTIAL SOURCES	COMMENTS PERTAINING TO IMPAIRMENT	BEING ADDRESSED BY TMDL/OTHER ACTION?	IS WATER BODY A RESERVOIR (R) - OR - DOWNSTREAM OF A RESERVOIR (Y/N)?
9	Kit Carson Creek	River & Stream	1	Miles	Total Dissolved Solids	Unknown Nonpoint Source, Urban Runoff/Storm Sewers, Unknown Point Source, Flow Regulation/Modification, Agricultural Return Flows			Y
9	Los Penasquitos Creek	River & Stream	12	Miles	Total Dissolved Solids	Source Unknown			Y
9	Oso Creek (at Mission Viejo Golf Course)	River & Stream	1	Miles	Chloride, Total Dissolved Solids	Source Unknown			Y
9	Rainbow Creek	River & Stream	5	Miles	Total Dissolved Solids	Unknown Nonpoint Source, Urban Runoff/Storm Sewers, Unknown Point Source, Nurseries, Onsite Wastewater Systems (Septic Tanks)			Y
9	Redhawk Channel	River & Stream	0	Miles	Total Dissolved Solids	Source Unknown			N
9	San Diego River (Lower)	River & Stream	16	Miles	Total Dissolved Solids	Unknown Nonpoint Source, Urban Runoff/Storm Sewers, Unknown Point Source, Flow Regulation/Modification, Natural Sources	Impairment transcends adjacent Calwater watershed 90712.		Y
9	San Dieguito River	River & Stream	19	Miles	Total Dissolved Solids	Nonpoint Source, Point Source			Y
9	San Luis Rey River, Lower (west of Interstate 15)	River & Stream	19	Miles	Chloride, Total Dissolved Solids	Unknown Nonpoint Source, Urban Runoff/Storm Sewers, Unknown Point Source, Flow Regulation/Modification, Natural Sources, Golf course activities, Industrial Point Sources, Surface Mining, Agriculture-storm runoff,	Chloride impairment located at lower 13 miles. □		Y
9	Sandia Creek	River & Stream	1	Miles	Total Dissolved Solids	Unknown Nonpoint Source, Urban Runoff/Storm Sewers, Unknown Point Source, Flow Regulation/Modification, Natural Sources			Y
9	Sweetwater River, Lower (below Sweetwater Reservoir)	River & Stream	5	Miles	Total Dissolved Solids	Unknown Nonpoint Source, Other Urban Runoff, Unknown Point Source			Y
9	San Vicente Reservoir	Lake & Reservoir	1058	Acres	Chloride	Unknown Nonpoint Source, Source Unknown, Water Diversions			R
9	Temecula Creek	River & Stream	44	Miles	Total Dissolved Solids	Unknown Point Source, Unknown Nonpoint Source, Urban Runoff/Storm Sewers			Y

Attachment 5a

GAMA Study Units (Based on GAMA-defined Priority Basins)

(The GAMA Priority Basin Project is grouped into groundwater basin groups called “study units”.)



Attachment 5b

Priority Basin Projects by Study Unit
(sampling has been completd for all Study Units)

Study Units (chronologically listed)*	Study Unit Areas	Groundwater Basins Names	Counties Included in Sampling	Regional Board(s) Included in Sampling	Number of Wells Sampled
San Diego	Temecula Basin; Warner Basin; Selected Alluvial basins; consolidated areas	Temecula; Warner Valley; Santa Margarita; San Luis Rey; Sweetwater	San Diego; Riverside; Orange Counties	San Diego (9)	58
North San Francisco Bay	Napa/Sonoma Volcanic Highlands; Selected Alluvial Basins; Wilson Grove Formation Highlands	Santa Rosa Valley; Petaluma Valley; Wilson Grove Formation Highlands; Alexander Valley; Lower Russian River Valley; Kenwood Valley; Napa-Sonoma Volcanic Headlands	Sonoma; Napa; Marin; Lake; Solano	North Coast (1); San Francisco Bay (2) and a very small area of Central Valley (5)	89
North San Joaquin Valley	Eastern San Joaquin; Tracy; Modesto	Eastern San Joaquin; Modesto; Tracy	San Joaquin; Stanislaus	Central Valley (5)	70
South Sacramento Valley	Yolo; Solano; North American; South American; Uplands	Yolo; Solano; North American; South American	Sacramento; Yolo; Solano	Central Valley (5) and San Francisco Bay (2)	87
San Gabriel/Upper LA Basin	San Gabriel Valley; Raymond Basin; San Fernando Valley	San Gabriel Valley; Raymond Basin; San Fernando Valley	Los Angeles	Los Angeles (4)	52
Salinas/Monterey	Santa Cruz, Monterey Bay; Salinas Valley; and Paso Robles	Felton Area, Scotts Valley, West Santa Cruz Terrace, Pajaro Valley, Salinas Valley; Santa Cruz Purisima Formation; Soquel Valley; Carmel Valley	San Luis Obispo; Monterey; Santa Cruz	Central Coast (3)	97
Southeast San Joaquin	Kings; Kaweah; Tule; Tulare Lake	Kings; Kaweah	Fresno; Tulare; Kings	Central Valley (5)	99
Kern	Kern	Kern County	Kern	Central Valley (5)	50
Central Eastside (Modesto/Turlock/ Merced)	Modesto; Turlock; Merced; Upland Quaternary Terraces (QPC)	Modesto; Turlock; Merced	Stanislaus; Merced	Central Valley (5)	78
Central Sierra	Upper Chowchilla/Upper Fresno Basins; Upper San Joaquin	Outside Groundwater Basins	Tulare; Fresno; Madera	Central Valley (5)	30
Southern Sierra	Kern River Basin; Tehachapi-Cummings Basin	Kern River Valley; Tehachapi valley East; Tehachapi Valley West; Cummings Valley; Areas outside of of mapped groundwater basins	Kern; Tulare	Central Valley (5) and small area of Lahontan (6)	50
Middle Sacramento Valley	West Sacramento River Basin; East Sacramento River Basin	Capay Valley; Colusa; Corning; Vina; West and East Butte; North and South Yuba; Sutter	Tehema; Glenn; Butte; Colusa; Yuba; Sutter; Yolo	Central Valley (5)	108
Coastal L.A.	Central Basin; West Coast Basin; Coastal Plain of Orange County; Hollywood; Santa Monica	Hollywood, Santa Monica, Central and West Coast sub-basins; Coastal Plain of Orange County basin	Los Angeles; Orange	Los Angeles (4) and Santa Ana (8)	69
Owens and Indian Wells Valleys	Owens Valley; Indian Wells Valley	Owens Valley; Indian Wells Valley	Inyo; Mono	Lahontan (6)	74

Attachment 5b

Priority Basin Projects by Study Unit
(sampling has been completd for all Study Units)

Study Units (chronologically listed)*	Study Unit Areas	Groundwater Basins Names	Counties Included in Sampling	Regional Board(s) Included in Sampling	Number of Wells Sampled
Santa Ana	Bunker Hill, Rialto-Colton and Cajon; Chino and Cucamonga; Riverside-Arlibgton and Temescal; Elsinore; San Jacinto; San Timoteo and Yucaipa	Elsinore; San Jacinto; and the subbasins of Chino, Cucamonga, Riverside-Arlington, Bunker Hill, Rialto-Colton, Yucaipa and Temescal	Riverside; San Bernardino; Los Angeles	Santa Ana (8)	99
Coachella Valley	Coachella	Coachella Valley	Riverside	Colorado River (7)	35
Santa Clara River Valley	Santa Clara River Valley; Pleasant valley; Las Posas Valley; Ventura River Valley	Santa Clara River Valley; Pleasant valley; Las Posas Valley; Ventura River Valley	Los Angeles; Ventura	Los Angeles (4)	57
San Francisco Bay	San Francisco Bay	Westside; Islais Valley; Marina; Lobos; Downtown; South San Francisco; Vistacion Valley; Santa Clara Valley Basins	San Francisco; San Mateo; Santa Clara; Alameda; Contra Costa	San Francisco Bay (2)	79
Tahoe/Martis	Tahoe basin; Martis basin; Tahoe area watersheds	Tahoe Valley South; Tahoe Valley West; Tahoe Valley North; Martis (Truckee) Valley; areas outside of groundwater basins	Nevada; Placer; El Dorado	Lahontan (6)	52
Colorado River	Colorado River basins	Yuma Valley; Palo Verde Valley; Palo Verde Mesa; Needles Valley	San Bernardino; Riverside; Imperial	Colorado River (7)	28
North Sacramento Valley	Red Bluff; Redding	Redding Area; Red Bluff; Bend; Antelope; Dye Creek; Los Molinos	Shasta; Tehama	Central Valley (5)	66
Antelope	Antelope Valley	Antelope Valley basin	Kern; Los Angeles; San Bernardino	Lahontan (6) and a small area of Los Angeles (4)	57
Mojave	Mojave Basin	Upper, Middle and Lower Mojave River Valleys	San Bernardino	Lahontan (6) and a small area of Colorado River (7)	59
Madera/Chowchilla	Madera/Chowchilla	Chowchilla; Madera	Madera; Merced; Fresno	Central Valley (5)	35
South Coast Ranges Coastal	South Coast Range Coastal Basins; South Coast Range Coastal Uplands	Santa Maria River Valley; Santa Ynez River Valley	San Luis Obispo; Santa Barbara	Central Coast (3)	70

Attachment 5b

Priority Basin Projects by Study Unit
(sampling has been completd for all Study Units)

Study Units (chronologically listed)*	Study Unit Areas	Groundwater Basins Names	Counties Included in Sampling	Regional Board(s) Included in Sampling	Number of Wells Sampled
Sierran Regional **	Sierran Regional (Entire Sierra Nevada)	Areas outside priority groundwater basins	Kern; Tulare; Inyo, Fresno; Madera; Mono; Mariposa; Tuolumne; Calaveras; Alpine; Amador; Sacramento; El Dorado; Placer; Nevada; Yuba; Sierra; Butte; Plumas; Lassen	Lahontan (6) and Central Valley (5)	84
South Coast Ranges Interior	South Coast Range Interior Basins	Livermore Valley; Llagas Area; Bolsa Area; Hollister Area; Cuyama Valley; Cuddy Canyon Valley; Cuddy Ranch Area; Cuddy Valley; Castaic Lake Valley	Santa Clara; San Benito; San Luis Obispo; Santa Barbara; Ventura; Kern	Central Coast (3); San Francisco Bay (2) and a small area of Central Valley (5)	54
Borrego - Central Desert - Low Use Basins of the Desert	Borrego Basin; Central Desert Basin; Low Use Basins of the Desert	Morongo Valley; Warren Valley; Joshua Tree; Desert Low Use Basins; Borrego Valley	San Bernardino; Kern; Los Angeles; Riverside; Imperial; San Diego	Colorado River (7)	52
Northern Coast Ranges	Interior and Coastal areas	Smith River Plain; Mad River Valley; Eureka Plain; Eel River Valley; Lower Klamath River Valley; Fort Bragg Terrace Area; Ukiah Valley; Upper Lake Valley; other small inland and coastal basins	Del Norte; Humboldt; Mendocino; Lake	North Coast (1); Central Valley (5)	58
Western San Joaquin Valley	Delta-Mendota; Westside	Delta-Mendota; Tracy; Westside	Stanislaus; Merced; Fresno	Central Valley (5)	58
Big Bear (San Bernardino)	Bear Valley; Lake Arrowhead	Bear Valley	San Bernardino	Santa Ana (8)	40
Cascades/Modoc	Shasta Valley and Volcanic Area; Honey Lake Valley; Quaternary and Tertiary Volcanic Areas; Modoc-Cascades Low Use Basins; Sacramento Valley Eastside	Sacramento Valley Eastside; Modoc Plateau Pleistocene Volcanics; Shasta Valley; Honey Lake Valley; areas outside defined groundwater basins	Modoc; Lassen; Siskiyou; Shasta; Tehama; Butte	North Coast (1); Central Valley (5); Lahontan (6)	91
Klamath	Klamath Basin	Klamath Basin; Scott River Valley	Siskiyou	North Coast (1)	~40
South Coast (Santa Barbara Area)	Santa Barbara	Goleta; Santa Barbara; Carpinteria; Montecito; Foothill	Santa Barbara; Ventura	Central Coast (3)	~25
Santa Cruz **	Areas in hard rock, outside groundwater basins.	Areas in and outside priority groundwater basins	Santa Cruz, San Mateo; Santa Clara	Central Coast (3); San Francisco Bay (2)	~25
San Gabriel Mountains **	Areas in hard rock, outside groundwater basins.	Areas in and outside priority groundwater basins	Los Angeles; San Bernardino	Los Angeles (4) and a small area of Lahontan (6)	~40
Shallow Groundwater in CA	Areas where domestic wells are a large source of drinking water, specific areas TBD.	Areas in and outside priority groundwater basins	TBD	TBD	TBD

*The GAMA Priority Basin Project is grouped into groundwater basin groups called “study units”.

** Sierran Regional Study Unit is the Tahoe, Central & Southern Sierra Study Unit's on the corresponding map. The Santa Cruz and San Gabriel Mountains Study Units have not been assigned official Study Unit's By USGS yet. Because of this they are not located on the corresponding map.

Attachment 6a
Hydrogeologically Vulnerable Areas by Region

* Hydrogeologically Vulnerable Areas are where published studies show geologic conditions are more likely to allow surface contaminants to move to groundwater through percolation; for example: areas without an aquitard. Vulnerable areas not mapped, due to their extensiveness, are fractured rock where contaminants can move directly to water.

Water Boards

Attachment 6b
Hydrogeologically Vulnerable Areas

Hydrologic Study Area	DWR Basin No.	Groundwater Basins Names	Counties	References (Primary References in Bold)	Included in Map?	Justifcation / Comments (Primarily from DWR Bull 118 v.1975)
North Coastal	1-1	Smith River Valley	Del Norte	**USGS Water-Supply Paper 1254, p. 38, Pl. 5;** DWR Bull. 66-59, p. 14	Yes	USGS Water-Supply Paper 1254, p. 38, paragraph 2, "Ground water … permeable stream channels."; paragraph 4, "Terrace deposits … recharge areas."
North Coastal	1-2	Klamath River Valley	Modoc, Siskiyou		No	Mappable, but volcanic recharge areas (fracture flow) not included. Sparse population.
North Coastal	1-3	Butte Valley	Siskiyou	**DWR Bull. 66-59, p. 18;** USGS Water-Supply Paper 1491, Pl. 1, Table 4, p. 18-19, 58	Yes	Recharge largely through direct percolation of precipitation or subsurface inflow from streams.
North Coastal	1-4	Shasta Valley	Siskiyou	**DWR Bull. 83, p. 31;** USGS Water-Supply Paper 1484, Pl. 1; DWR Bull. 66-59, p. 22	No	DWR Bull. 83, p. 31, Paragraph 5, "The main recharge …Shasta River." Need to map alluvial valley.
North Coastal	1-5	Scott River Valley	Siskiyou	**DWR Bull. 83, p. 31-32**; DWR Bull. 66-59, p. 26	Yes	DWR Bull. 83, p. 31, paragraph 5, "The main recharge …Shasta River."
North Coastal	1-6	Hayfork Valley	Trinity		No	Low/Limited Use.
North Coastal	1-7	Hoopa Valley	Humboldt		No	Low/Limited Use.
North Coastal	1-8	Mad River Valley	Humboldt	**DWR Bull. 142-1, p. 239-253**; DWR Bull. 66-59, p. 30, Mad River Valley Map	Yes	Basin divided into six areas; recharge through alluvium in all areas.
North Coastal	1-9	Eureka Plain	Humboldt	**DWR Bull. 142-1, p. 232-253**; DWR Bull. 66-59, p. 30, Mad River Valley Map	Yes	Subdivided into two areas (Salmon Creek-Elk River Area and Jacoby Creek-Freshwater Creek Areas). Recharge by infiltration and percolation on the Hookton and Carlotta Formations. Basin delineation modified by DWR comments 11/19/99, #4.
North Coastal	1-10	Eel River Valley	Humboldt	**DWR Bull. 136, p. 19-22, Pl. 4;** DWR Bull. 66-59, p. 38, Eel River Valley Map	Yes	Recharge through permeable soil types Basin delineation modified by DWR comments 11/19/99, #4.
North Coastal	1-11	Round Valley	Mendocino	**USGS Water-Supply Paper 1548, p. 85-86, Pl. 3;** DWR Bull. 66-60, Pl. 4	No	Recharge through percolation of precipitation through stream channel and alluvial fans at valley margins to permeable deposits. Possible underflow from surrounding bedrock. Area too small for scale.
North Coastal	1-12	Laytonville Valley	Mendocino		Yes	Delineation based on DWR comments, 11/24/99.
North Coastal	1-13	Little Lake Valley	Mendocino	**USGS Water-Supply Paper 1548, p. 105-106, Pl. 6**	Yes	Recharge is principally through permeable stream channels and alluvial soils and fans.
North Coastal	1-14	Lower Klamath River Valley	Del Norte		No	Low/Limited Use.
North Coastal	1-15	Happy Camp Town Area	Siskiyou		No	Low/Limited Use.
North Coastal	1-16	Seiad Valley	Siskiyou		No	Low/Limited Use.
North Coastal	1-17	Bray Town Area	Siskiyou		No	Low/Limited Use.
North Coastal	1-18	Red Rock Valley	Siskiyou		No	Low/Limited Use.

Attachment 6b
Hydrogeologically Vulnerable Areas

Hydrologic Study Area	DWR Basin No.	Groundwater Basins Names	Counties	References (Primary References in Bold)	Included in Map?	Justifcation / Comments (Primarily from DWR Bull 118 v.1975)
North Coastal	1-19	Anderson Valley	Mendocino		Yes	Delineation based on DWR comments, 11/24/99
North Coastal	1-20	Garcia River Valley	Mendocino		Yes	Delineation based on DWR comments, 11/24/99
North Coastal	1-21	Fort Bragg Terrace Area	Mendocino	**DWR Bull. 142-1, p. 258-280**	Yes	Located in the Mendocino Coast Hydrographic Unit. Recharge by infiltration of rainfall and surface runoff. INCLUDES PART OF BASINS 1-40 AND 1-45. Basin delineation modified by DWR comments of 11/24/99.
North Coastal	1-22	Fairchild Swamp Valley	Modoc		No	Low/Limited Use.
North Coastal	1-23	Modoc Plateau Recent Volcanic Areas	Modoc, Siskiyou		No	Mappable, but volcanic recharge areas (fracture flow) not included. Sparse population.
North Coastal	1-24	Modoc Plateau Pleistocene Volcanic Areas	Modoc, Siskiyou		No	Mappable, but volcanic recharge areas (fracture flow) not included. Sparse population.
North Coastal	1-25	Prairie Creek Area	Humboldt		No	Low/Limited Use.
North Coastal	1-26	Redwood Creek Valley	Humboldt		No	Low/Limited Use.
North Coastal	1-27	Big Lagoon Area	Humboldt		No	Low/Limited Use.
North Coastal	1-28	Mattole River Valley	Humboldt		No	Low/Limited Use.
North Coastal	1-29	Honeydew Town Area	Humboldt		No	Low/Limited Use.
North Coastal	1-30	Pepperwood Town Area	Humboldt		No	Low/Limited Use.
North Coastal	1-31	Weott Town Area	Humboldt		No	Low/Limited Use.
North Coastal	1-32	Garberville Town Area	Humboldt		No	Low/Limited Use.
North Coastal	1-33	Larabee Valley	Humboldt		No	Low/Limited Use.
North Coastal	1-34	Dinsmore Town Area	Humboldt		No	Low/Limited Use.
North Coastal	1-35	Hyampom Valley	Trinity		No	Low/Limited Use.
North Coastal	1-36	Hettenshaw Valley	Trinity		No	Low/Limited Use.

Attachment 6b
Hydrogeologically Vulnerable Areas

Hydrologic Study Area	DWR Basin No.	Groundwater Basins Names	Counties	References (Primary References in Bold)	Included in Map?	Justifcation / Comments (Primarily from DWR Bull 118 v.1975)
North Coastal	1-37	Cottoneva Creek Valley	Mendocino		No	Low/Limited Use.
North Coastal	1-38	Lower Laytonville Valley	Mendocino		No	Low/Limited Use.
North Coastal	1-39	Branscomb Town Area	Mendocino		No	Low/Limited Use.
North Coastal	1-40	Ten Mile River Valley	Mendocino	**DWR Bull. 142-1, p. 258-280**	Yes	Located in the Mendocino Coast Hydrographic Unit. Recharge by infiltration of rainfall and surface runoff. PARTLY INCLUDED IN BASIN 1-21.
North Coastal	1-41	Little Valley	Mendocino	**DWR Bull. 142-1, p. 258-280**	No	Located in the Mendocino Coast Hydrographic Unit. Recharge by infiltration of rainfall and surface runoff. Area too small for scale.
North Coastal	1-42	Sherwood Valley	Mendocino		No	Low/Limited Use.
North Coastal	1-43	Williams Valley	Mendocino		No	Low/Limited Use.
North Coastal	1-44	Eden Valley	Mendocino		No	Low/Limited Use.
North Coastal	1-45	Big River Valley	Mendocino	**DWR Bull. 142-1, p. 258-280**	Yes	Located in the Mendocino Coast Hydrographic Unit. Recharge by infiltration of rainfall and surface runoff. PARTLY INCLUDED IN BASIN 1-21.
North Coastal	1-46	Navarro River Valley	Mendocino	**DWR Bull. 142-1, p. 258-280**	No	Located in the Mendocino Coast Hydrographic Unit. Recharge by infiltration of rainfall and surface runoff. Area too small for scale.
North Coastal	1-47	Gualala River Valley	Mendocino		No	Area too small for scale.
North Coastal	1-48	Gravelly Valley	Lake		No	Low/Limited Use.
North Coastal	1-49	Anapolis Ohlson Ranch Formation Highlands	Sonoma		No	Low/Limited Use.
San Francisco Bay	2-1	Petaluma Valley	Marin, Sonoma	**DWR Bull. 118-4, v. 3, Fig. 7;** USGS Water Supply Paper 1427	Yes	Delineation based on DWR comments, 11/24/99.
San Francisco Bay	2-2.01	Napa Valley	Napa, Solano	**USGS Water-Supply Paper 1495**	Yes	Delineation based on DWR comments, 11/24/99
San Francisco Bay	2-2.02	Sonoma Valley	Sonoma	**DWR Bull. 118-4, v. 4, Fig. 7;** USGS Water-Supply Paper 1495	Yes	Delineation based on DWR comments, 11/24/99

Attachment 6b
Hydrogeologically Vulnerable Areas

Hydrologic Study Area	DWR Basin No.	Groundwater Basins Names	Counties	References (Primary References in Bold)	Included in Map?	Justifcation / Comments (Primarily from DWR Bull 118 v.1975)
San Francisco Bay	2-3	Suisun-Fairfield Valley	Solano		No	No DWR or USGS references found.
San Francisco Bay	2-4	Pittsburg Plain	Contra Costa		No	No DWR or USGS references found.
San Francisco Bay	2-5	Clayton Valley	Contra Costa		No	No DWR or USGS references found.
San Francisco Bay	2-6	Ygnacio Valley	Contra Costa		No	No DWR or USGS references found.
San Francisco Bay	2-7	San Ramon Valley	Contra Costa		No	No DWR or USGS references found.
San Francisco Bay	2-8	Castro Valley	Alameda		No	No DWR or USGS references found.
San Francisco Bay	2-9	Santa Clara Basin	Alameda, Contra Costa, Santa Clara, San Mateo	**DWR Bull. 118-1, App A, p. 85, Pl. 11**	Yes	Confined/unconfined areas and primary recharge zones.
San Francisco Bay	2-9.01	East Bay Area	Alameda, Contra Costa	**DWR Bull. 118-1, App A, Pl. 14;** DWR Bull. 118-1, v. I-II; ACFCD 205(J) Report, Maslonkowski, 1984	Yes	Recharge area for Niles Cone defined based on presence of Newark aquitard.
San Francisco Bay	2-9.02	South Bay Area	Santa Clara	**SEEHRL Report No. 87-8/10, v. 10, p. 9, Fig. 1 (San Mateo Basin);** DWR Bull. 118-1 v. III; Kleinfelder, 1988	No	Confined areas referenced but not delineated.
San Francisco Bay	2-10	Livermore Valley	Alameda, Contra Costa	**DWR Bull. 118-2, p. 37, Pl. 9A-9B**	Yes	High infiltration areas defined based on aquitard thickness and soils.
San Francisco Bay	2-11	Sunol Valley	Alameda	**DWR Bull. 118-2, p. 61, Pl. 9A-9B**	Yes	High infiltration areas defined.
San Francisco Bay	2-12	McDowell Valley	Mendocino		No	Low/Limited Use.

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Hydrogeologically Vulnerable Areas

Hydrologic Study Area	DWR Basin No.	Groundwater Basins Names	Counties	References (Primary References in Bold)	Included in Map?	Justifcation / Comments (Primarily from DWR Bull 118 v.1975)
San Francisco Bay	2-13	Knights Valley	Sonoma		No	Low/Limited Use.
San Francisco Bay	2-14	Potter Valley	Mendocino	**USGS Water-Supply Paper 1548, p. 75-76, Pl. 2**	No	Recharge from precipitation in drainage basin, especially at valley margins. Also, infiltration from irrigation canals, laterals and fields with excess water. Area too small for scale.
San Francisco Bay	2-15	Ukiah Valley	Mendocino	**USGS Water-Supply Paper 1548, p. 68, Pl. 2;** DWR Bull. 66-59, p. 42	Yes	Direct infiltration of rainfall and seepage loss from streams. Some recharge from streams and percolation of irrigation water.
San Francisco Bay	2-16	Sanel Valley	Mendocino	**USGS Water-Supply Paper 1548, p. 58, Pl. 2;** DWR Bull. 66-59, p. 47	Yes	Recharge from infiltration from streams and percolation of rainfall. PARTLY INCLUDED WITH BASIN 2-15.
San Francisco Bay	2-17.01	Alexander Area	Sonoma	**DWR Bull. 118-4, v. 5, p. 48;** DWR Bull. 142-1; DWR Unnumbered Report (Thronson, 1963); USGS Water-Supply Paper 1548	Yes	Entire valley has potential for high infiltration. Delineation based on DWR comments, 11/24/99.
San Francisco Bay	2-17.02	Cloverdale Area	Sonoma		Yes	Entire valley has potential for high infiltration. Delineation based on DWR comments, 11/24/99.
San Francisco Bay	2-18.01	Santa Rosa Plain	Sonoma	**DWR Bull. 118-4 v. 2, Fig. 7;** USGS Water-Supply Paper 1427	Yes	High infiltration areas defined based on Soil Conservation Service. Delineation based on DWR comments, 11/24/99.
San Francisco Bay	2-18.02	Healdsburg Area	Sonoma	**DWR Bull. 118-4, v. 5, p. 48**	Yes	Entire valley has potential for high infiltration. Delineation based on DWR comments, 11/24/99.
San Francisco Bay	2-18.03	Rincon Valley	Sonoma		No	Low/Limited Use.
San Francisco Bay	2-19	Kenwood Valley	Sonoma		No	No DWR references found.
San Francisco Bay	2-20	Lower Russian River Valley	Sonoma		No	No DWR references found.
San Francisco Bay	2-21	Bodega Bay Area	Sonoma		No	No DWR references found.

Attachment 6b
Hydrogeologically Vulnerable Areas

Hydrologic Study Area	DWR Basin No.	Groundwater Basins Names	Counties	References (Primary References in Bold)	Included in Map?	Justifcation / Comments (Primarily from DWR Bull 118 v.1975)
San Francisco Bay	2-22	Half Moon Bay Terrace	San Mateo		No	No DWR references found.
San Francisco Bay	2-23	Napa-Sonoma Volcanic Highlands	Sonoma		No	No DWR references found.
San Francisco Bay	2-24	San Gregorio Valley	San Mateo		No	No DWR references found.
San Francisco Bay	2-25	Sebastopol Merced Formation Highlands	Marin, Sonoma		No	No DWR references found.
San Francisco Bay	2-26	Pescadero Valley	San Mateo		No	No DWR references found.
San Francisco Bay	2-27	Sand Point Area	Marin		No	No DWR references found.
San Francisco Bay	2-28	Ross Valley	Marin		No	No DWR references found.
San Francisco Bay	2-29	San Rafael Valley	Marin		No	No DWR references found.
San Francisco Bay	2-30	Novato Valley	Marin		No	No DWR references found.
San Francisco Bay	2-31	Arroyo Del Hambre Valley	Contra Costa		No	No DWR references found.
San Francisco Bay	2-32	Visitation Valley	Sam Francisco, San Mateo		No	No DWR references found.
San Francisco Bay	2-33	Islais Valley	San Francisco		No	No DWR references found.

Attachment 6b
Hydrogeologically Vulnerable Areas

Hydrologic Study Area	DWR Basin No.	Groundwater Basins Names	Counties	References (Primary References in Bold)	Included in Map?	Justifcation / Comments (Primarily from DWR Bull 118 v.1975)
San Francisco Bay	2-34	San Francisco Sand Dune Area	San Francisco		No	No DWR references found.
San Francisco Bay	2-35	Merced Valley	Sam Francisco, San Mateo		No	No DWR references found.
San Francisco Bay	2-36	San Pedro Valley	San Mateo		No	No DWR references found.
Central Coastal	3-1	Soquel Valley	Santa Cruz	**USGS Open-File Report 79-1065**	No	High infiltration areas defined. Areas too small for map scale.
Central Coastal	3-2	Pajaro Valley	Monterey, Santa Cruz	**Richardson, et al, (1961) "San Felipe Division, Geology and Ground-Water Resources Appendix, Part IV", USBR Unnumbered Report, Pl. 2, 3;** USGS Open-File Report, Muir, June 1972, p. 14, Fig. 11; USGS Water-Res. Inv. 87-4281	No	High infiltration areas defined. USBR Unnumbered Report, Pl. 3 defines confined/unconfined zones. Areas too small for map scale.
Central Coastal	3-3	Gilroy-Hollister Valley	San Benito, Santa Clara	**Richardson, et al, (1961) "San Felipe Division, Geology and Ground-Water Resources Appendix, Part IV", USBR Unnumbered Report, Pl. 2, 3;** DWR Bull. 118-1, v. 4 (Gilroy area); USGS Open-File Report, Fig. 5 (Hollister/San Juan area)	Yes	Confined/unconfined zones defined.
Central Coastal	3-4	Salinas Valley	Monterey	**DWR Bull. 19, Pl. 1;** USGS Water-Res. Inv. 83-4049	Yes	Confined/unconfined areas defined.
Central Coastal	3-4.06	Paso Robles Basin	Monterey, San Luis Obispo	**DWR District Report (1979) "Groundwater in the Paso Robles Basin";** DWR Unnumbered Report (Gershon, March 1971) "Preliminary Evaluation of the Water Supply of Arroyo Grande & Paso Robles Areas"; DWR Bull. 18	No	Generally confined, recharge areas not defined in reference.
Central Coastal	3-4.08	Seaside Area	Monterey	**USGS Water-Res. Inv. 82-10, p. 10, Fig. 9**	No	High infiltration areas defined. Areas too small for map scale.
Central Coastal	3-4.09	Langley Area	Monterey		No	Low/Limited Use.
Central Coastal	3-4.10	Corral de Tierra Area	Monterey		No	Low/Limited Use.
Central Coastal	3-5	Cholame Valley	Monterey, San Luis Obispo		No	No references found.
Central Coastal	3-6	Lockwood Valley	Monterey		No	No references found.
Central Coastal	3-7	Carmel Valley	Monterey	**USGS Water-Res. Inv. 83-4280, p. 12, Fig. 2;** DWR Unnumbered Report (Meffley, July 1974), p. 1	No	Highly permeable basin, apparent confinement in West. Areas too small for map scale.

Attachment 6b
Hydrogeologically Vulnerable Areas

Hydrologic Study Area	DWR Basin No.	Groundwater Basins Names	Counties	References (Primary References in Bold)	Included in Map?	Justifcation / Comments (Primarily from DWR Bull 118 v.1975)
Central Coastal	3-8	Los Osos Valley	San Luis Obispo	**DWR District Report (October 1973), p. 23, Fig. 2**; DWR District Report (July 1989); DWR Bull. 63-6	No	Largely confined, recharge in tributary canyons, areas not mapped in references.
Central Coastal	3-9	San Luis Obispo Valley	San Luis Obispo		No	No references found.
Central Coastal	3-10	Pismo Creek Valley	San Luis Obispo	**DWR Bull. 18, Pl. 2; DWR Bull. 63-3, p.15, Pl.3**	No	Largely confined, recharge areas not defined in reference.
Central Coastal	3-11	Arroyo Grande Valley-Nipoma Mesa Area	San Luis Obispo	**DWR Bull. 18, Pl. 2; DWR Unnumbered Report (Gershon, March 1971) "Preliminary Evaluation of the Water Supply of Arroyo Grande & Paso Robles Areas";** DWR District Report (June 1979); DWR Bull. 74-9	Yes	Largely confined, recharge areas adjacent to uplands, not delineated in reference. PARTLY INCLUDED WITH BASIN 3-12.
Central Coastal	3-12	Santa Maria River Valley	San Luis Obispo, Santa Barbara	**USGS Water-Res. Inv. 85-4129, p.1, Fig. 2;** DWR Bull. 63-3	Yes	Confined/unconfined well delineated.
Central Coastal	3-13	Cuyama Valley Basin	Kern, San Luis Obispo, Santa Barbara, Ventura		No	No references found.
Central Coastal	3-14	San Antonio Creek Valley (Vandenberg)	Santa Barbara	**USGS Water-Res. Inv. 84-4340, p. 10, Fig. 1;** USGS Open-File Report, Koehler, 1970; USGS Water-Supply Paper 1664; USGS Water-Res. Inv. 80-750	Yes	Largely unconfined.
Central Coastal	3-15	Santa Ynez River Valley (Lompoc)	Santa Barbara	**USGS Water-Res. Inv. 91-4172, Fig. 12;** USGS Water-Supply Papers 1467, 1664 and 1107; USGS Water-Res. Inv. 84-4131 and 97-4056; USGS Open-File Report 76-183	Yes	Confined area defined.
Central Coastal	3-16	Goleta Basin	Santa Barbara	**USGS Water-Supply Paper 1108, p. 84, Pl. 5 and 9**	Yes	Confined, recharge areas defined.
Central Coastal	3-17	Santa Barbara Basin	Santa Barbara	**USGS Water-Supply Paper 2197, p. 5, Table 1;** USGS Water-Supply Papers 1108 and 1859-A; USGS Water-Res. Inv. 89-4017	No	Largely confined, unconfined area not defined in reference.
Central Coastal	3-18	Carpinteria Basin	Santa Barbara	**USGS Water-Supply Paper 1108, Pl. 4, p. 53**	Yes	Confined, recharge areas defined.
Central Coastal	3-19	Carrizo Plain	San Luis Obispo		No	No references found.
Central Coastal	3-20	Ano Nuevo Area	San Mateo		No	No references found.
Central Coastal	3-21	Santa Cruz Purisima Formation Highlands	Santa Cruz	**USGS Water-Res. Inv. Open-File Report 79-1065 (North Central Highlands)**	No	High infiltration areas defined. Areas too small for map scale.

Attachment 6b
Hydrogeologically Vulnerable Areas

Hydrologic Study Area	DWR Basin No.	Groundwater Basins Names	Counties	References (Primary References in Bold)	Included in Map?	Justifcation / Comments (Primarily from DWR Bull 118 v.1975)
Central Coastal	3-22	Santa Ana Valley	San Benito		No	No references found.
Central Coastal	3-23	Upper Santa Ana Valley	San Benito		No	No references found.
Central Coastal	3-24	Quien Sabe Valley	San Benito		No	No references found.
Central Coastal	3-25	Tres Pinos Creek Valley	San Benito		No	No references found.
Central Coastal	3-26	West Santa Cruz Terrace	Santa Cruz	**USGS Water-Res. Inv. Open-File Report 79-1065**	No	High infiltration areas defined. Areas too small for map scale.
Central Coastal	3-27	Scotts Valley	Santa Cruz	**USGS Water-Res. Inv. 81-6, Fig. 4**	No	Unconfined aquifer, recharge through Santa Margarita Sandstone. Areas too small for map scale.
Central Coastal	3-28	San Benito River Valley	San Benito		No	Low/Limited Use.
Central Coastal	3-29	Dry Lake Valley	San Benito		No	Low/Limited Use.
Central Coastal	3-30	Bitter Water Valley	San Benito		No	Low/Limited Use.
Central Coastal	3-31	Hernandez Valley	San Benito		No	Low/Limited Use.
Central Coastal	3-32	Peach Tree Valley	San Benito		No	Low/Limited Use.
Central Coastal	3-33	San Carpoforo Valley	San Luis Obispo		No	Low/Limited Use.
Central Coastal	3-34	Arroyo de la Cruz Valley	San Luis Obispo		No	Low/Limited Use.
Central Coastal	3-35	San Simeon Valley	San Luis Obispo		No	Low/Limited Use.
Central Coastal	3-36	Santa Rosa Valley	San Luis Obispo		No	Low/Limited Use.
Central Coastal	3-37	Villa Valley	San Luis Obispo		No	Low/Limited Use.
Central Coastal	3-38	Cayucos Valley	San Luis Obispo		No	Low/Limited Use.
Central Coastal	3-39	Old Valley	San Luis Obispo		No	Low/Limited Use.
Central Coastal	3-40	Toro Valley	San Luis Obispo		No	Low/Limited Use.

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Hydrologic Study Area	DWR Basin No.	Groundwater Basins Names	Counties	References (Primary References in Bold)	Included in Map?	Justifcation / Comments (Primarily from DWR Bull 118 v.1975)
Central Coastal	3-41	Morro Valley	San Luis Obispo		No	Low/Limited Use.
Central Coastal	3-42	Chorro Valley	San Luis Obispo		No	Low/Limited Use.
Central Coastal	3-43	Rinconada Valley	San Luis Obispo		No	Low/Limited Use.
Central Coastal	3-44	Pozo Valley	San Luis Obispo		No	Low/Limited Use.
Central Coastal	3-45	Huasna Valley	San Luis Obispo		No	Low/Limited Use.
Central Coastal	3-46	Rafael Valley	San Luis Obispo		No	Low/Limited Use.
Central Coastal	3-47	Bis Spring Area	San Luis Obispo		No	Low/Limited Use.
Central Coastal	3-48	Careaga Sand Highlands	Santa Barbara		No	Low/Limited Use.
Central Coastal	3-49	Montecito Valley	Santa Barbara		No	Low/Limited Use.
South Coastal	4-1	Upper Ojai Valley	Ventura	**DWR Bull. 12, p. B-53, Pl. 11**	No	Areas too small for map scale.
South Coastal	4-2	Ojai Valley	Ventura	**DWR Bull. 12, p. B-53, Pl. 11**	Yes	Generally unconfined.
South Coastal	4-3	Ventura River Valley	Ventura	**DWR Bull. 12, p. B-55, B-58 and B-59, Pl. 11;** DWR Bull. 63-1	No	Eastern portion unconfined, west confined.
South Coastal	4-4	Santa Clara River Valley (incl. Oxnard Plain)	Ventura	**DWR Bull. 12, Table 11, Pl. 11;** DWR Bull. 63-1, p. 104-8	Yes	Forebay well defined.
South Coastal	4-4.07	Santa Clara River Valley Eastern Basin	Los Angeles		No	Low/Limited Use.
South Coastal	4-5	Acton Valley	Los Angeles		No	No references found.
South Coastal	4-6	Pleasant Valley	Ventura	**DWR Bull. 12, p. B-93, Table 11**	No	Confined basin.
South Coastal	4-7	Arroyo Santa Rosa Valley	Ventura	**DWR Bull. 12, p. B-118, Pl. 11**	No	Deep aquifers confined.
South Coastal	4-8	Los Posas Valley	Ventura	**DWR Bull. 12, p. B-105, Pl. B-1C**	Yes	High Infiltration area well defined.

Attachment 6b
Hydrogeologically Vulnerable Areas

Hydrologic Study Area	DWR Basin No.	Groundwater Basins Names	Counties	References (Primary References in Bold)	Included in Map?	Justifcation / Comments (Primarily from DWR Bull 118 v.1975)
South Coastal	4-9	Simi Valley	Ventura	**DWR Bull. 12, p. B-99, Pl. 11, 12-C; DWR Bull. 74-9**	Yes	Eastern portion unconfined, west confined.
South Coastal	4-10	Conejo Valley	Ventura	**DWR Bull. 12, p. B-111, Pl. 11, Table B-3**	Yes	Unconfined volcanic basin. COMBINED WITH BASINS 4-19 AND 4-21.
South Coastal	4-11	Coastal Plain - Los Angeles Co.	Los Angeles	**DWR Bull. 104, App A, Pl. 8A-8B;** USGS Water-Supply Paper 1461, Pl. 3	Yes	Potentially rapid infiltration was delineated where the upper confining layer known as the Bellflower aquiclude is absent. An area known as Ballona Gap was also designated as potentially rapid infiltration zone, based on a geologic cross-section C-C'.
South Coastal	4-12	San Fernando Valley Basin	Los Angeles	**State Water Rights Board, "Report of Referee…City of Los Angeles vs. City of San Fernando…" No. 650079, (Finlayson, et al, July 1962)**	Yes	Eastern part of valley with medium to high infiltration rate delineated. Areas in western part of valley delineated based on surface soil properties and geologic cross-sections A/A'-D/D', M/M'.
South Coastal	4-13	San Gabriel Basin	Los Angeles	**DWR Bull. 104-2, Pl. 9A, 9B, 14;** Dept. of Public Work, "Report of Referee…City of Pasadena vs. City of Alhambra…" No. Pasadena C-1323, (Conklin, et al, 1943), p. 37-78, 126-137, Pl. 5 (well logs), Pl. 6 (areal geology)	Yes	Infiltration rates >1 in/hr mapped as rapid infiltration zones per DWR Bull. 104-2. Potentially rapid infiltration zones in Raymond sub-basin were delineated by younger alluvium associated with drainage channels and recharge fields
South Coastal	4-14	Upper Santa Ana Valley	Los Angeles		Yes	PARTLY INCLUDED WITH BASIN 8-2
South Coastal	4-15	Tierra Rejada	Ventura	**DWR Bull. 12, p. B-114, Pl. 11, Table B-3**	No	Unconfined volcanic basin. Area too small for scale.
South Coastal	4-16	Hidden Valley	Ventura		No	Low/Limited Use.
South Coastal	4-17	Lockwood Valley	Ventura		No	Low/Limited Use.
South Coastal	4-18	Hungry Valley	Los Angeles, Ventura		No	Low/Limited Use.
South Coastal	4-19	Thousand Oaks Area	Ventura	**DWR Bull. 12, p. B-111, Pl. 11, Table B-3**	Yes	PARTLY INCLUDED WITH BASIN 4-10.
South Coastal	4-20	Russell Valley	Los Angeles, Ventura	**DWR Bull. 12, p. B-111, Pl. 11, Table B-3**	No	Low/Limited Use. Only Ventura County portion delineated. Primarily unconfined volcanics with some thin alluvium along streams.
South Coastal	4-21	Conejo-Tierra Rejada Volcanic Areas	Los Angeles, Ventura	**DWR Bull. 12, p. B-111, Pl. 11, Table B-3**	Yes	PARTLY INCLUDED WITH BASIN 4-10.
South Coastal	4-22	Malibu Valley	Los Angeles		No	Low/Limited Use.
Sacramento Basin	5-1	Goose Lake Valley	Modoc	**DWR Bull. 98, v. 1, p. 79-80, 83; v. 2, Pl. 4;** DWR Bull. 66-60, Part I	No	Upland recharge areas consist of permeable lava flows. Infiltration through the lava then percolation valleyward. Mappable, but volcanic recharge areas not included.

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Hydrologic Study Area	DWR Basin No.	Groundwater Basins Names	Counties	References (Primary References in Bold)	Included in Map?	Justifcation / Comments (Primarily from DWR Bull 118 v.1975)
Sacramento Basin	5-2	Alturas Basin	Modoc	**DWR Bull. 98, v. 1, p. 98-99, 102-103; v. 2, Pl. 8;** DWR Bull. 66-60, Part I	No	Upland recharge areas consist of permeable lava flows. Infiltration through the lava then percolation valleyward. Mappable, but volcanic recharge areas not included.
Sacramento Basin	5-2.01	South Fork Pit River and Alturas Area	Modoc	**DWR Bull. 98, v. 1, p. 102, 104-105; v. 2, Pl. 8;** DWR Bull. 66-60, Part I	No	Upland recharge areas consist of permeable lava flows. Infiltration through the lava then percolation valleyward. Mappable, but volcanic recharge areas not included.
Sacramento Basin	5-2.02	Warm Springs Valley	Modoc	**DWR Bull. 98, v. 1, p. 102, 105-106; v. 2, Pl. 8;** DWR Bull. 66-60, Part I	No	Upland recharge areas consist of permeable lava flows. Infiltration through the lava then percolation valleyward. Mappable, but volcanic recharge areas not included.
Sacramento Basin	5-3	Jess Valley	Modoc	**DWR Bull. 98, v. 2, Pl. 7, 8, 9**	Yes	Basin described as volcanic but actually alluvium.
Sacramento Basin	5-4	Big Valley	Lassen, Modoc	**DWR Bull. 98, v. 1, p. 116-121; v. 2 , Pl. 10, 11**	No	Upland recharge areas consist of permeable lava flows. Infiltration through the lava then percolation valleyward. Mappable, but volcanic recharge areas not included.
Sacramento Basin	5-5	Fall River Valley	Lassen, Shasta	**DWR Bull. 98, v. 1, p. 133, 138-140; v. 2 , Pl. 14, 15**	No	Upland recharge areas consist of permeable lava flows. Infiltration through the lava then percolation valleyward. Mappable, but volcanic recharge areas not included.
Sacramento Basin	5-6	Redding Basin	Shasta, Tehama	**DWR Bull. 22; App E-P, p. 32, 348-351, 354, Pl. N-1, Sheet 2 of 2**	Yes	The highest permeability exists in the southeast portion of the of the basin where Tuscan volcanic gravels occur in large amounts. Generally, alluvium is so thin that it is of little significance in regard to movement of storage of ground water.
Sacramento Basin	5-7	Lake Almanor Valley	Plumas		No	Mappable, but volcanic recharge areas (fracture flow) not included.
Sacramento Basin	5-8	Mountain Meadows Valley	Lassen		No	Low/Limited Use.
Sacramento Basin	5-9	Indian Valley	Plumas		No	Low/Limited Use.
Sacramento Basin	5-10	American Valley	Plumas		No	Low/Limited Use.
Sacramento Basin	5-11	Mohawk Valley	Plumas	**DWR Bull. 98, v. 1, p. 155-157; v. 2 , Pl. 17, 18**	Yes	Upland deposits are at best "moderately" permeable. Morainal deposits along southwest border have high water content and are locally permeable. Shallow unconfined area in valley.
Sacramento Basin	5-12	Sierra Valley	Plumas, Sierra	**DWR Bull. 98, v. 1, p. 155-157; v. 2 , Pl. 17, 19**	Yes	Upland recharge areas exist in the upper portion of alluvial fans. Minor infiltration through the lava also flows valleyward. Shallow unconfined area in valley.

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Hydrologic Study Area	DWR Basin No.	Groundwater Basins Names	Counties	References (Primary References in Bold)	Included in Map?	Justifcation / Comments (Primarily from DWR Bull 118 v.1975)
Sacramento Basin	5-13	Upper Lake Valley	Lake		No	Mappable, but volcanic recharge areas (fracture flow) not included.
Sacramento Basin	5-14	Scott Valley	Lake		No	Mappable, but volcanic recharge areas (fracture flow) not included.
Sacramento Basin	5-15	Kelseyville Valley (Big Valley)	Lake		No	Low/Limited Use.
Sacramento Basin	5-16	High Valley	Lake	**USGS Water-Supply Paper 1297, Pl. 1, p. 70**	Yes	Recharge from infiltration of precipitation on the drainage area.
Sacramento Basin	5-17	Burns Valley	Lake	**USGS Water-Supply Paper 1297, Pl. 1, p. 61**	Yes	Recharge from infiltration of precipitation on the drainage area.
Sacramento Basin	5-18	Coyote Valley	Lake	**USGS Water-Supply Paper 1297, Pl. 1, p. 43**	Yes	Recharge in part from infiltration of precipitation on the drainage area and also from outflow of Collayomi and Long Valleys.
Sacramento Basin	5-19	Collayomi Valley	Lake	**USGS Water-Supply Paper 1297, Pl. 1, p. 36**	Yes	Recharge from infiltration of precipitation on the drainage area.
Sacramento Basin	5-20	Berryessa Valley	Napa	**DWR Bull. 99, p. 89-95**	No	Recharge from infiltration of precipitation on the drainage area and seepage from adjoining hillsides. Areas too small for scale.
Sacramento Basin / San Joaquin Basin	5-21	Sacramento Valley	County # 4, 6, 11, 31, 34, 48, 51, 52, 57, 58 / County # 34, 48, 57	**DWR Bull. 118-6, Fig. 5**; USGS Prof. Paper 1401-A,B,C,D; DWR Bull. 133	Yes	"Areas having few barriers to vertical flow" per DWR Bull. 118-6, Fig. 5, were delineated as having highest potential infiltration/recharge. Basin delineation modified by DWR comments 11/19/99, #1, #2, and #3, and DWR comments 11/24/99.
San Joaquin Basin	5-22	San Joaquin Valley	County # 1, 7, 10, 15, 16, 20, 24, 34, 39, 50, 54	**USGS Prof. Paper 1401-A, 1401-C, Pl. 5, and 1401-D;** USGS Open-File Report "Ground-Water Geolgoy and Hydrology of the Kern River Alluvial Fan Area, Ca"; DWR Bull. 89, p. 33-37	Yes	Areas delineated as highest "susceptibility" based on absence of so-called Corcoran Clay which impedes vertical flow from shallow groundwater to deeper, higher quality drinking water production zones across much of the San Joaquin Valley.
San Joaquin Basin	5-23	Panoche Valley	San Benito		No	Low/Limited Use.
San Joaquin Basin	5-24	Squaw Valley	Fresno		No	Low/Limited Use.
San Joaquin Basin	5-25	Kern River Valley	Kern		No	Low/Limited Use.
San Joaquin Basin	5-26	Walker Basin Creek Valley	Kern		No	Low/Limited Use.
San Joaquin Basin	5-27	Cummings Valley	Kern		No	Low/Limited Use.

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Hydrologic Study Area	DWR Basin No.	Groundwater Basins Names	Counties	References (Primary References in Bold)	Included in Map?	Justifcation / Comments (Primarily from DWR Bull 118 v.1975)
San Joaquin Basin	5-28	Tehachapi Valley West	Kern		No	Low/Limited Use.
San Joaquin Basin	5-29	Castaic Lake Valley	Kern		No	Low/Limited Use.
Sacramento Basin	5-30	Lower Lake Valley	Lake	**USGS Water-Supply Paper 1297, Pl. 1, p. 56**	Yes	Recharge from infiltration of precipitation on the Cache Formation outcrop area.
Sacramento Basin	5-31	Long Valley	Lake	**USGS Water-Supply Paper 1297, Pl. 1, p. 73**	Yes	Recharge from percolation of precipitation and streams.
Sacramento Basin	5-32	Modoc Plateau Recent Volcanic Areas	Lassen, Modoc, Shasta, Siskiyou		No	Mappable, but volcanic recharge areas (fracture flow) not included.
Sacramento Basin	5-33	Modoc Plateau Pleistocene Volcanic Areas	Siskiyou		No	Mappable, but volcanic recharge areas (fracture flow) not included.
Sacramento Basin	5-34	Mount Shasta Area	Siskiyou		No	Mappable, but volcanic recharge areas (fracture flow) not included.
Sacramento Basin	5-35	McCloud Area	Siskiyou		No	Mappable, but volcanic recharge areas (fracture flow) not included.
Sacramento Basin	5-36	Round Valley	Modoc	**DWR Bull. 98, v. 1, p. 116-121; v. 2, Pl. 11**	No	Upland recharge areas consist of permeable lava flows. Infiltration through the lava then percolation valleyward. Mappable, but volcanic recharge areas not included.
Sacramento Basin	5-37	Toad Well Area	Siskiyou		No	Low/Limited Use.
Sacramento Basin	5-38	Pondosa Town Area	Shasta, Siskiyou		No	Low/Limited Use.
Sacramento Basin	5-39	Fandango Valley	Modoc		No	Low/Limited Use.
Sacramento Basin	5-40	Hot Spring Valley	Lassen, Modoc, Shasta		No	Low/Limited Use.
Sacramento Basin	5-41	Egg Lake Valley	Modoc		No	Low/Limited Use.
Sacramento Basin	5-42	Bucher Swamp Valley	Modoc		No	Low/Limited Use.
Sacramento Basin	5-43	Rocky Prairie Valley	Modoc		No	Low/Limited Use.
Sacramento Basin	5-44	Long Valley	Lassen, Modoc		No	Low/Limited Use.

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Hydrologic Study Area	DWR Basin No.	Groundwater Basins Names	Counties	References (Primary References in Bold)	Included in Map?	Justifcation / Comments (Primarily from DWR Bull 118 v.1975)
Sacramento Basin	5-45	Cayton Valley	Shasta		No	Low/Limited Use.
Sacramento Basin	5-46	Lake Britton Area	Shasta		No	Low/Limited Use.
Sacramento Basin	5-47	Goose Valley	Shasta		No	Low/Limited Use.
Sacramento Basin	5-48	Burney Creek Valley	Shasta		No	Low/Limited Use.
Sacramento Basin	5-49	Dry Burney Creek Valley	Shasta		No	Low/Limited Use.
Sacramento Basin	5-50	North Fork Battle Creek Valley	Shasta		No	Low/Limited Use.
Sacramento Basin	5-51	Butte Creek Valley	Lassen		No	Low/Limited Use.
Sacramento Basin	5-52	Gray Valley	Lassen		No	Low/Limited Use.
Sacramento Basin	5-53	Dixie Valley	Lassen		No	Low/Limited Use.
Sacramento Basin	5-54	Ash Valley	Lassen		No	Low/Limited Use.
Sacramento Basin	5-55	Sacramento Valley Eastside Tuscan Formation Highlands	Butte, Plumas, Tehama		No	Mappable, but volcanic recharge areas (fracture flow) not included.
Sacramento Basin	5-56	Yellow Creek Valley	Plumas		No	Low/Limited Use.
Sacramento Basin	5-57	Last Chance Creek Valley	Plumas		No	Low/Limited Use.
Sacramento Basin	5-58	Clover Valley	Plumas		No	Low/Limited Use.
Sacramento Basin	5-59	Grizzly Valley	Plumas		No	Low/Limited Use.
Sacramento Basin	5-60	Humbug Valley	Plumas	**DWR Bull. 98, v. 1, p. 155-157, v. 2, Pl. 17, 18**	Yes	Upland recharge areas consist of permeable lava flows. Infiltration through the lava then percolation valleyward.
Sacramento Basin	5-61	Chrome Town Area	Glenn		No	Low/Limited Use.

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Sacramento Basin	5-62	Elk Creek Area	Glenn		No	Low/Limited Use.
Sacramento Basin	5-63	Stonyford Town Area	Colusa, Glenn		No	Low/Limited Use.
Sacramento Basin	5-64	Bear Valley	Colusa		No	Low/Limited Use.
Sacramento Basin	5-65	Little Indian Valley	Lake		No	Low/Limited Use.
Sacramento Basin	5-66	Clear Lake Cache Formation Highlands	Lake		No	Mappable, but volcanic recharge areas (fracture flow) not included.
Sacramento Basin	5-67	Clear Lake Pleistocene Volcanics	Lake		No	Mappable, but volcanic recharge areas (fracture flow) not included.
Sacramento Basin	5-68	Pope Valley	Lake		No	Low/Limited Use.
San Joaquin Basin	5-69	Yosemite Valley	Mariposa		No	Low/Limited Use.
San Joaquin Basin	5-70	Los Banos Creek Valley	Merced		No	Low/Limited Use.
San Joaquin Basin	5-71	Vallecitos Creek Valley	San Benito		No	Low/Limited Use.
San Joaquin Basin	5-72	Cedar Grove Area	Fresno		No	Low/Limited Use.
San Joaquin Basin	5-73	Three Rivers Area	Tulare		No	Low/Limited Use.
San Joaquin Basin	5-74	Springville Area	Tulare		No	Low/Limited Use.
San Joaquin Basin	5-75	Templeton Mountain Area	Tulare		No	Low/Limited Use.
San Joaquin Basin	5-76	Manache Meadows Area	Tulare		No	Low/Limited Use.
San Joaquin Basin	5-77	Sacator Canyon Valley	Tulare		No	Low/Limited Use.
San Joaquin Basin	5-78	Rockhouse Meadow Valley	Tulare		No	Low/Limited Use.
San Joaquin Basin	5-79	Inns Valley	Kern, Tulare		No	Low/Limited Use.

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Hydrologic Study Area	DWR Basin No.	Groundwater Basins Names	Counties	References (Primary References in Bold)	Included in Map?	Justifcation / Comments (Primarily from DWR Bull 118 v.1975)
San Joaquin Basin	5-80	Brite Valley	Kern		No	Low/Limited Use.
San Joaquin Basin	5-81	Bear Valley	Kern		No	Low/Limited Use.
San Joaquin Basin	5-82	Cuddy Canyon Valley	Kern		No	Low/Limited Use.
San Joaquin Basin	5-83	Cuddy Ranch Area	Kern, Ventura		No	Low/Limited Use.
San Joaquin Basin	5-84	Cuddy Valley	Kern		No	Low/Limited Use.
San Joaquin Basin	5-85	Mill Potrera Area	Kern		No	Low/Limited Use.
North Lahontan	6-1	Surprise Valley	Lassen, Modoc	**DWR Bull. 98, v. 1, p. 172; v. 2 , Pl. 21, 22;** DWR Bull. 66-60	No	Upland recharge on west side of valley from surface water into apexes of alluvial fans along base of Warner Mtns and extensive recharge areas along eastern side of valley as shown on Pl. 22, DWR Bull. 98. Mappable but volcanic areas not included.
North Lahontan	6-2	Madeline Plains	Lassen	**DWR Bull. 98, v. 1, p. 188; v. 2 , Pl. 24, 25;** DWR Bull. 66-60	No	Upland recharge areas consist of permeable lava flows. Infiltration through the lava then percolation valleyward. Mappable but volcanic areas not included.
North Lahontan	6-3	Willow Creek Valley	Lassen	**DWR Bull. 98, v. 1, p. 200; v. 2 , Pl. 27, 28;** DWR Bull. 66-60	No	Upland recharge areas consist of permeable lava flows. Infiltration through the lava then percolation valleyward.
North Lahontan	6-4	Honey Lake Valley	Lassen	**DWR Bull. 98, v. 1, p. 213, v. 2, Pl. 31;** DWR Bull. 66-60, Pl. 19; DWR Memorandum to Mr. James Welsh	No	Upland recharge area consists of permeable lava flows with percolation valleyward. Some subsurface inflow may enter from Secret Valley. Hot water encountered in some wells indicate considerable recharge from magma sources (DWR Memorandum). Mappable but volcanic areas not included.
North Lahontan	6-5.01	Tahoe Valley South	El Dorado	**USGS Water-Res. Inv. Report 97-4072, p. 20-25, Fig. 6;** USGS Open-File Report (Crippen and Pavelka, 1969), p. 15-18, Fig. 7; CDMG Geologic Map, Walker Lake, Sacramento, Chico sheets	Yes	Delineated as a potentially rapid infiltration zone. Recharge is primarily from infiltration of precipitation into faults and fractures in bedrock, into soil and decomposed granite that overlies much of the bedrock.
North Lahontan	6-5.02	Tahoe Valley North	Placer	**USGS Water-Res. Inv. Report 97-4072, Fig 6;** USGS Open-File Report (Crippen and Pavelka, 1969), p. 15-18, Fig. 7; CDMG Geologic Map, Walker Lake, Sacramento, Chico sheets	Yes	Alluvial fill of high hydraulic permeability delineated as a potentially rapid infiltration zone. Recharge is primarily from infiltration of precipitation into faults and fractures in bedrock, into soil and decomposed granite that overlies much of the bedrock.

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Hydrologic Study Area	DWR Basin No.	Groundwater Basins Names	Counties	References (Primary References in Bold)	Included in Map?	Justifcation / Comments (Primarily from DWR Bull 118 v.1975)
North Lahontan	6-6	Carson Valley	Alpine	**USGS Water-Res. Inv. 86-4328, p. 17-46, Fig. 1, 7, 8, 13;** CDMG Geologic Map, Walker Lake sheet	Yes	The western part of the valley was delineated as a potentially rapid infiltration zone. The area includes alluvial fans and associated drainage channels of the Sierra Nevada eastern slopes.
North Lahontan	6-7	Antelope Valley (Topaz Valley)	Mono	**USDA Report (1969) "Water and Related Resources, Central Lahontan Basin, Walker River Sub-Basin, Nevada-California", p. 13, 54-59, General Geologic Map, General Soil Map;** Price, et al, (1983) "Groundwater-Surface Water Interaction at Topaz Lake, Nevada", p. 35-39	Yes	Delineated as a potentially rapid infiltration zone. INCLUDES PART OF BASIN 6-106.
North Lahontan	6-8	Bridgeport Valley	Mono	**DWR Unnumbered Report, "Bridgeport Valley Groundwater Investigation" (1960), p. 5-16, Pl. 2;** USDA Report, p. 13, 54-59; CDMG Geologic Map, Walker Lake sheet	Yes	Alluvial fill was delineated as a potentially rapid infiltration zone.
South Lahontan	6-9	Mono Valley	Mono	**DWR Bull. 106-1, p. 91-97, Fig. 1**; Winkler (1977) "An Ecological Study of Mono Lake, California", p. 18-23, Fig. 2-8, 2-9	Yes	Area west and south of the Mono Lake is delineated as a potentially rapid infiltration zone. This area of the basin is filled with quaternary coarse alluvial deposits and is a recharge zone for runoff from the Sierra Nevada.
South Lahontan	6-10	Adobe Lake Valley	Mono	**DWR Bull. 106-1, p. 101-104, Fig. 2**; CDMG Geologic Map, Mariposa sheet	Yes	Quaternary alluvium within the basin was delineated as a potentially rapid infiltration zone.
South Lahontan	6-11	Long Valley	Mono	**DWR Bull. 106-1, p. 107-112, Fig. 3**; CDMG Geologic Map, Mariposa sheet	Yes	Quaternary alluvium within the basin was delineated as a potentially rapid infiltration zone.
South Lahontan	6-12	Owens Valley	Inyo, Mono	**DWR Bull. 106-1, p. 113-121, Fig. 4;** USGS Water-Supply Paper 2370-B, Pl. 1, p. 59-73	Yes	Owens River flood-plain deposits and west of the river to the basin boundary along Sierra Nevada foothills delineated as a rapid infiltration zone.
South Lahontan	6-13	Black Springs Valley	Inyo	**DWR Bull. 106-1, p. 113-121, Fig. 4;** USGS Water-Supply Paper 2370-B	Yes	PARTLY INCLUDED WITH BASIN 6-12.
South Lahontan	6-14	Fish Lake Valley	Inyo, Mono	**DWR Bull. 106-1, p. 135-137, Fig 6**; CDMG Geologic Map, Mariposa sheet	Yes	Quaternary alluvium along foothills of the White Mountains was delineated as a potentially rapid infiltration zone.
South Lahontan	6-15	Deep Springs Valley	Inyo	**DWR Bull. 106-1, p. 141-144, Fig 7**; CDMG Geologic Map, Mariposa sheets	Yes	Quaternary alluvium was delineated as a potentially rapid infiltration area.
South Lahontan	6-16	Eureka Valley	Inyo	**DWR Bull. 106-1, p. 145-148, Fig 8**; CDMG Geologic Map, Mariposa sheet	Yes	Quaternary alluvium was delineated as a potentially rapid infiltration area.
South Lahontan	6-17	Saline Valley	Inyo	**DWR Bull. 106-1, p. 149-152, Fig 9;** CDMG Geologic Map, Death Valley sheet	Yes	Limited development. Areas delineated as a potentially rapid infiltration zones include alluvial deposits of Willow Creek, Waucabe Wash, Palm Springs and Upper Warm Spring.
South Lahontan	6-18	Death Valley	Inyo, San Bernardino	**DWR Bull. 106-1, p. 155-159, Fig 10**; CDMG Geologic Map, Death Valley sheet	Yes	There are few areas with permanent residences and tourist facilities where either ground water or springs are the only water supply resources. Potentially rapid infiltration zones were delineated to where there is ground water usage within the valley.

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Hydrologic Study Area	DWR Basin No.	Groundwater Basins Names	Counties	References (Primary References in Bold)	Included in Map?	Justifcation / Comments (Primarily from DWR Bull 118 v.1975)
South Lahontan	6-19	Wingate Valley	Inyo, San Bernardino	**DWR Bull. 106-1, p.163-164, Fig. 11**	No	Low/Limited Use basin. Military use only.
South Lahontan	6-20	Middle Amargosa Valley	Inyo, San Bernardino	**DWR Bull. 106-1, p. 167-171, Fig. 12**; CDMG Geologic Map, Death Valley sheet	Yes	Areas of potentially rapid infiltration are quaternary alluvium (except Lake Deposit) and alluvial fans along the Amargosa River channel.
South Lahontan	6-21	Lower Kingston Valley	San Bernardino	**DWR Bull. 106-1**	No	Undeveloped.
South Lahontan	6-22	Upper Kingston Valley	San Bernardino	**DWR Bull. 106-1**	No	Undeveloped.
South Lahontan	6-23	Riggs Valley	San Bernardino	**DWR Bull. 106-1, p. 183-185, Fig. 15**	No	Undeveloped.
South Lahontan	6-24	Red Pass Valley	San Bernardino	**DWR Bull. 106-1, p. 187-188, Fig. 16**	No	Undeveloped.
South Lahontan	6-25	Bicycle Valley	San Bernardino	**DWR Bull. 106-1, p.191-193, Fig. 17**	No	Undeveloped.
South Lahontan	6-26	Avawatz Valley	San Bernardino		No	Low/Limited Use.
South Lahontan	6-27	Leach Valley	San Bernardino	**DWR Bull. 106-1, p. 195-197, Fig. 18**	No	Undeveloped.
South Lahontan	6-28	Pahrump Valley	Inyo	**DWR Bull. 106-1, p. 213-216, Fig. 22;** USGS Water-Supply Paper 2279, p. 10-18, Fig. 3,4,5, Pl. 1; CDMG Geologic Map, Death Valley sheet	Yes	Only California's side of the Pahrump valley has been delineated. Alluvial fan deposits (fanglomerates) between lacustrine deposits underlying center of the valley and mountains slope to the west were delineated as potentially rapid infiltration zones.
South Lahontan	6-29	Mesquite Valley	Inyo, San Bernardino	**DWR Bull. 106-1, p. 221-226, Fig. 23**	No	Undeveloped.
South Lahontan	6-30	Ivanpah Valley	San Bernardino	**DWR Bull. 106-1, p. 231-235, Fig. 24**	No	Undeveloped.
South Lahontan	6-31	Kelso Valley	San Bernardino	**DWR Bull. 106-1, p. 241-243, Fig. 25**	No	Undeveloped.
South Lahontan	6-32	Broadwell Valley	San Bernardino	**DWR Bull. 106-1, p. 245-247, Fig. 26**	No	Undeveloped.
South Lahontan	6-33	Soda Lake Valley	San Bernardino	**DWR Bull. 106-1, p. 249-252, Fig. 27**	No	Undeveloped.
South Lahontan	6-34	Silver Lake Valley	San Bernardino	**DWR Bull. 106-1, p. 255-257, Fig. 28**	No	Undeveloped.
South Lahontan	6-35	Cronise Valley	San Bernardino	**DWR Bull. 106-1, p. 259-262, Fig. 29**	No	Undeveloped.

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Hydrologic Study Area	DWR Basin No.	Groundwater Basins Names	Counties	References (Primary References in Bold)	Included in Map?	Justifcation / Comments (Primarily from DWR Bull 118 v.1975)
South Lahontan	6-36	Langford Valley	San Bernardino	**DWR Bull. 106-1, p. 265-267, Fig. 30**	No	Undeveloped.
South Lahontan	6-37	Coyote Lake Valley	San Bernardino	**DWR Bull. 106-1, p. 269-272, Fig. 31**	No	Undeveloped.
South Lahontan	6-38	Caves Canyon Valley	San Bernardino	**DWR Bull. 106-1, p. 275-277, Fig. 32**	No	Undeveloped.
South Lahontan	6-39	Troy Valley	San Bernardino	**DWR Bull. 106-1, p. 279-282, Fig. 33**	No	Undeveloped.
South Lahontan	6-40	Lower Mojave River Valley	San Bernardino	**DWR Bull. 106-1, p. 285-293, Fig. 34;** DWR Bull. 84, Pl. 2, 3, 4, Chapter II, III, V	Yes	River channel deposits and dune sand and older alluvium adjacent to the channel of the Mojave River were delineated as a potentially rapid infiltration zone within Mojave River Valley.
South Lahontan	6-41	Middle Mojave River Valley	San Bernardino	**DWR Bull. 106-1, p. 299-304, Fig. 35;** DWR Bull. 84, Pl. 2, 3, 4, Chapter II, III, V	Yes	River channel deposits and dune sand and older alluvium adjacent to the channel of the Mojave River were delineated as a potentially rapid infiltration zone within Mojave River Valley.
South Lahontan	6-42	Upper Mojave River Valley	San Bernardino	**DWR Bull. 106-1, p. 307-313, Fig. 36;** DWR Bull. 84, Pl. 2, 3, 4, Chapter II, III, V	Yes	River channel deposits and dune sand and older alluvium adjacent to the channel of the Mojave River were delineated as a potentially rapid infiltration zone within Mojave River Valley.
South Lahontan	6-43	El Mirage Valley	San Bernardino	**DWR Bull. 106-1, p. 317-320, Fig. 37**	No	Undeveloped.
South Lahontan	6-44	Antelope Valley	Kern, Los Angeles, San Bernardino	**DWR Bull. 106-1, p. 323-332, Fig. 38;** USGS Water-Res. Inv. 93-4141, p. 8-13, Fig. 5	Yes	A confining clayey layer within the Lancaster sub-basin above which there is shallow, semi-perched ground water is delineated as a potentially rapid infiltration zone because it is recharging a deeper aquifer in the area.
South Lahontan	6-45	Tehachapi Valley East	Kern	**DWR Bull. 106-1**	No	Low/Limited Use basin.
South Lahontan	6-46	Fremont Valley	Kern	**DWR Bull. 106-1, p. 345-356, Fig. 40;** CDMG Geologic Map, Trona sheet; SAMDA, Inc. "Draft, Initial Study/Proposed Negative Declaration SAMDA Water Exploration…", Appendices	Yes	Alluvium and alluvial fans deposits north of Cantil Valley fault (flow barrier) were delineated as a potentially rapid infiltration zone in the valley.
South Lahontan	6-47	Harper Valley	Kern, San Bernardino	**DWR Bull. 106-1, p. 357-361, Fig. 41**	No	Low/Limited Use basin. Low population.
South Lahontan	6-48	Goldstone Valley	San Bernardino	**DWR Bull. 106-1, p. 365-367, Fig. 42**	No	Low/Limited Use basin. Low population.
South Lahontan	6-49	Superior Valley	San Bernardino	**DWR Bull. 106-1, p. 369-371, Fig. 43**	No	Low/Limited Use basin. Low population.

Attachment 6b
Hydrogeologically Vulnerable Areas

Hydrologic Study Area	DWR Basin No.	Groundwater Basins Names	Counties	References (Primary References in Bold)	Included in Map?	Justifcation / Comments (Primarily from DWR Bull 118 v.1975)
South Lahontan	6-50	Cuddeback Valley	San Bernardino	**DWR Bull. 106-1, p. 373-376, Fig. 44**	No	Low/Limited Use basin. Low population.
South Lahontan	6-51	Pilot Knob Valley	San Bernardino	**DWR Bull. 106-1, p. 379-381, Fig. 45**	No	Low/Limited Use basin. Low population.
South Lahontan	6-52	Searles Valley	Inyo, Kern, San Bernardino	**DWR Bull. 106-1, p. 383-388, Fig. 46**	No	Low/Limited Use basin. Low population.
South Lahontan	6-53	Salt Wells Valley	San Bernardino	**DWR Bull. 106-1, p. 391-394, Fig. 47**	No	Low/Limited Use basin. Low population.
South Lahontan	6-54	Indian Wells Valley	Inyo, Kern, San Bernardino	**USGS Hydrologic Investigations Atlas, Dutcher, et al, (1968), "Geohydrologic Features of Indian Wells Valley, California", p. 12-16, Fig. 3;** DWR Bull. 106-1, p. 397-401, Fig. 48; CDMG Geologic Map, Trona sheet	Yes	Alluvial fans and Recent alluvium within the western part of the valley where most of the ephemeral streams flow occur were delineated as a potential rapid infiltration zone.
South Lahontan	6-55	Coso Valley	Inyo	**DWR Bull. 106-1, p. 407-409, Fig. 49**	No	Low/Limited Use basin. Low population.
South Lahontan	6-56	Rose Valley	Inyo	**DWR Bull. 106-1, p. 411-413, Fig. 50**	No	Low/Limited Use basin. Low population.
South Lahontan	6-57	Darwin Valley	Inyo	**DWR Bull. 106-1, p. 415-418, Fig. 51**	No	Low/Limited Use basin. Low population.
South Lahontan	6-58	Panamint Valley	Inyo	**DWR Bull. 106-1, p. 421-425, Fig. 52**	No	Low/Limited Use basin. Low population.
South Lahontan	6-59	Granite Mountain Area	Mono		No	No DWR or USGS references found.
South Lahontan	6-60	Fish Slough Valley	Inyo, Mono		No	No DWR or USGS references found.
South Lahontan	6-61	Cameo Area	Inyo		No	No DWR or USGS references found.
South Lahontan	6-62	Race Track Valley	Inyo		No	No DWR or USGS references found.
South Lahontan	6-63	Hidden Valley	Inyo		No	No DWR or USGS references found.
South Lahontan	6-64	Marble Canyon Area	Inyo		No	No DWR or USGS references found.
South Lahontan	6-65	Cottonwood Springs Area	Inyo		No	No DWR or USGS references found.
South Lahontan	6-66	Lee Flat	Inyo		No	No DWR or USGS references found.

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Hydrogeologically Vulnerable Areas

Hydrologic Study Area	DWR Basin No.	Groundwater Basins Names	Counties	References (Primary References in Bold)	Included in Map?	Justifcation / Comments (Primarily from DWR Bull 118 v.1975)
South Lahontan	6-67	Martis Valley (Truckee Valley)	Nevada, Placer		No	No DWR or USGS references found.
South Lahontan	6-68	Santa Rosa Flat	Inyo		No	No DWR or USGS references found.
South Lahontan	6-69	Kelso Lander Valley	Kern	**DWR Bull. 106-1, p. 429-430, Fig. 53**	No	Low/Limited Use basin.
South Lahontan	6-70	Cactus Flat	Inyo		No	No DWR or USGS references found.
South Lahontan	6-71	Lost Lake Valley	San Bernardino		No	No DWR or USGS references found.
South Lahontan	6-72	Coles Flat	Inyo		No	No DWR or USGS references found.
South Lahontan	6-73	Wild Horse Mesa Area	Inyo		No	No DWR or USGS references found.
South Lahontan	6-74	Harrisburg Flats	Inyo		No	No DWR or USGS references found.
South Lahontan	6-75	Wildrose Canyon	Inyo		No	No DWR or USGS references found.
South Lahontan	6-76	Brown Mountain Valley	San Bernardino	**DWR Bull. 106-1, p. 433-435, Fig. 54**	No	Low/Limited Use basin. Low population.
South Lahontan	6-77	Grass Valley	San Bernardino	**DWR Bull. 106-1, p. 437-438, Fig. 55**	No	Unused, military only.
South Lahontan	6-78	Denning Spring Valley	San Bernardino		No	Low/Limited Use basin. Low population.
South Lahontan	6-79	California Valley	Inyo, San Bernardino	**DWR Bull. 106-1, p. 207-209, Fig. 21**	No	Low/Limited Use basin. Low population.
South Lahontan	6-80	Middle Park Valley	Inyo		No	No DWR or USGS references found.
South Lahontan	6-81	Butte Valley	Inyo		No	No DWR or USGS references found.
South Lahontan	6-82	Spring Canyon Area	Inyo		No	No DWR or USGS references found.
South Lahontan	6-83	Furnace Creek Area	Inyo		No	No DWR or USGS references found.
South Lahontan	6-84	Greenwater Valley	Inyo		No	No DWR or USGS references found.
South Lahontan	6-85	Gold Valley	Inyo		No	No DWR or USGS references found.

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Hydrogeologically Vulnerable Areas

Hydrologic Study Area	DWR Basin No.	Groundwater Basins Names	Counties	References (Primary References in Bold)	Included in Map?	Justifcation / Comments (Primarily from DWR Bull 118 v.1975)
South Lahontan	6-86	Rhodes Hill Area	Inyo		No	No DWR or USGS references found.
South Lahontan	6-87	Butterbread Canyon Valley	Kern		No	No DWR or USGS references found.
South Lahontan	6-88	Owl Lake Valley	San Bernardino		No	No DWR or USGS references found.
South Lahontan	6-89	Kane Wash Area	San Bernardino		No	No DWR or USGS references found.
South Lahontan	6-90	Cady Fault Area	San Bernardino		No	No DWR or USGS references found.
North Lahontan	6-91	Cow Head Lake Valley	Modoc		No	No DWR or USGS references found.
North Lahontan	6-92	Pine Creek Valley	Lassen		No	No DWR or USGS references found.
North Lahontan	6-93	Harvey Valley	Lassen		No	No DWR or USGS references found.
North Lahontan	6-94	Grasshopper Valley	Lassen		No	No DWR or USGS references found.
North Lahontan	6-95	Dry Valley	Lassen		No	No DWR or USGS references found.
North Lahontan	6-96	Eagle Lake Area	Lassen		No	No DWR or USGS references found.
North Lahontan	6-97	Horse Lake Valley	Lassen		No	No DWR or USGS references found.
North Lahontan	6-98	Tuledad Canyon Area	Lassen		No	No DWR or USGS references found.
North Lahontan	6-99	Painters Flat	Lassen		No	No DWR or USGS references found.
North Lahontan	6-100	Secret Valley	Lassen		No	No DWR or USGS references found.
North Lahontan	6-101	Bull Flat	Lassen		No	No DWR or USGS references found.
North Lahontan	6-102	Modoc Plateau Recent Volcanic Areas	Lassen		No	No DWR or USGS references found.
North Lahontan	6-103	Modoc Plateau Pleistocene Volcanic Areas	Lassen		No	No DWR or USGS references found.

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Hydrogeologically Vulnerable Areas

Hydrologic Study Area	DWR Basin No.	Groundwater Basins Names	Counties	References (Primary References in Bold)	Included in Map?	Justifcation / Comments (Primarily from DWR Bull 118 v.1975)
North Lahontan	6-104	Long Valley	Lassen, Sierra		No	No DWR or USGS references found.
North Lahontan	6-105	Slinkard Valley	Mono		No	No DWR or USGS references found.
North Lahontan	6-106	Little Antelope Valley	Mono		Yes	No DWR or USGS references found. PARTLY INCLUDED WITH BASIN 6-7.
North Lahontan	6-107	Sweetwater Flat	Mono		No	No DWR or USGS references found.
Colorado Desert	7-1	Lanfair Valley	San Bernardino	**DWR Report No. 4**	No	Low/Limited Use basin. Low population.
Colorado Desert	7-2	Fenner Valley	San Bernardino	**DWR Report No. 4**	No	Low/Limited Use basin. Low population.
Colorado Desert	7-3	Ward Valley	Riverside, San Bernardino	**DWR Report No. 4**	No	Low/Limited Use basin. Low population.
Colorado Desert	7-4	Rice Valley	Riverside, San Bernardino	**DWR Report No. 4**	No	Low/Limited Use basin. Low population.
Colorado Desert	7-5	Chuckwalla Valley	Imperial, Riverside	**DWR Report No. 4**	No	Low/Limited Use basin. Low population.
Colorado Desert	7-6	Pinto Valley	Riverside, San Bernardino	**DWR Report No. 4**	No	Low/Limited Use basin. Low population.
Colorado Desert	7-7	Cadiz Valley	Riverside, San Bernardino	**DWR Report No. 4**	No	Low/Limited Use basin. Low population.
Colorado Desert	7-8	Bristol Valley	San Bernardino	**DWR Report No. 4**	No	Low/Limited Use basin. Low population.
Colorado Desert	7-9	Dale Valley	Riverside, San Bernardino	**DWR Report No. 4, p. 26**	No	Low/Limited Use basin. Low population.
Colorado Desert	7-10	Twentynine Palms Valley	San Bernardino	**DWR Report No. 4, C304, p. 24-26**	Yes	Alluvial deposits, alluvial fans, and Tertiary sands south of the Base Line Fault delineated as potentially rapid infiltration zones based on soil infiltration and fault barrier north of the Little San Bernardino Mountains.
Colorado Desert	7-11	Copper Mountain Valley	San Bernardino	**DWR Report No. 4, p. 26**	No	Low/Limited Use basin. Low population.
Colorado Desert	7-12	Warren Valley	San Bernardino	**DWR Report No. 4**	No	Low/Limited Use basin. Low population. Poor water quality.
Colorado Desert	7-13	Deadman Valley	San Bernardino	**DWR Report No. 4, p. 26**	No	Low/Limited Use basin. Low population. Poor water quality.
Colorado Desert	7-14	Lavic Valley	San Bernardino	**DWR Report No. 4**	No	Low/Limited Use basin. Low population. Poor water quality.

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Hydrogeologically Vulnerable Areas

Hydrologic Study Area	DWR Basin No.	Groundwater Basins Names	Counties	References (Primary References in Bold)	Included in Map?	Justifcation / Comments (Primarily from DWR Bull 118 v.1975)
Colorado Desert	7-15	Bessemer Valley	San Bernardino	**DWR Report No. 4, p. 26**	No	Low/Limited Use basin. Low population. Poor water quality.
Colorado Desert	7-16	Ames Valley	San Bernardino	**DWR Report No. 4, p. 26**	No	Low/Limited Use basin. Low population. Poor water quality.
Colorado Desert	7-17	Means Valley	San Bernardino	**DWR Report No. 4, p. 27**	No	Low/Limited Use basin. Low population. Poor water quality.
Colorado Desert	7-18	Johnson Valley	San Bernardino	**DWR Report No. 4, p. 28**	No	Low/Limited Use basin. Low population. Poor water quality.
Colorado Desert	7-19	Lucerne Valley	San Bernardino	**DWR Report No. 4, p. 16, 26**	Yes	Alluvial deposits west of Helendale fault were delineated as a potentially rapid infiltration and recharge zone for runoff from the mountains.
Colorado Desert	7-20	Morongo Valley	San Bernardino	**DWR Report No. 4, p. 27**	No	Low/Limited Use basin. Low population.
Colorado Desert	7-21	Coachella Valley	Imperial, Riverside	**DWR Report No. 4, p. 27;** DWR Bull. 108, Pl. 3A, 3B, 3C	Yes	High permeability river channel deposits and alluvial fans were delineated as a potentially rapid infiltration zones within the Coachella Valley. Areas underlain by bedrock and playa deposits were excluded from these zones.
Colorado Desert	7-22	West Salton Sea Basin	Imperial	**DWR Report No. 4**	Yes	INCLUDED WITH BASIN 7-30.
Colorado Desert	7-23	Clark Valley	San Diego	**DWR Report No. 4**	No	Low/Limited Use basin. Low population.
Colorado Desert	7-24	Borrego Valley	San Diego	**DWR Report No. 4, p. 29-30, Pl. 1**	Yes	Alluvial and alluvial fan deposits west of Borrego Sink were delineated as a potentially rapid infiltration zone
Colorado Desert	7-25	Ocotillo Valley	Imperial, San Diego	**DWR Report No. 4, p. 29, Pl. 1**	Yes	INCLUDED WITH BASIN 7-30.
Colorado Desert	7-26	Terwilliger Valley	Riverside	**DWR Report No. 4**	No	Low/Limited Use basin. Low population.
Colorado Desert	7-27	San Felipe Valley	San Diego	**DWR Report No. 4**	No	Low/Limited Use basin. Low population.
Colorado Desert	7-28	Vallecito-Carrizo Valley	Imperial, San Diego		No	Low/Limited Use.
Colorado Desert	7-29	Coyote Wells Valley	Imperial, San Diego	**DWR Report No. 4**	No	PARTLY INCLUDED WITH BASIN 7-30.
Colorado Desert	7-30	Imperial Valley	Imperial	**DWR Report No. 4, p. 30-31, Pl. 2;** USGS Prof. Paper 486-K, p. K13-K24	Yes	Quaternary alluvial deposits of sand, gravel and silt were delineated as a potentially rapid infiltration zones in the Imperial Valley.
Colorado Desert	7-31	Orcopia Valley	Riverside		No	Low/Limited Use.

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Hydrologic Study Area	DWR Basin No.	Groundwater Basins Names	Counties	References (Primary References in Bold)	Included in Map?	Justifcation / Comments (Primarily from DWR Bull 118 v.1975)
Colorado Desert	7-32	Chocolate Valley	Riverside		No	Low/Limited Use.
Colorado Desert	7-33	East Salton Sea Basin	Imperial, Riverside		Yes	PARTLY INCLUDED WITH BASIN 7-30.
Colorado Desert	7-34	Amos Valley	Imperial		Yes	PARTLY INCLUDED WITH BASIN 7-30.
Colorado Desert	7-35	Ogilby Valley	Imperial		Yes	PARTLY INCLUDED WITH BASIN 7-30.
Colorado Desert	7-36	Yuma Valley	Imperial	**DWR Report No. 4, p. 31, Pl. 1**	Yes	Younger alluvium along Colorado River was delineated as a potentially rapid infiltration zone. Shallow ground water is used for domestic purpose in this area.
Colorado Desert	7-37	Arroyo Seco Valley	Imperial, Riverside		No	Low/Limited Use.
Colorado Desert	7-38	Palo Verde Valley	Imperial, Riverside	**DWR Report No. 4, p. 31-32, Pl. 2**	Yes	Colorado River Alluvial deposits were delineated as a potentially rapid infiltration zone within Palo Verde Valley.
Colorado Desert	7-39	Palo Verde Mesa	Imperial, Riverside		Yes	PARTLY INCLUDED WITH BASIN 7-38.
Colorado Desert	7-40	Quien Sabe Point Valley	Riverside		No	Low/Limited Use.
Colorado Desert	7-41	Calzona Valley	Riverside, San Bernardino		No	Low/Limited Use.
Colorado Desert	7-42	Vidal Valley	Riverside, San Bernardino		No	Low/Limited Use.
Colorado Desert	7-43	Chemehuevi Valley	San Bernardino		No	Low/Limited Use.
Colorado Desert	7-44	Needles Basin	San Bernardino	**USGS Prof. Paper 486-J, p. J13-J19, Pl. 1**	Yes	Younger alluvium (flood-plain) deposits of the Colorado River were delineated as a potentially rapid infiltration zones in this area.
Colorado Desert	7-45	Piute Valley	San Bernardino		No	Low/Limited Use.
Colorado Desert	7-46	Canebrake Valley	San Diego		No	Low/Limited Use.
Colorado Desert	7-47	Jacumba Valley	San Diego		No	Low/Limited Use.
Colorado Desert	7-48	Helendale Fault Valley	San Bernardino		No	Low/Limited Use.
Colorado Desert	7-49	Pipes Canyon Fault Valley	San Bernardino		No	Low/Limited Use.

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Hydrogeologically Vulnerable Areas

Hydrologic Study Area	DWR Basin No.	Groundwater Basins Names	Counties	References (Primary References in Bold)	Included in Map?	Justifcation / Comments (Primarily from DWR Bull 118 v.1975)
Colorado Desert	7-50	Iron Ridge Area	San Bernardino		No	Low/Limited Use.
Colorado Desert	7-51	Lost Horse Valley	Riverside, San Bernardino		No	Low/Limited Use.
Colorado Desert	7-52	Pleasant Valley	Riverside		No	Low/Limited Use.
Colorado Desert	7-53	Hexie Mountain Area	Riverside		No	Low/Limited Use.
Colorado Desert	7-54	Buck Ridge Fault Valley	Riverside		No	Low/Limited Use.
Colorado Desert	7-55	Collins Valley	Riverside, San Diego		No	Low/Limited Use.
Colorado Desert	7-56	Yaqui Well Area	San Diego		No	Low/Limited Use.
Colorado Desert	7-57	Pinyon Wash Area	San Diego		No	Low/Limited Use.
Colorado Desert	7-58	Whale Peak Area	San Diego		No	Low/Limited Use.
Colorado Desert	7-59	Mason Valley	San Diego		No	Low/Limited Use.
Colorado Desert	7-60	Jacumba Valley-East	Imperial, San Diego		No	Low/Limited Use.
Colorado Desert	7-61	Davies Valley	Imperial		No	Low/Limited Use.
South Coastal	8-1	Coastal Plain of Orange County	Orange	**DWR Unnumbered Progress Report (Weber, et al, July 1967), Pl. 11 and Pl. 3, 4, 4A, cross-section A/A'-E/E'**	Yes	Rapid infiltration zones where thickness of confining layer is less then 20 feet and where the upper aquifer (Talbot Formation) crops out along the southern slopes of Puente and Chino Hills and northern slopes of Coyote Hills.
South Coastal	8-2	Upper Santa Ana Valley	Riverside, San Bernardino	**DWR Bull. 104-3, App A (Chino-Riverside); DWR Bull. 104-5, p. 10, Fig. 3, 11 (Bunker Hill); DWR Bull. 15, App B, p. 107-126, Fig. B1-B3 (San Jacinto)**	Yes	Infiltration >1 in/hr (p. 5-52, Pl. 2, 1), unconfined areas (Pl. 6-9, cross-section A/A'-I/I'); USGS Water-Supply Paper 1999-C *(Chino)*. Unconfined areas (p.10, Fig. 3), spreading grounds (Fig.11) *(Bunker Hill)*. Specific Yield > 10% (Pl. B-1A-1B, B-3A) *(San Jacinto)*.
South Coastal	8-3	Cajalco Valley (Inundated by Lake Mathews)	Riverside		No	No DWR or USGS references found.
South Coastal	8-4	Elsinore Basin	Riverside	**DWR Bull. 15**	Yes	Areas of alluvium with specific yield of more than 10%, 50 feet above water table.

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Hydrogeologically Vulnerable Areas

Hydrologic Study Area	DWR Basin No.	Groundwater Basins Names	Counties	References (Primary References in Bold)	Included in Map?	Justifcation / Comments (Primarily from DWR Bull 118 v.1975)
South Coastal	8-5	San Jacinto Basin	Riverside	**DWR Bull. 15**	Yes	Areas of alluvium with specific yield of more than 10%, 50 feet above water table.
South Coastal	8-6	Hemet Lake Valley (Garner Valley)	Riverside	**DWR Bull. 118**	No	Low/Limited Use basin. Low population.
South Coastal	8-7	Big Meadows Valley	San Bernardino	**DWR Bull. 118**	No	Low/Limited Use basin. Low population.
South Coastal	8-8	Seven Oaks Valley	San Bernardino	**DWR Bull. 118**	No	Low/Limited Use basin. Low population.
South Coastal	8-9	Bear Valley	San Bernardino	**DWR Bull. 118**	No	Low/Limited Use basin. Low population.
South Coastal	9-1	San Juan Valley	Orange	**DWR Bull. 106-2**	No	Low/Limited Use basin. (San Diego)
South Coastal	9-2	San Mateo Vaalley	San Diego	**DWR Bull. 106-2**	No	Low/Limited Use basin. (San Diego)
South Coastal	9-3	San Onofre Valley	San Diego	**DWR Bull. 106-2**	No	Low/Limited Use basin. (San Diego)
South Coastal	9-4	Santa Margarita Valley	San Diego	**DWR Bull. 106-2**	No	Low/Limited Use basin. (San Diego)
South Coastal	9-5	Temecula Valley	Riverside	**DWR Bull. 106-2, Pl. 2A, p. 46-47**	Yes	Stream channel deposits and Temecula Arkose formation delineated as potentially rapid infiltration zones.
South Coastal	9-6	Coahuila Valley	Riverside	**DWR Bull. 106-2**	No	Low/Limited Use basin.
South Coastal	9-7	San Luis Rey Valley	San Diego	**DWR Bull. 106-2, Pl. 2A, p. 46-47**	Yes	Stream channel deposits and Pala Fanglomerate formation delineated as potentially rapid infiltration zones.
South Coastal	9-8	Warner Valley	San Diego	**DWR Bull. 106-2**	No	Low/Limited Use basin.
South Coastal	9-9	Escondido Valley	San Diego	**DWR Bull. 106-2**	No	Low/Limited Use basin.
South Coastal	9-10	San Pasqual Valley	San Diego	**DWR Bull. 106-2**	No	Low/Limited Use basin.
South Coastal	9-11	Santa Maria Valley	San Diego	**DWR Bull. 106-2**	No	Low/Limited Use basin.
South Coastal	9-12	San Dieguito Creek	San Diego	**DWR Bull. 106-2**	No	Low/Limited Use basin.
South Coastal	9-13	Poway Valley	San Diego	**DWR Bull. 106-2**	No	Low/Limited Use basin.
South Coastal	9-14	Mission Valley	San Diego	**DWR Bull. 106-2**	No	Low/Limited Use basin.

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Hydrologic Study Area	DWR Basin No.	Groundwater Basins Names	Counties	References (Primary References in Bold)	Included in Map?	Justifcation / Comments (Primarily from DWR Bull 118 v.1975)
South Coastal	9-15	San Diego River Valley	San Diego	**DWR Bull. 106-2**	No	Low/Limited Use basin.
South Coastal	9-16	El Cajon Valley	San Diego	**DWR Bull. 106-2**	No	Low/Limited Use basin.
South Coastal	9-17	Sweetwater Valley	San Diego	**DWR Bull. 106-2**	No	Low/Limited Use basin.
South Coastal	9-18	Otay Valley	San Diego	**DWR Bull. 106-2**	No	Low/Limited Use basin.
South Coastal	9-19	Tia Juana Basin	San Diego	**DWR Bull. 106-2**	No	Low/Limited Use basin.
South Coastal	9-20	Jamul Valley	San Diego	**DWR Bull. 106-2**	No	Low/Limited Use basin.
South Coastal	9-21	Las Pulgas Valley	San Diego	**DWR Bull. 106-2**	No	Low/Limited Use basin.
South Coastal	9-22	Batiquitos Lagoon Valley	San Diego	**DWR Bull. 106-2**	No	Low/Limited Use basin.
South Coastal	9-23	San Elijo Valley	San Diego	**DWR Bull. 106-2**	No	Low/Limited Use basin.
South Coastal	9-24	Pamo Valley	San Diego	**DWR Bull. 106-2**	No	Low/Limited Use basin.
South Coastal	9-25	Ranchita Town Area	San Diego		No	Low/Limited Use.
South Coastal	9-26	Pine Valley	San Diego		No	Low/Limited Use.
South Coastal	9-27	Cottonwood Valley	San Diego		No	Low/Limited Use.
South Coastal	9-28	Campo Valley	San Diego		No	Low/Limited Use.
South Coastal	9-29	Potrero Valley	San Diego		No	Low/Limited Use.
South Coastal	9-30	Tecate Valley	San Diego		No	Low/Limited Use.