

TASTE AND ODOR

Groundwaters designated for use as domestic or municipal supply (MUN) shall not contain taste- or odor-producing substances in concentrations that cause a nuisance or adversely affect beneficial uses. At a minimum, groundwaters designated for use as domestic or municipal supply shall not contain concentrations in excess of the secondary maximum contaminant levels (Secondary MCLs) specified in Tables 64449-A (Secondary MCLs-Consumer Acceptance Limits) and 64449-B (Secondary MCLs-Ranges) of Section 64449 of Title 22 of the California Code of Regulations, which is incorporated by reference into this plan. This incorporation-by-reference is prospective, including future changes to the incorporated provisions as the changes take effect. (See Table 3-5.)

OBJECTIVES FOR THE DELTA AND SUISUN MARSH

The objectives contained in the State Board's "Water Quality Control Plan for the Sacramento-San Joaquin Delta and Suisun Marsh" and any revisions thereto shall apply to the waters of the Sacramento-San Joaquin Delta and Suisun Marsh.

OBJECTIVES FOR ALAMEDA CREEK WATERSHED

The water quality objectives contained in Table 3-7 apply to the surface and groundwaters of the Alameda Creek watershed above Niles.

Wastewater discharges that cause the surface water limits in Table 3-7 to be exceeded may be allowed if they are part of an overall waterwastewater resource operational program developed by those agencies affected and approved by the Regional Board.

TABLE 3-1 WATER QUALITY OBJECTIVES FOR COLIFORM BACTERIA ^a

BENEFICIAL USE	FECAL COLIFORM (MPN /100ML)	TOTAL COLIFORM (MPN/100ML)
Water Contact Recreation	log mean < 200 90th percentile < 400	median < 240 no sample > 10,000
Shellfish Harvesting ^b	median < 14 90th percentile < 43	median < 70 90th percentile < 230 ^c
Non-contact Water Recreation ^d	mean < 2000 90th percentile < 4000	
Municipal Supply:		
- Surface Water ^e	log mean < 20	log mean < 100
- Groundwater		< 1.1 ^f

NOTES:

- a. Based on a minimum of five consecutive samples equally spaced over a 30-day period.
- b. Source: National Shellfish Sanitation Program.
- c. Based on a five-tube decimal dilution test or 300 MPN/100 ml when a three-tube decimal dilution test is used.
- d. Source: Report of the Committee on Water Quality Criteria, National Technical Advisory Committee, 1968.
- e. Source: DOHS recommendation.
- f. Based on multiple tube fermentation technique; equivalent test results based on other analytical techniques, as specified in the National Primary Drinking Water Regulation, 40 CFR, Part 141.21(f), revised June 10, 1992, are acceptable.

TABLE 3-2 U.S. EPA BACTERIOLOGICAL CRITERIA FOR WATER CONTACT RECREATION^{1,2} (IN COLONIES PER 100 ML)

	FRESH WATER		SALT WATER ENTEROCOCCI
	ENTEROCOCCI	E. COLI	
Steady State (all areas)	33	126	35
Maximum at:			
- designated beach	61	235	104
- moderately used area	89	298	124
- lightly used area	108	406	276
- infrequently used area	151	576	500

NOTES:

1. The criteria were published in the Federal Register, Vol. 51, No. 45 / Friday, March 7, 1986 / 8012 - 8016. The Criteria are based on:
 - (a) Cabelli, V.J. 1983. Health Effects Criteria for Marine Recreational Waters. U.S. EPA, EPA 600/1-80-031, Cincinnati, Ohio, and
 - (b) Dufour, A.P. 1984. Health Effects Criteria for Fresh Recreational Waters. U.S. EPA, EPA 600/1-84-004, Cincinnati, Ohio.
2. The U.S. EPA criteria apply to water contact recreation only. The criteria provide for a level of protection based on the frequency of usage of a given water contact recreation area. The criteria may be employed in special studies within this region to differentiate between pollution sources or to supplement the current coliform objectives for water contact recreation.

TABLE 3-3

**WATER QUALITY OBJECTIVES FOR TOXIC POLLUTANTS FOR
SURFACE WATERS WITH SALINITIES GREATER THAN 5 PPT^{a,b}**
(ALL VALUES IN UG/L)

COMPOUND	4-DAY AVERAGE ^c	1-HR AVERAGE ^c	24-HR AVERAGED	INSTANTANEOUS MAXIMUM ^d
Arsenic	36.0	69.0		
Cadmium	9.3	43.0		
Chromium (VI) ^e	50.0	1100.0		
Copper		f		
Cyanide		5.0		
Lead	5.6	140.0		
Mercury	0.025	2.1		
Nickel ^g			7.1	140.0
Selenium				
Silver				2.3
Tributyltin ^h				
Zinc			58.0	170.0
PAHs ⁱ			15.0	

NOTES:

- a. These objectives shall apply to all estuarine waters within the region, according to the salinity threshold, except for the South Bay below Dumbarton Bridge.
- b. The values reported in this table are derived from the 1980 and 1984 U.S. EPA Ambient Water Quality Criteria for salt water and fresh water (unless otherwise specified) and were adopted by the Board in 1986. In 1992, the Regional Board adopted a more inclusive set of objectives reflecting more recent technical information; this set of objectives had been developed and adopted as part of the statewide Inland Surface Waters and Enclosed Bays and Estuaries Plan and was ruled invalid by a court decision in 1993. The U.S. EPA is expected to promulgate final water quality standards for California in late 1995. The national standards will then apply to all planning, monitoring, NPDES permitting, enforcement, and compliance programs conducted under the Clean Water Act within the state.
- c. Source: U.S. EPA 1984.
- d. Source: U.S. EPA 1980.
- e. This objective may be met as total chromium.

- f. The current U.S. EPA criterion is 2.9 ug/l. However, copper toxicity varies with the complexing capacity of specific receiving waters, and background concentrations in the Bay typically vary from 1 to 4 ug/l. The Regional Board conducted scientific studies on Bay waters between 1986 and 1992 and determined that 4.9 ug/l was a more appropriate value for a site-specific objective, given U.S. EPA's derivation method. U.S. EPA is reviewing that method as part of its national rulemaking for California water quality standards. A site-specific criterion for copper is urgently needed.
- g. The current U.S. EPA criterion is 8.3 ug/l (4-day average).
- h. Tributyltin is a compound used as an antifouling ingredient in marine paints and toxic to aquatic life in low concentrations (<1 ppb). Based on technical information, a value of 0.005 ug/l (30-day average) would be protective of human health.
- i. U.S. EPA water quality criteria indicate that 0.031 ug/l in both fresh water and salt water is protective of human health, based on setting the acceptable lifetime risk for cancer at the 10⁻⁶ risk level. PAHs are those compounds identified by EPA Method 610.

TABLE 3-4 WATER QUALITY OBJECTIVES FOR TOXIC POLLUTANTS FOR SURFACE WATERS WITH SALINITIES LESS THAN 5 PPT^{a,b}

(ALL VALUES IN UG/L)

COMPOUND	4-DAY AVERAGE ^c	1-HR AVERAGE ^c	24-HR AVERAGE ^d	INSTANTANEOUS MAXIMUM ^d
Arsenic	190.0	360.0		
Cadmium	e	e		
Chromium (VI) ^f	11.0	16.0		
Copper ^g	6.5	9.2		
Cyanide	5.2	22.0		
Lead	h	h		
Mercury	0.025 ⁱ	2.4		
Nickel	j	j	56.0	1100.0
Selenium				
Silver ^k				1.2
Tributyltin ^l				
Zinc	m	m	58.0	170.0
PAHs ⁿ				

NOTES:

- a. These objectives shall apply to all estuarine and inland surface waters within the region where the salinity is less than 5 ppt, except for the South Bay below Dumbarton Bridge.
- b. The values reported in this table are derived from the 1980 and 1984 U.S. EPA Ambient Water Quality Criteria for salt water and fresh water (unless otherwise specified) and were adopted by the Regional Board in 1986. In 1992, the Regional Board adopted a more inclusive set of objectives reflecting more recent technical information; this set of objectives had been developed and adopted as part of the statewide Inland Surface Waters and Enclosed Bays and Estuaries Plan and was ruled invalid by a court decision in 1993. The U.S. EPA is expected to promulgate final water quality standards for the California in late 1995. The national standards will then apply to all planning, monitoring, NPDES permitting, enforcement, and compliance programs conducted under the Clean Water Act within the state.
- c. Source: U.S. EPA 1984.
- d. Source: U.S. EPA 1980.
- e. The objectives for cadmium and other noted metals are expressed by formulas where H = ln (hardness) as CaCO₃ in mg/l: The four-day average objective for cadmium is $e^{(0.7652 H - 3.460)}$. This is 1.1 µg/l at a hardness of 100 mg/l as CaCO₃. The one-hour average objective for cadmium is $e^{(1.128 H - 3.828)}$. This is 3.9 µg/l at a hardness of 100 mg/l as CaCO₃.
- f. This limit may be met as total chromium.
- g. The U.S. EPA water quality criteria for copper are hardness-dependent. The current objectives are equivalent to these criteria as calculated for 50 mg/l hardness as CaCO₃. The four-day average EPA criterion for copper is $e^{(0.0545 H - 1.465)}$; the one-hour average criterion is $e^{(0.0422 H - 1.464)}$.
- h. The four-day average objective for lead is $e^{(1.273 H - 4.705)}$. This is 3.2 µg/l at a hardness of 100 mg/l as CaCO₃. The one-hour average objective for lead is $e^{(1.273 H - 1.460)}$. This is 81 µg/l at a hardness of 100 mg/l as CaCO₃.
- i. The U.S. EPA Water Quality Criterion for mercury is 0.012 µg/l, which is below the level of detection of 0.025 µg/l. An objective of 0.012 µg/l is desirable, but attainment can only be determined at the level of detection.
- j. The U.S. EPA criteria for nickel are hardness-dependent; the 4-day average criterion is $e^{(0.005 H - 1.1645)}$, which is 158 µg/l at a hardness of 100 mg/l as CaCO₃. The 1-hour average is $e^{(0.004 H - 3.3612)}$, which is 1,419 µg/l at a hardness of 100 mg/l as CaCO₃.
- k. The U.S. EPA water quality criterion for silver is hardness-dependent. This objective is equivalent to these criteria as calculated for 50 mg/l hardness as CaCO₃. The instantaneous maximum EPA criterion is $e^{(1.72 H - 6.52)}$.
- l. Tributyltin is a compound used as an antifouling ingredient in marine paints and toxic to aquatic life in low concentrations (<1 ppb). Based on technical information, values of 0.02 µg/l (4-day average), 0.04 µg/l (24-hour average), and 0.06 µg/l (instantaneous maximum) would be protective of aquatic life.
- m. The U.S. EPA criteria for zinc are hardness-dependent: the 4-day average criterion is $e^{(0.0473 H - 0.7614)}$, which is 23 µg/l at a hardness of 100 mg/l as CaCO₃. The 1-hour average is $e^{(0.0473 H - 0.8804)}$, which is 21 µg/l at a hardness of 100 mg/l as CaCO₃.
- n. U.S. EPA water quality criteria indicate that 0.031 µg/l in both fresh water and salt water is protective of human health, based on setting the acceptable lifetime risk for cancer at the 10⁻⁴ risk level. PAHs are those compounds identified by EPA Method 610.

TABLE 3-5 WATER QUALITY OBJECTIVES FOR MUNICIPAL SUPPLY

PARAMETER	OBJECTIVE (IN MG/L)
Physical:	
Color (units) ^a	15.0
Odor (number) ^a	3.0
Turbidity (NTU) ^a	5.0
pH ^b	6.5
TDS ^c	500.0
EC (mmhos/cm) ^c	0.9
Corrosivity	non-corrosive
Inorganic Parameters:	
Aluminum ^d	1.0 ^d / 0.2 ^a
Antimony ^d	0.006
Arsenic ^d	0.05
Asbestos ^d	7 MFL ^e
Barium ^d	1.0
Beryllium ^d	0.004
Chloride ^c	250.0
Cadmium ^d	0.005
Chromium ^d	0.05
Copper ^a	1.0
Cyanide ^d	0.2
Fluoride ^f	0.8-1.79
Iron ^a	0.3
Lead ^b	0.05
Manganese ^a	0.05
Mercury ^d	0.002
Nickel ^d	0.1
Nitrate (as NO ₃) ^d	45.0
Nitrate + Nitrite (as N) ^d	10.0
Nitrite (as N) ^d	1.0
Selenium ^d	0.05
Silver ^b	0.05
Sulfate ^c	250.0
Thallium ^d	0.002
Zinc ^a	5.0
Organic Parameters:	
MBAS (Foaming agents) ^a	0.5
Oil and grease ^b	none
Phenols ^b	0.001
Trihalomethanes ^b	0.1
Chlorinated Hydrocarbons:	
Endrin ^h	0.002
Lindane ^h	0.0002
Methoxychlor ^h	0.04
Toxaphene ^h	0.003
2,3,7,8-TCDD (Dioxin) ^h	3 x 10 ⁻⁸
2,4-d ^h	0.07
2,4,4-TP Silvex ^h	0.05
Synthetics:	
Alachlor ^h	0.002
Atrazine ^h	0.003
Bentazon ^h	0.018
Benzo(a)pyrene ^h	0.0002
Dalapon ^h	0.2
Dinoseb ^h	0.007
Diquat ^h	0.02
Endothal ^h	0.1

PARAMETER	OBJECTIVE (IN MG/L)
Benzene ^h	0.001
Carbon Tetrachloride ^h	0.0005
Carbofuran ^h	0.018
Chlordane ^h	0.0001
1,2-Dibromo-3-chloropropane ^h	0.0002
1,2-Dichlorobenzene ^h	0.6
1,4-Dichlorobenzene ^h	0.005
1,1-Dichloroethane ^h	0.005
1,2-Dichloroethane ^h	0.0005
cis-1,2-Dichloroethylene ^h	0.006
trans-1,2-Dichloroethylene ^h	0.01
1,1-Dichloroethylene ^h	0.006
Dichloromethane ^h	0.005
1,2-Dichloropropane ^h	0.005
1,3-Dichloropropene ^h	0.0005
Di (2-ethylhexyl) adipate ^h	0.4
Di(2-ethylhexyl) phthalate ^h	0.004
Ethylbenzene ^h	0.7
Ethylene dibromide ^h	0.00005
Glyphosate ^h	0.7
Heptachlor ^h	0.00001
Heptachlor epoxide ^h	0.00001
Hexachlorobenzene ^h	0.001
Hexachlorocyclopentadiene ^h	0.05
Molinate ^h	0.02
Monochlorobenzene ^h	0.07
Oxamyl ^h	0.2
Pentachlorophenol ^h	0.001
Picloram ^h	0.5
Polychlorinated Biphenyls ^h	0.0005
Simazine ^h	0.004
Styrene ^h	0.1
1,1,2,2-Tetrachloroethane ^h	0.001
Tetrachloroethylene ^h	0.005
Thiobencarb ^h	0.001
1,2,4-Trichlorobenzene ^h	0.07
1,1,1-Trichloroethane ^h	0.2
1,1,2-Trichloroethane ^h	0.005
Trichloroethylene ^h	0.005
Trichlorofluoromethane ^h	0.15
1,1,2-Trichloro-1,2,2-trifluoroethane ^h	1.2
Toluene ^h	0.15
Vinyl chloride ^h	0.0005
Xylenes (single or sum of isomers) ^h	1.75

PARAMETER	OBJECTIVE (IN pCi/l)
Radioactivity:	
Combined Radium-226 and Radium-228 ⁱ	5
Gross Alpha Particle Activity ^j	15i
Tritium ⁱ	20,000
Strontium-90 ⁱ	8
Gross Beta Particle Activity ^j	50
Uranium ⁱ	20

NOTES:

- a. Secondary Maximum Contaminant Levels as specified in Table 64449-A of Section 64449, Title 22 of the California Code of Regulations, as of June 19, 1995.
- b. Table III-2, 1986 Basin Plan.
- c. Secondary Maximum Contaminant Levels as specified in Table 64449-B of Section 64449, Title 22 of the California Code of Regulations, as of June 19, 1995. (Levels indicated are "recommended" levels. Table 64449-B contains a complete list of upper and short-term ranges.)
- d. Maximum Contaminant Levels as specified in Table 64431-A (Inorganic Chemicals) of Section 64431, Title 22 of the California Code of Regulations, as of June 19, 1995.
- e. MFL = million fibers per liter, MCL for fibers exceeding 10 µm in length.
- f. Fluoride objectives depend on temperature.
- g. A complete list of optimum and limiting concentrations is specified in Table 64431-B of Section 64431, Title 22 of the California Code of Regulations, as of June 19, 1995.
- h. Maximum Contaminant Levels as specified in Table 64444-A (Organic Chemicals) of Section 64444, Title 22 of the California Code of Regulations, as of June 19, 1995.
- i. Maximum Contaminant Levels as specified in Table 4 (Radioactivity) of Section 64443, Title 22 of the California Code of Regulations, as of December 22, 1988.
- j. Includes Radium-226 but excludes Radon and Uranium.

Appendix H-3

**Central Valley Regional Water Quality Control Board
Water Quality Objectives (CVRWQCB 1994)**

**THE WATER QUALITY CONTROL PLAN (BASIN PLAN)
FOR THE
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION**

THIRD EDITION - 1994

**THE SACRAMENTO RIVER BASIN AND
THE SAN JOAQUIN RIVER BASIN**



**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION**

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Rafting the American River: Rapid Shooters, Lotus CA

Sunset Waterfowl: David Rosen/ Ducks Unlimited

Yosemite: David Rosen/ Ducks Unlimited

Sugar Beets: Brenda Grewell/ Dept. of Water Resources

III. WATER QUALITY OBJECTIVES

The Porter-Cologne Water Quality Control Act defines water quality objectives as "...the limits or levels of water quality constituents or characteristics which are established for the reasonable protection of beneficial uses of water or the prevention of nuisance within a specific area" [Water Code Section 13050(h)]. It also requires the Regional Water Board to establish water quality objectives, while acknowledging that it is possible for water quality to be changed to some degree without unreasonably affecting beneficial uses. In establishing water quality objectives, the Regional Water Board must consider, among other things, the following factors:

- Past, present, and probable future beneficial uses;
- Environmental characteristics of the hydrographic unit under consideration, including the quality of water available thereto;
- Water quality conditions that could reasonably be achieved through the coordinated control of all factors which affect water quality in the area;
- Economic considerations;
- The need for developing housing within the region;
- The need to develop and use recycled water. (Water Code Section 13241)

The Federal Clean Water Act requires a state to submit for approval of the Administrator of the U.S. Environmental Protection Agency (USEPA) all new or revised water quality standards which are established for surface and ocean waters. As noted earlier, California water quality standards consist of both beneficial uses (identified in Chapter II) and the water quality objectives based on those uses.

There are six important points that apply to water quality objectives.

The first point is that water quality objectives can be revised through the basin plan amendment process. Objectives may apply region-wide or be specific to individual water bodies or parts of water bodies. Site-specific objectives may be developed whenever

the Regional Water Board believes they are appropriate. As indicated previously, federal regulations call for each state to review its water quality standards at least every three years. These Triennial Reviews provide one opportunity to evaluate changing water quality objectives, because they begin with an identification of potential and actual water quality problems, i.e., beneficial use impairments. Since impairments may be associated with water quality objectives being exceeded, the Regional Water Board uses the results of the Triennial Review to implement actions to assess, remedy, monitor, or otherwise address the impairments, as appropriate, in order to achieve objectives and protect beneficial uses. If a problem is found to occur because, for example, a water quality objective is too weak to protect beneficial uses, the Basin Plan should be amended to make the objective more stringent. (Better enforcement of the water quality objectives or adoption of certain policies or redirection of staff and resources may also be proper responses to water quality problems. See the Implementation chapter for further discussion.)

Changes to the objectives can also occur because of new scientific information on the effects of water contaminants. A major source of information is the USEPA which develops data on the effects of chemical and other constituent concentrations on particular aquatic species and human health. Other information sources for data on protection of beneficial uses include the National Academy of Science which has published data on bioaccumulation and the Federal Food and Drug Administration which has issued criteria for unacceptable levels of chemicals in fish and shellfish used for human consumption. The Regional Water Board may make use of those and other state or federal agency information sources in assessing the need for new water quality objectives.

The second point is that achievement of the objectives depends on applying them to controllable water quality factors. *Controllable water quality factors* are those actions, conditions, or circumstances resulting from human activities that may influence the quality of the waters of the State, that are subject to the authority of the State Water Board or the Regional Water Board, and that may be reasonably controlled. Controllable factors are not

allowed to cause further degradation of water quality in instances where uncontrollable factors have already resulted in water quality objectives being exceeded. The Regional Water Board recognizes that man made changes that alter flow regimes can affect water quality and impact beneficial uses.

The third point is that objectives are to be achieved primarily through the adoption of waste discharge requirements (including permits) and cleanup and abatement orders. When adopting requirements and ordering actions, the Regional Water Board considers the potential impact on beneficial uses within the area of influence of the discharge, the existing quality of receiving waters, and the appropriate water quality objectives. It can then make a finding as to the beneficial uses to be protected within the area of influence of the discharge and establish waste discharge requirements to protect those uses and to meet water quality objectives. The objectives contained in this plan, and any State or Federally promulgated objectives applicable to the basins covered by the plan, are intended to govern the levels of constituents and characteristics in the main water mass unless otherwise designated. They may not apply at or in the immediate vicinity of effluent discharges, but at the edge of the *mixing zone* if areas of dilution or criteria for diffusion or dispersion are defined in the waste discharge specifications.

The fourth point is that in cases where water quality objectives are formulated to preserve historic conditions, there may be insufficient data to determine completely the temporal and hydrologic variability representative of historic water quality. When violations of such objectives occur, the Regional Water Board judges the reasonableness of achieving those objectives through regulation of the controllable factors in the areas of concern.

The fifth point is that the State Water Board adopts policies and plans for water quality control which can specify water quality objectives or affect their implementation. Chief among the State Water Board's policies for water quality control is State Water Board Resolution No. 68-16 (Statement of Policy with Respect to Maintaining High Quality of Waters in California). It requires that wherever the existing quality of surface or ground waters is better than the objectives established for those waters in a basin plan, the existing quality will be maintained unless as otherwise provided by Resolution No. 68-16 or any revisions thereto. This policy and others establish general objectives. The State Water Board's water quality control plans applicable to the

Sacramento and San Joaquin River Basins are the Thermal Plan and Water Quality Control Plan for Salinity. The Thermal Plan and its water quality objectives are in the Appendix. The Water Quality Control Plan for Salinity water quality objectives are listed as Table III-5. The State Water Board's plans and policies that the Basin Plan must conform to are addressed in Chapter IV, Implementation.

The sixth point is that water quality objectives may be in numerical or narrative form. The enumerated milligram-per-liter (mg/l) limit for copper is an example of a numerical objective; the objective for color is an example of a narrative form.

Information on the application of water quality objectives is contained in the section, *Policy for Application of Water Quality Objectives*, in Chapter IV.

WATER QUALITY OBJECTIVES FOR INLAND SURFACE WATERS

The objectives below are presented by categories which, like the Beneficial Uses of Chapter II, were standardized for uniformity among the Regional Water Boards. The water quality objectives apply to all surface waters in the Sacramento and San Joaquin River Basins, including the Delta, or as noted. (*The legal boundary of the Delta is contained in Section 12220 of the Water Code and identified in Figure III-1.*) The numbers in parentheses following specific water bodies are keyed to Figure II-1.

Bacteria

In waters designated for contact recreation (REC-1), the fecal coliform concentration based on a minimum of not less than five samples for any 30-day period shall not exceed a geometric mean of 200/100 ml, nor shall more than ten percent of the total number of samples taken during any 30-day period exceed 400/100 ml.

For Folsom Lake (50), the fecal coliform concentration based on a minimum of not less than five samples for any 30-day period, shall not exceed a geometric mean of 100/100 ml, nor shall more than ten percent of the total number of samples taken during any 30-day period exceed 200/100 ml.

Biostimulatory Substances

Water shall not contain biostimulatory substances which promote aquatic growths in concentrations that cause nuisance or adversely affect beneficial uses.

Chemical Constituents

Waters shall not contain chemical constituents in concentrations that adversely affect beneficial uses. The chemical constituent objectives in Table III-1 apply to the water bodies specified. Metal objectives in the table are dissolved concentrations. Selenium, molybdenum, and boron objectives are total concentrations. Water quality objectives are also contained in the Water Quality Control Plan for Salinity, adopted by the State Water Board in May 1991.

At a minimum, water designated for use as domestic or municipal supply (MUN) shall not contain

concentrations of chemical constituents in excess of the maximum contaminant levels (MCLs) specified in the following provisions of Title 22 of the California Code of Regulations, which are incorporated by reference into this plan: Tables 64431-A (Inorganic Chemicals) and 64431-B (Fluoride) of Section 64431, Table 64444-A (Organic Chemicals) of Section 64444, and Tables 64449-A (Secondary Maximum Contaminant Levels-Consumer Acceptance Limits) and 64449-B (Secondary Maximum Contaminant Levels-Ranges) of Section 64449. This incorporation-by-reference is prospective, including future changes to the incorporated provisions as the changes take effect. At a minimum, water designated for use as domestic or municipal supply (MUN) shall not contain lead in excess of 0.015 mg/l. The Regional Water Board acknowledges that specific treatment requirements are imposed by state and federal drinking water regulations on the consumption of surface waters under specific circumstances. To protect all beneficial uses the Regional Water Board may apply limits more stringent than MCLs.

TABLE III-1
TRACE ELEMENT WATER QUALITY OBJECTIVES

<u>CONSTITUENT</u>	<u>MAXIMUM CONCENTRATION^a</u> <u>(mg/l)</u>	<u>APPLICABLE WATER BODIES</u>
Arsenic	0.01	Sacramento River from Keswick Dam to the I Street Bridge at City of Sacramento (13, 30); American River from Folsom Dam to the Sacramento River (51); Folsom Lake (50); and the Sacramento-San Joaquin Delta.
Barium	0.1	As noted above for Arsenic.
Boron	2.0 (15 March through 15 September)	San Joaquin River, mouth of the Merced River to Vernalis
	0.8 (monthly mean, 15 March through 15 September)	
	2.6 (16 September through 14 March)	
	1.0 (monthly mean, 16 September through 14 March)	
	1.3 (monthly mean, critical year ^b)	
Cadmium	5.8 ^c	Salt Slough, Mud Slough (north), San Joaquin River from Sack Dam to the mouth of Merced River
	2.0 (monthly mean, 15 March through 15 September) ^c	
Cadmium	0.0002 ^d	Sacramento River and its tributaries above State Hwy 32 bridge at Hamilton City.
Copper	0.0056 ^d	As noted above for Cadmium.
	0.01 ^e	As noted above for Arsenic. ^e

TABLE III-1 TRACE ELEMENT
WATER QUALITY OBJECTIVES
(Continued)

<u>CONSTITUENT</u>	<u>MAXIMUM CONCENTRATION^a</u> (mg/l)	<u>APPLICABLE WATER BODIES</u>
Cyanide	0.01	As noted above for Arsenic.
Iron	0.3	As noted above for Arsenic.
Manganese	0.05	As noted above for Arsenic.
Molybdenum	0.015	San Joaquin River, mouth of the Merced River to Vernalis
	0.010 (monthly mean)	
	0.050 ^c 0.019 (monthly mean) ^c	
Selenium	0.012	San Joaquin River, mouth of the Merced River to Vernalis
	0.005 (4-day average) ^f	
	0.020 ^f 0.005 (4-day average) ^f	
	0.002 (monthly mean)	Any water supplies used for waterfowl habitat in the Grassland Water District, San Luis National Wildlife Refuge, and Los Banos State Wildlife Area.
Silver	0.01	As noted above for Arsenic.
Zinc	0.1 ^e	As noted above for Arsenic. ^e
	0.016 ^d	As noted above for Cadmium.

a Metal objectives in this table are dissolved concentrations. Selenium, molybdenum, and boron objectives are total concentrations.

b See Table IV-3.

c An alternate set of objectives is proposed to go into effect if the plan to use the San Luis Drain is implemented. The alternate set of objectives provide for better water quality in Salt Slough and the San Joaquin River, Sack Dam to the mouth of Mud Slough (north) and a longer compliance period for Mud Slough (north) and the San Joaquin River, mouth of Mud Slough (north) to mouth of the Merced River.

d The effects of these concentrations were measured by exposing test organisms to dissolved aqueous solutions of 40 mg/l hardness that had been filtered through a 0.45 micron membrane filter. Where deviations from 40 mg/l of water hardness occur, the objectives, in mg/l, shall be determined using the following formulas:

$$Cu = e^{(0.905)(\ln \text{ hardness}) - 1.612} \times 10^{-3}$$

$$Zn = e^{(0.830)(\ln \text{ hardness}) - 0.289} \times 10^{-3}$$

$$Cd = e^{(1.160)(\ln \text{ hardness}) - 5.777} \times 10^{-3}$$

e Does not apply to Sacramento River above State Hwy. 32 bridge at Hamilton City. See relevant objectives (*) above.

f The Regional Water Board has not adopted these selenium concentrations. These selenium concentrations were promulgated by USEPA on 22 December 1992 after USEPA disapproved the Regional Water Board's selenium concentrations. (See 57 Fed.Reg. 60848, 60920.) The selenium concentrations promulgated by USEPA are currently in effect, and are provided in this table solely for reference.

Color

Water shall be free of discoloration that causes nuisance or adversely affects beneficial uses.

Dissolved Oxygen

Within the legal boundaries of the Delta, the dissolved oxygen concentration shall not be reduced below:

7.0 mg/l in the Sacramento River (below the I Street Bridge) and in all Delta waters west of the Antioch Bridge; 6.0 mg/l in the San Joaquin River (between Turner Cut and Stockton, 1 September through 30 November); and 5.0 mg/l in all other Delta waters except for those bodies of water which are constructed for special purposes and from which fish have been

excluded or where the fishery is not important as a beneficial use.

For surface water bodies outside the legal boundaries of the Delta, the monthly median of the mean daily dissolved oxygen (DO) concentration shall not fall below 85 percent of saturation in the main water mass, and the 95 percentile concentration shall not fall below 75 percent of saturation. The dissolved oxygen concentrations shall not be reduced below the following minimum levels at any time:

Waters designated WARM 5.0 mg/l
Waters designated COLD 7.0 mg/l
Waters designated SPWN 7.0 mg/l

The more stringent objectives in Table III-2 apply to specific water bodies in the Sacramento and San Joaquin River Basins:

**TABLE III-2
SPECIFIC DISSOLVED OXYGEN WATER QUALITY OBJECTIVES**

<u>AMOUNT</u>	<u>TIME</u>	<u>PLACE</u>
9.0 mg/l*	1 June to 31 August	Sacramento River from Keswick Dam to Hamilton City (13)
8.0 mg/l	1 September to 31 May	Feather River from Fish Barrier Dam at Oroville to Honcut Creek (40)
8.0 mg/l	all year	Merced River from Cressy to New Exchequer Dam (78)
8.0 mg/l	15 October to 15 June	Tuolumne River from Waterford to La Grange (86)

* When natural conditions lower dissolved oxygen below this level, the concentrations shall be maintained at or above 95 percent of saturation.

Floating Material

Water shall not contain floating material in amounts that cause nuisance or adversely affect beneficial uses.

Oil and Grease

Waters shall not contain oils, greases, waxes, or other materials in concentrations that cause nuisance, result

in a visible film or coating on the surface of the water or on objects in the water, or otherwise adversely affect beneficial uses.

pH

The pH shall not be depressed below 6.5 nor raised above 8.5. Changes in normal ambient pH levels shall not exceed 0.5 in fresh waters with designated COLD or WARM beneficial uses. In determining

compliance with the water quality objective for pH, appropriate averaging periods may be applied provided that beneficial uses will be fully protected.

For Goose Lake (2), pH shall be less than 9.5 and greater than 7.5 at all times.

Pesticides

- No individual pesticide or combination of pesticides shall be present in concentrations that adversely affect beneficial uses.
- Discharges shall not result in pesticide concentrations in bottom sediments or aquatic life that adversely affect beneficial uses.
- Total identifiable persistent chlorinated hydrocarbon pesticides shall not be present in the water column at concentrations detectable within the accuracy of analytical methods approved by the Environmental Protection Agency or the Executive Officer.
- Pesticide concentrations shall not exceed those allowable by applicable antidegradation policies (see State Water Resources Control Board Resolution No. 68-16 and 40 C.F.R. Section 131.12.).
- Pesticide concentrations shall not exceed the lowest levels technically and economically achievable.
- Waters designated for use as domestic or municipal supply (MUN) shall not contain concentrations of pesticides in excess of the Maximum Contaminant Levels set forth in California Code of Regulations, Title 22, Division 4, Chapter 15.
- Waters designated for use as domestic or municipal supply (MUN) shall not contain concentrations of thiobencarb in excess of 1.0 $\mu\text{g/l}$.

Where more than one objective may be applicable, the most stringent objective applies.

For the purposes of this objective, the term pesticide shall include: (1) any substance, or mixture of substances which is intended to be used for defoliating plants, regulating plant growth, or for preventing, destroying, repelling, or mitigating any

pest, which may infest or be detrimental to vegetation, man, animals, or households, or be present in any agricultural or nonagricultural environment whatsoever, or (2) any spray adjuvant, or (3) any breakdown products of these materials that threaten beneficial uses. Note that discharges of "inert" ingredients included in pesticide formulations must comply with all applicable water quality objectives.

Radioactivity

Radionuclides shall not be present in concentrations that are harmful to human, plant, animal or aquatic life nor that result in the accumulation of radionuclides in the food web to an extent that presents a hazard to human, plant, animal or aquatic life.

At a minimum, waters designated for use as domestic or municipal supply (MUN) shall not contain concentrations of radionuclides in excess of the maximum contaminant levels (MCLs) specified in Table 4 (MCL Radioactivity) of Section 64443 of Title 22 of the California Code of Regulations, which are incorporated by reference into this plan. This incorporation-by-reference is prospective, including future changes to the incorporated provisions as the changes take effect.

Salinity

Electrical Conductivity and Total Dissolved Solids—Special Cases in the Sacramento and San Joaquin River Basins Other Than the Delta

The objectives for electrical conductivity and total dissolved solids in Table III-3 apply to the water bodies specified. To the extent of any conflict with the general Chemical Constituents water quality objectives, the more stringent shall apply.

Electrical Conductivity, Total Dissolved Solids, and Chloride—Delta Waters

The objectives for salinity (electrical conductivity, total dissolved solids, and chloride) which apply to the Delta are listed in Table III-5 at the chapter's end. See Figure III-2 for an explanation of the hydrologic year type classification system. The objectives in Table III-5 were adopted by the State Water Board in May 1991 in the Water Quality Control Plan for Salinity.

Table III-3

ELECTRICAL CONDUCTIVITY AND TOTAL DISSOLVED SOLIDS

<u>PARAMETER</u>	<u>WATER QUALITY OBJECTIVES</u>	<u>APPLICABLE WATER BODIES</u>
Electrical Conductivity (at 25°C)	Shall not exceed 230 micromhos/cm (50 percentile) or 235 micromhos/cm (90 percentile) at Knights Landing above Colusa Basin Drain; or 240 micromhos/cm (50 percentile) or 340 micromhos/cm (90 percentile) at I Street Bridge, based upon previous 10 years of record.	Sacramento River (13, 30)
	Shall not exceed 150 micromhos/cm (90 percentile) in well-mixed waters of the Feather River.	North Fork of the Feather River (33); Middle Fork of the Feather River from Little Last Chance Creek to Lake Oroville (36); Feather River from the Fish Barrier Dam at Oroville to Sacramento River (40)
	Shall not exceed 150 micromhos/cm from Friant Dam to Gravelly Ford (90 percentile).	San Joaquin River, Friant Dam to Mendota Pool (69)
Total Dissolved Solids	Shall not exceed 125 mg/l (90 percentile)	North Fork of the American River from the source to Folsom Lake (44); Middle Fork of the American River from the source to Folsom Lake (45); South Fork of the American River from the source to Folsom Lake (48, 49); American River from Folsom Dam to Sacramento River (51)
	Shall not exceed 100 mg/l (90 percentile)	Folsom Lake (50)
	Shall not exceed 1,300,000 tons	Goose Lake (2)

Sediment

The suspended sediment load and suspended sediment discharge rate of surface waters shall not be altered in such a manner as to cause nuisance or adversely affect beneficial uses.

Settleable Material

Waters shall not contain substances in concentrations that result in the deposition of material that causes nuisance or adversely affects beneficial uses.

Suspended Material

Waters shall not contain suspended material in concentrations that cause nuisance or adversely affect beneficial uses.

Tastes and Odors

Water shall not contain taste- or odor-producing substances in concentrations that impart undesirable tastes or odors to domestic or municipal water supplies or to fish flesh or other edible products of aquatic origin, or that cause nuisance, or otherwise adversely affect beneficial uses.

Temperature

The natural receiving water temperature of intrastate waters shall not be altered unless it can be demonstrated to the satisfaction of the Regional Water Board that such alteration in temperature does not adversely affect beneficial uses.

Temperature objectives for COLD interstate waters, WARM interstate waters, and Enclosed Bays and Estuaries are as specified in the *Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays of California* including any revisions. There are also temperature objectives for the Delta in the State

Water Board's May 1991 *Water Quality Control Plan for Salinity*.

At no time or place shall the temperature of COLD or WARM intrastate waters be increased more than 5°F above natural receiving water temperature. Temperature changes due to controllable factors shall be limited for the water bodies specified as described in Table III-4. To the extent of any conflict with the above, the more stringent objective applies.

In determining compliance with the water quality objectives for temperature, appropriate averaging periods may be applied provided that beneficial uses will be fully protected.

TABLE III-4
SPECIFIC TEMPERATURE OBJECTIVES

<u>DATES</u>	<u>APPLICABLE WATER BODY</u>
From 1 December to 15 March, the maximum temperature shall be 55°F.	Sacramento River from its source to Box Canyon Reservoir (9); Sacramento River from Box Canyon Dam to Shasta Lake (11)
From 16 March to 15 April, the maximum temperature shall be 60°F.	
From 16 April to 15 May, the maximum temperature shall be 65°F.	
From 16 May to 15 October, the maximum temperature shall be 70°F.	
From 16 October to 15 November, the maximum temperature shall be 65°F.	
From 16 November to 30 November, the maximum temperature shall be 60°F.	
The temperature in the epilimnion shall be less than or equal to 75°F or mean daily ambient air temperature, whichever is greater.	Lake Siskiyou (10)
The temperature shall not be elevated above 56°F in the reach from Keswick Dam to Hamilton City nor above 68°F in the reach from Hamilton City to the I Street Bridge during periods when temperature increases will be detrimental to the fishery.	Sacramento River from Shasta Dam to I Street Bridge (13, 30)

Toxicity

All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life. This objective applies regardless of whether the toxicity is caused by a single substance or the interactive effect of multiple substances. Compliance with this objective will be determined by analyses of indicator organisms, species diversity, population density, growth anomalies, and biotoxicity tests of appropriate duration or other methods as specified by the Regional Water Board.

The Regional Water Board will also consider all material and relevant information submitted by the discharger and other interested parties and numerical criteria and guidelines for toxic substances developed by the State Water Board, the California Office of Environmental Health Hazard Assessment, the California Department of Health Services, the U.S. Food and Drug Administration, the National Academy of Sciences, the U.S. Environmental Protection Agency, and other appropriate organizations to evaluate compliance with this objective.

The survival of aquatic life in surface waters subjected to a waste discharge or other controllable water quality factors shall not be less than that for the same water body in areas unaffected by the waste discharge, or, when necessary, for other control water that is consistent with the requirements for "experimental water" as described in *Standard Methods for the Examination of Water and Wastewater*, latest edition. As a minimum, compliance with this objective as stated in the previous sentence shall be evaluated with a 96-hour bioassay.

In addition, effluent limits based upon acute biotoxicity tests of effluents will be prescribed where appropriate; additional numerical receiving water quality objectives for specific toxicants will be established as sufficient data become available; and source control of toxic substances will be encouraged.

Turbidity

Waters shall be free of changes in turbidity that cause nuisance or adversely affect beneficial uses. Increases in turbidity attributable to controllable water quality factors shall not exceed the following limits:

- Where natural turbidity is between 0 and 5 Nephelometric Turbidity Units (NTUs), increases shall not exceed 1 NTU.
- Where natural turbidity is between 5 and 50 NTUs, increases shall not exceed 20 percent.
- Where natural turbidity is between 50 and 100 NTUs, increases shall not exceed 10 NTUs.
- Where natural turbidity is greater than 100 NTUs, increases shall not exceed 10 percent.

In determining compliance with the above limits, appropriate averaging periods may be applied provided that beneficial uses will be fully protected.

Exceptions to the above limits will be considered when a dredging operation can cause an increase in turbidity. In those cases, an allowable zone of dilution within which turbidity in excess of the limits may be tolerated will be defined for the operation and prescribed in a discharge permit.

For Folsom Lake (50) and American River (Folsom Dam to Sacramento River) (51), except for periods of storm runoff, the turbidity shall be less than or equal 10 NTUs. To the extent of any conflict with the general turbidity objective, the more stringent applies.

For Delta waters, the general objectives for turbidity apply subject to the following: except for periods of storm runoff, the turbidity of Delta waters shall not exceed 50 NTUs in the waters of the Central Delta and 150 NTUs in other Delta waters. Exceptions to the Delta specific objectives will be considered when a dredging operation can cause an increase in turbidity. In this case, an allowable zone of dilution within which turbidity in excess of limits can be tolerated will be defined for the operation and prescribed in a discharge permit.

WATER QUALITY OBJECTIVES FOR GROUND WATERS

The following objectives apply to all ground waters of the Sacramento and San Joaquin River Basins, as the objectives are relevant to the protection of designated beneficial uses. These objectives do not require improvement over naturally occurring background concentrations. The ground water objectives contained in this plan are not required by the federal Clean Water Act.

Bacteria

In ground waters used for domestic or municipal supply (MUN) the most probable number of coliform organisms over any seven-day period shall be less than 2.2/100 ml.

Chemical Constituents

Ground waters shall not contain chemical constituents in concentrations that adversely affect beneficial uses.

At a minimum, ground waters designated for use as domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels (MCLs) specified in the following provisions of Title 22 of the California Code of Regulations, which are incorporated by reference into this plan: Tables 64431-A (Inorganic Chemicals) and 64431-B

(Fluoride) of Section 64431, Table 64444-A (Organic Chemicals) of Section 64444, and Tables 64449-A (Secondary Maximum Contaminant Levels-Consumer Acceptance Limits) and 64449-B (Secondary Maximum Contaminant Levels-Ranges) of Section 64449. This incorporation-by-reference is prospective, including future changes to the incorporated provisions as the changes take effect. At a minimum, water designated for use as domestic or municipal supply (MUN) shall not contain lead in excess of 0.015 mg/l. To protect all beneficial uses, the Regional Water Board may apply limits more stringent than MCLs.

Radioactivity

At a minimum, ground waters designated for use as domestic or municipal supply (MUN) shall not contain concentrations of radionuclides in excess of the maximum contaminant levels (MCLs) specified in Table 4 (MCL Radioactivity) of Section 64443 of Title 22 of the California Code of Regulations, which are incorporated by reference into this plan. This incorporation-by-reference is prospective, including future changes to the incorporated provisions as the changes take effect.

Tastes and Odors

Ground waters shall not contain taste- or odor-producing substances in concentrations that cause nuisance or adversely affect beneficial uses.

Toxicity

Ground waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life associated with designated beneficial use(s). This objective applies regardless of whether the toxicity is caused by a single substance or the interactive effect of multiple substances.

FIGURE III-1

BOUNDARY OF THE SACRAMENTO - SAN JOAQUIN DELTA

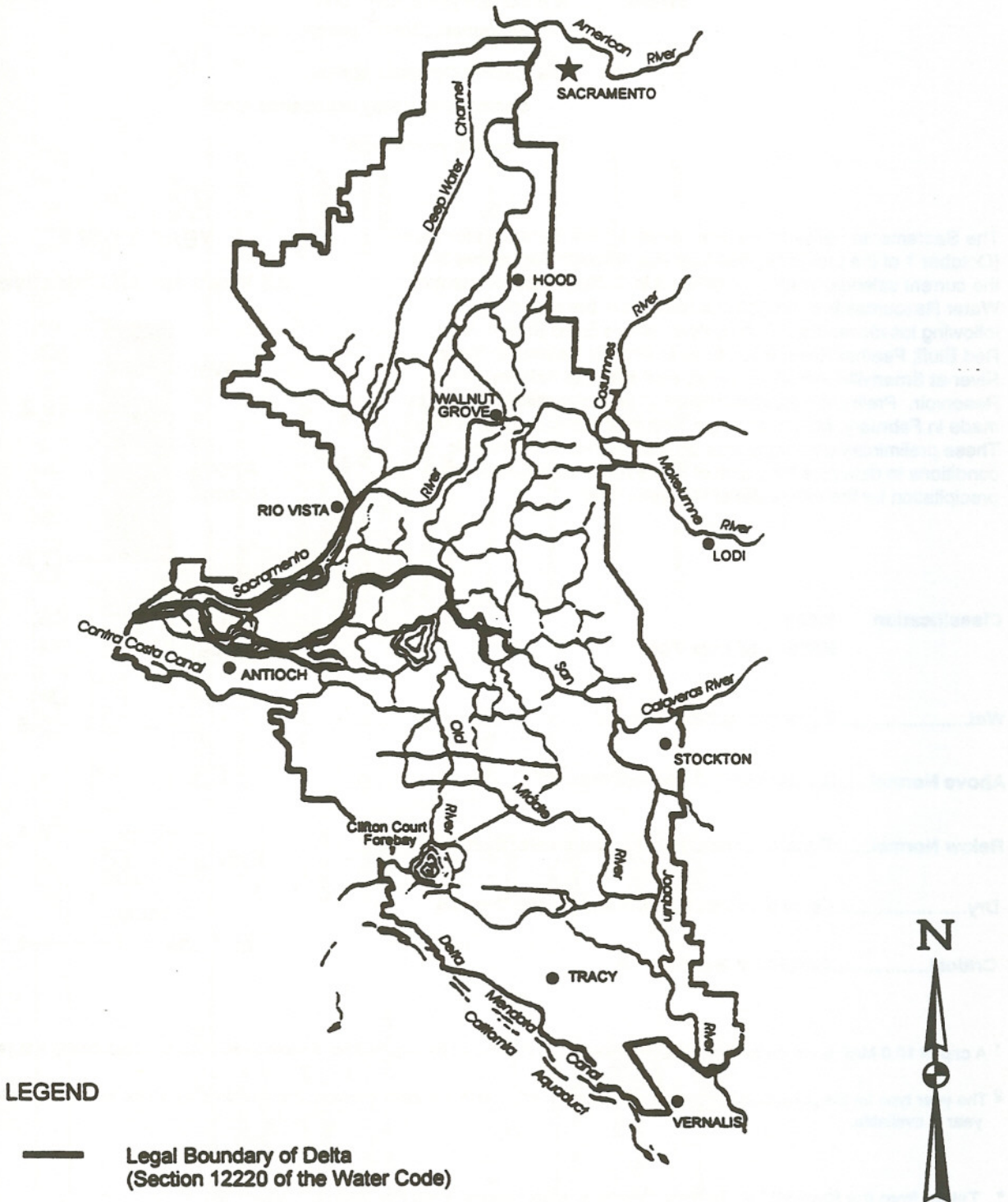


FIGURE III-2 *

**Sacramento Valley
Water Year Hydrologic Classification**

Year classification shall be determined by computation of the following equation:

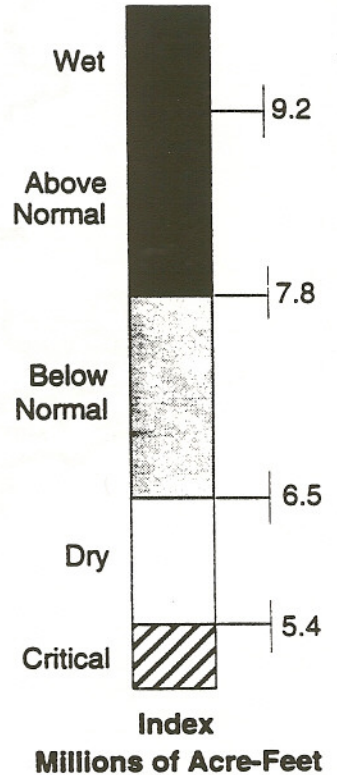
$$\text{INDEX} = 0.4 * X + 0.3 * Y + 0.3 * Z$$

Where: X = Current years April - July
Sacramento Valley unimpaired runoff
Y = Current October - March
Sacramento Valley unimpaired runoff
Z = Previous year's index ¹

The Sacramento Valley unimpaired runoff for the current water year (October 1 of the preceding calendar year through September 30 of the current calendar year) as published in California Department of Water Resources Bulletin 120 is a forecast of the sum of the following locations: Sacramento River above Bend Bridge, near Red Bluff; Feather River, total inflow to Oroville Reservoir; Yuba River at Smartville; American River, total inflow to Folsom Reservoir. Preliminary determinations of year classification shall be made in February, March, and April with final determination in May. These preliminary determinations shall be based on hydrologic conditions to date plus forecasts of future runoff assuming normal precipitation for the remainder of the water year.

Classification	Index Millions of Acre-Feet
Wet	Equal to or greater than 9.2
Above Normal	Greater than 7.8 and less than 9.2
Below Normal	Equal to or less than 7.8 and greater than 6.5
Dry	Equal to or less than 6.5 and greater than 5.4
Critical	Equal to or less than 5.4

**YEAR TYPE 2
All Years for All Objectives**



¹ A cap of 10.0 MAF is put on the previous years index (X) to account for required flood control reservoir releases during wet years.

² The year type for the preceding water year will remain in effect until the initial forecast of unimpaired runoff for the current water year is available.

* Taken from the State Water Board's "Water Quality Control Plan For Salinity", May 1991, Figure 3-4

TABLE III-5 *: WATER QUALITY OBJECTIVES

A) MUNICIPAL AND INDUSTRIAL USES

LOCATION	SAMPLING SITE NOs. (I-A/RK)	PARAMETER	DESCRIPTION	INDEX TYPE	YEAR TYPE	DATES	VALUES
Contra Costa Canal at Pumping Plant #1	C-5 CHCCC06	Chloride (Cl-)	Maximum mean daily, in mg/l	Not Applicable	All	Oct-Sep	250
Contra Costa Canal at Pumping Plant #1	C-5 CHCCC06	Chloride (Cl-)	Maximum mean daily 150 mg/l chloride for at least the number of days shown during the Calendar Year. Must be provided in intervals of not less than two weeks duration. (Percentage of Calendar Year shown in parenthesis).	Sacramento River 40-30-30		No. of days each Cal. Year < 150 mg/l Cl-	
- or -					W		240 (66%)
San Joaquin River at Antioch Water Works Intake	D-12(near) RSAN007	Chloride (Cl-)		Sacramento River 40-30-30	AN		190 (52%)
					D		165 (45%)
					C	155 (42%)	
West Canal at mouth of Clifton Court Forebay	C-9 CHWST0	Chloride (Cl-)	Maximum mean daily, in mg/l	Not Applicable	All	Oct-Sep	250
Delta Mendota Canal at Tracy Pumping Plant	DMC-1 CHDMC004	Chloride (Cl-)	Maximum mean daily, in mg/l	Not Applicable	All	Oct-Sep	250
Cache Slough at City of Vallejo Intake [1]	C-19 SLCCH16	Chloride (Cl-)	Maximum mean daily, in mg/l	Not Applicable	All	Oct-Sep	250
-and/or- Barker Slough at North Bay Aqueduct Intake	- SLBAR3	Chloride (Cl-)	Maximum mean daily, in mg/l	Not Applicable	All	Oct-Sep	250

* Taken from the State Water Board's "Water Quality Control Plan For Salinity", May 1991

TABLE III-5* (cont.): WATER QUALITY OBJECTIVES

B) AGRICULTURAL USES BY AREA

LOCATION	SAMPLING SITE NOS. (I-A/RKI)	PARAMETER	DESCRIPTION	INDEX TYPE	YEAR TYPE	DATES	VALUES
1) WESTERN DELTA							
<i>Sacramento River at Emmaton</i>	<i>D-22 RSAC092</i>	<i>Electrical Conductivity (EC)</i>	<i>Maximum 14-day running average of mean daily, in mmhos/cm (mmhos)</i>	<i>Sacramento River 40-30-30</i>		<i>0.45 EC April 1 to Date Shown Aug. 15</i>	<i>EC from Date Shown to Aug. 15 [2] --</i>
					<i>W</i>	<i>Aug. 15</i>	<i>--</i>
					<i>AN</i>	<i>July 1</i>	<i>0.63</i>
					<i>BN</i>	<i>June 20</i>	<i>1.14</i>
					<i>D</i>	<i>June 15</i>	<i>1.67</i>
					<i>C</i>	<i>--</i>	<i>2.78</i>
<i>San Joaquin River at Jersey Point</i>	<i>D-15 RSAN018</i>	<i>Electrical Conductivity (EC)</i>	<i>Maximum 14-day running average of mean daily, in mmhos</i>	<i>Sacramento River 40-30-30</i>		<i>0.45 EC April 1 to Date Shown Aug. 15</i>	<i>EC from Date Shown to Aug. 15 [2] --</i>
					<i>W</i>	<i>Aug. 15</i>	<i>--</i>
					<i>AN</i>	<i>Aug. 15</i>	<i>--</i>
					<i>BN</i>	<i>June 20</i>	<i>0.74</i>
					<i>D</i>	<i>June 15</i>	<i>1.35</i>
					<i>C</i>	<i>--</i>	<i>2.20</i>
2) INTERIOR DELTA							
<i>South Fork Mokelumne River at Terminous</i>	<i>C-13 RSMKLO8</i>	<i>Electrical Conductivity (EC)</i>	<i>Maximum 14-day running average of mean daily, in mmhos</i>	<i>Sacramento River 40-30-30</i>		<i>0.45 EC April 1 to Date Shown Aug. 15</i>	<i>EC from Date Shown to Aug. 15 [2] --</i>
					<i>W</i>	<i>Aug. 15</i>	<i>--</i>
					<i>AN</i>	<i>Aug. 15</i>	<i>--</i>
					<i>BN</i>	<i>Aug. 15</i>	<i>--</i>
					<i>D</i>	<i>Aug. 15</i>	<i>--</i>
					<i>C</i>	<i>--</i>	<i>0.54</i>
<i>San Joaquin River at San Andreas Landing</i>	<i>C-4 RSAN032</i>	<i>Electrical Conductivity (EC)</i>	<i>Maximum 14-day running average of mean daily, in mmhos</i>	<i>Sacramento River 40-30-30</i>		<i>0.45 EC April 1 to Date Shown Aug. 15</i>	<i>EC from Date Shown to Aug. 15 [2] --</i>
					<i>W</i>	<i>Aug. 15</i>	<i>--</i>
					<i>AN</i>	<i>Aug. 15</i>	<i>--</i>
					<i>BN</i>	<i>Aug. 15</i>	<i>--</i>
					<i>D</i>	<i>Jun. 25</i>	<i>0.58</i>
					<i>C</i>	<i>--</i>	<i>0.87</i>

TABLE III-5*: WATER QUALITY OBJECTIVES

A) MUNICIPAL AND INDUSTRIAL USES

LOCATION	SAMPLING SITE NOs. (I-A/RKI)	PARAMETER	DESCRIPTION	INDEX TYPE	YEAR TYPE	DATES	VALUES
Contra Costa Canal at Pumping Plant #1	C-5 CHCCC06	Chloride (Cl-)	Maximum mean daily, in mg/l	Not Applicable	All	Oct-Sep	250
Contra Costa Canal at Pumping Plant #1 - or - San Joaquin River at Antioch Water Works Intake	C-5 CHCCC06 D-12(near) RSAN007	Chloride (Cl-)	Maximum mean daily 150 mg/l chloride for at least the number of days shown during the Calendar Year. Must be provided in intervals of not less than two weeks duration. (Percentage of Calendar Year shown in parenthesis).	Sacramento River 40-30-30 Sacramento River 40-30-30	W AN BN D C	No. of days each Cal. Year < 150 mg/l Cl- 240 (66%) 190 (52%) 175 (48%) 165 (45%) 155 (42%)	
West Canal at mouth of Clifton Court Forebay	C-9 CHWST0	Chloride (Cl-)	Maximum mean daily, in mg/l	Not Applicable	All	Oct-Sep	250
Delta Mendota Canal at Tracy Pumping Plant	DMC-1 CHDMC004	Chloride (Cl-)	Maximum mean daily, in mg/l	Not Applicable	All	Oct-Sep	250
Cacha Slough at City of Vallejo Intake (1) -and/or- Barker Slough at North Bay Aqueduct Intake	C-19 SLCCH16 SLBAR3	Chloride (Cl-)	Maximum mean daily, in mg/l	Not Applicable	All	Oct-Sep	250

* Taken from the State Water Board's "Water Quality Control Plan For Salinity", May 1991

TABLE III-5* (cont.): WATER QUALITY OBJECTIVES

B) AGRICULTURAL USES BY AREA

LOCATION	SAMPLING SITE NOs. (I-A/R/K)	PARAMETER	DESCRIPTION	INDEX TYPE	YEAR TYPE	DATES	VALUES
1) WESTERN DELTA							
Sacramento River at Enmaton	D-22 RSAC092	Electrical Conductivity (EC)	Maximum 14-day running average of mean daily, in mmhos/cm (mmhos)	Sacramento River 40-30-30	0.45 EC	April 1 to Date Shown	EC from Date Shown to Aug. 15 [2]
						Aug. 15	--
						AN July 1	0.63
						BN June 20	1.14
						D June 15	1.67
						C --	2.78
San Joaquin River at Jersey Point	D-15 RSAN018	Electrical Conductivity (EC)	Maximum 14-day running average of mean daily, in mmhos	Sacramento River 40-30-30	0.45 EC	April 1 to Date Shown	EC from Date Shown to Aug. 15 [2]
						Aug. 15	--
						AN Aug. 15	--
						BN June 20	0.74
						D June 15	1.35
						C --	2.20
2) INTERIOR DELTA							
South Fork Mokelumne River at Terminous	C-13 RSMKL08	Electrical Conductivity (EC)	Maximum 14-day running average of mean daily, in mmhos	Sacramento River 40-30-30	0.45 EC	April 1 to Date Shown	EC from Date Shown to Aug. 15 [2]
						Aug. 15	--
						AN Aug. 15	--
						BN Aug. 15	--
						D Aug. 15	--
						C --	0.54
San Joaquin River at San Andreas Landing	C-4 RSAN032	Electrical Conductivity (EC)	Maximum 14-day running average of mean daily, in mmhos	Sacramento River 40-30-30	0.45 EC	April 1 to Date Shown	EC from Date Shown to Aug. 15 [2]
						Aug. 15	--
						AN Aug. 15	--
						BN Aug. 15	--
						D Jun. 25	0.58
						C --	0.87

TABLE III-5* (cont.): WATER QUALITY OBJECTIVES

B) AGRICULTURAL USES BY AREA

LOCATION	SAMPLING SITE NOS. (I-AR/KI)	PARAMETER	DESCRIPTION	INDEX TYPE	YEAR TYPE	DATES	VALUES
(To be implemented by 1996) [3]			3) SOUTH DELTA				
San Joaquin River at Airport Way Bridge, Vernalis	C-10 RSAN112	Electrical Conductivity (EC)	Maximum 30-day running average of mean daily, in mmhos	Not Applicable	All	Apr 1-Aug 31 Sep 1-Mar 31	0.7 1.0
Old River near Middle River	C-8 ROLD69					or	
Old River at Tracy Road Bridge	P-12 ROLD59						
San Joaquin River at Brandt Bridge [site]	C-6 RSAN073						
				4) EXPORT			
West Canal at mouth of Clifton Court Forebay -and- Delta Mendota Canal at Tracy Pumping Plant	C-9 CHWST0 DMC-1 CHDMC004	Electrical Conductivity (EC)	Maximum monthly average of mean daily EC, in mmhos	Not Applicable	All	Oct-Sept	1.0

If a three-party contract has been implemented among DWR, USBR and the SDWA, that contract will be reviewed prior to implementation of the above and, after also considering the needs of other beneficial uses, revisions will be made to the objectives and compliance/monitoring locations noted above, as appropriate.

* Taken from the State Water Board's "Water Quality Control Plan For Salinity", May 1991

TABLE III-5* (cont.): WATER QUALITY OBJECTIVES

(C) FISH AND WILDLIFE BY HABITAT/SPECIES

LOCATION	SAMPLING SITE NOs. (I-A/RKI)	PARAMETER	DESCRIPTION	INDEX TYPE	YEAR TYPE	DATES	VALUES
			CHINOOK SALMON				
DISSOLVED OXYGEN							
<i>San Joaquin River between Turner Cut & Stockton</i>	<i>RSAN050- RSAN061</i>	<i>Dissolved Oxygen (DO)</i>	<i>Minimum dissolved oxygen, in mg/l</i>	<i>Not Applicable</i>	<i>All</i>	<i>Sep 1-Nov 30</i>	<i>6.0</i>
TEMPERATURE							
<i>Sacramento River at Freeport and</i>	<i>RSAC155</i>	<i>Temperature</i>	<i>Narrative Objective</i>	<i>Not Applicable</i>	<i>All</i>	<i>"The daily average water temperature shall not be elevated by controllable factors above 68 deg. F from the I Street Bridge to Freeport on the Sacramento River, and at Vernalis on the San Joaquin River between April 1 through June 30 and September 1 through November 30 in all water year types." [4]</i>	
<i>San Joaquin River at Airport Way Bridge, Vernalis</i>	<i>C-10 RSAN112</i>	<i>Temperature</i>	<i>Narrative Objective</i>	<i>Not Applicable</i>	<i>All</i>		
<i>Sacramento River at Freeport</i>	<i>RSAC155</i>	<i>Temperature</i>	<i>Narrative Objective</i>	<i>Not Applicable</i>	<i>All</i>		<i>"The daily average water temperature shall not be elevated by controllable factors above 66 deg. F from the I street Bridge to Freeport on the Sacramento River between January 1 through March 31." [4]</i>

(C) FISH AND WILDLIFE BY HABITAT/SPECIES

LOCATION	SAMPLING SITE NOs. (I-A/R/KI)	PARAMETER	DESCRIPTION	INDEX TYPE	YEAR TYPE	DATES	VALUES
STRIPED BASS - SALINITY:1 ANTIOCH - SPAWNING							
Sacramento River at Chipps Island	D-10 RSAC075	Delta outflow Index (DOI)	Average for the period not less than the value shown, in cfs.	Not Applicable	All	Apr 1-Apr 14	6,700
San Joaquin River at Antioch Water Works Intake	D-12 (near) RSAN007	Electrical Conductivity (EC)	14-day running average of mean daily for the period not more than value shown, in mmhos	Not Applicable	All	Apr 15-May 31 (or until spawning has ended)	1.5
STRIPED BASS - SALINITY:2. ANTIOCH - SPAWNING - RELAXATION PROVISION							
San Joaquin River at Antioch Water Works Intake	D-12 (near) RSAN007	Electrical Conductivity (EC)	14-day running average of mean daily EC in mmhos, not more than value shown corresponding to deficiencies in firm supplies declared by a set of water projects representative of the Sacramento River and San Joaquin River watersheds, for the period shown, or until spawning has ended. The specific representative projects and amounts of deficiencies will be defined in subsequent phases of the proceedings.	Total Annual Imposed Deficiency (MAF)		Apr 1-May 31 EC in mmhos Dry Critical	
This relaxation provision replaces the above Antioch & Chipps Island standard whenever the projects impose deficiencies in firm supplies.				0.0		1.5	1.5
				0.5		1.8	1.9
				1.0		1.8	2.5
				1.5		1.8	3.4
				2.0 or more		1.8	3.7
						Linear interpolation is to be used to determine values between those shown.	
STRIPED BASS - SALINITY:3. PRISONERS POINT - SPAWNING							
San Joaquin River at: Prisoners Point	D-29 RSAN038	Electrical Conductivity (EC)	14-day running average of mean daily for the period not more than value shown, in mmhos	Sacramento River 40-30-30	All	Apr 1-May 31 (or until spawning has ended)	0.44

* Taken from the State Water Board's "Water Quality Control Plan For Salinity", May 1991